Dover District Council

Annual Status Report 2022

Bureau Veritas

September 2022

Move Forward with Confidence

Document Control Sheet

Identification	
Client	Dover District Council
Document Title	Dover District Council 2022 Annual Status Report
Bureau Veritas Ref No.	AIR 15064854

Contact Details		
Company Name	Bureau Veritas UK Limited	Dover District Council
Contact Name	Daniel Clampin	Brian Gibson
Position	Senior Consultant	Senior Environmental Protection Officer
Address	5th Floor, 66 Prescot Street, London, E1 8HG	Dover District Council Council Offices White Cliffs Business Park Whitfield, Dover CT16 3PJ

Configuration				
Version	**Date**	**Author**	**Reason for Issue/Summary of Changes**	**Status**
1.0	23/9/22	J Cai	Draft issued for client comment	Draft

	Name	Job Title	Signature
Prepared By	J Cai	Graduate Air Quality Consultant	
Approved By	D Clampin	Senior Air Quality Consultant	

Commercial In Confidence

© Bureau Veritas UK Limited

The copyright in this work is vested in Bureau Veritas UK Limited, and the information contained herein is confidential. This work, either in whole or in part, may not be reproduced or disclosed to others or used for any purpose, other than for internal client evaluation, without Bureau Veritas' prior written approval.
Bureau Veritas UK Limited, Registered in England & Wales, Company Number: 01758622
Registered Office: Suite 206 Fort Dunlop, Fort Parkway, Birmingham B24 9FD

Disclaimer

This Report was completed by Bureau Veritas on the basis of a defined programme of work and terms and conditions agreed with the Client. Bureau Veritas confirms that in preparing this Report it has exercised all reasonable skill and care taking into account the project objectives, the agreed scope of works, prevailing site conditions and the degree of manpower and resources allocated to the project.

Bureau Veritas accepts no responsibility to any parties whatsoever, following the issue of the Report, for any matters arising outside the agreed scope of the works.

This Report is issued in confidence to the Client and Bureau Veritas has no responsibility to any third parties to whom this Report may be circulated, in part or in full, and any such parties rely on the contents of the report solely at their own risk.

Unless specifically assigned or transferred within the terms of the agreement, the consultant asserts and retains all Copyright, and other Intellectual Property Rights, in and over the Report and its contents.

Any questions or matters arising from this Report should be addressed in the first instance to the Project Manager.

2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: September 2022

Information	Dover District Council Details
Local Authority Officer	Brian Gibson
Department	Environmental Protection
Address	Dover District Council, Council Offices, White Cliffs Business Park, Whitfield, Dover CT16 3PJ
Telephone	01304 872428
E-mail	Brian.Gibson@dover.gov.uk
Report Reference Number	Dover District Council 2022 ASR
Date	September 2022

Executive Summary: Air Quality in Our Area

Air Quality in Dover District Council

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 existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Dover is “the gateway to England” and its location at the narrowest crossing point in the Channel has always given it great significance for both trade and military activities.

Dover is the district’s principal town, the major employment centre, an international gateway and a transport hub. In addition to Dover, Deal and Sandwich are the other main towns within the district.

The main sources of pollutant emissions within Dover are linked with port activities; regular cross-channel ships and large volumes of road traffic arising as a result of associated transport of good along the A2 and A20 entering and leaving the town.

Dover District Council (the Council) has an adopted Core Strategy (CS) which includes ambitious plans to regenerate Dover and other areas of the district and has an adopted Land Allocations Local Plan (LALP). The Council is currently in the process of preparing a new Local Plan which will replace the Adopted CS, LALP and ‘saved’ 2002 Local Plan Policies. Air quality will be one of a number of key considerations that will need to be taken

[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2021

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

into account as part of the development, consultation, adoption and implementation of the new Local Plan.

There are currently two Air Quality Management Areas (AQMAs) declared within the district. Both have been designated due to exceedances of the annual mean Air Quality Strategy (AQS) objective for nitrogen dioxide (NO_2), with the elevated concentrations caused primarily by road traffic emissions. These are:

- A20 AQMA, declared in 2004 (and amended in 2007 and 2009); and
- High Street/Ladywell AQMA, declared in 2007.

In 2021, a dispersion modelling exercise was carried out for both AQMAs to establish whether any changes to the extent of AQMA boundary could be made. The results concluded that exceedances of the annual mean NO_2 objective were still evident within the High St / Ladywell AQMA and concentration was predicted to be within 10% of the AQS Objective at receptor within the A20 AQMA. Concentrations predicted at any receptors outside the AQMA were below the annual mean NO_2 AQS objective. Following the modelling report, it was recommended that the AQMAs remain as currently declared. However, it was recommended that the existing monitoring at High Street toward Victoria Crescent (DV30) and monitoring around the A20 AQMA should continue to assess the current boundary.

A new Air Quality Action Plan (AQAP) has been developed to be released in 2022. An updated source apportionment study indicates that Cars, Buses and LGVs are largely responsible for the exceedances in the High St / Ladywell AQMA; and, Cars, HGVs and LGVs are largely responsible for the worst air quality within the A20 AQMA. Measure to further improve the air quality in Dover has been included in the new AQAP.

There were no exceedances of the annual mean NO_2 objective in 2021. All sites recorded annual mean concentrations below 36 $\mu g/m^3$ (i.e. not within 10% of the AQS objective). The highest concentration of 35.9 $\mu g/m^3$ was observed at co-location site DV06,07,08. Site DV06,07,08 is adjacent to Dover Town Hall, within the High Street/ Ladywell AQMA boundary. Exceedances of the annual mean NO_2 AQS objective have been recorded at DV06,07,08 in 2017 and 2018. In 2019, the concentration was recorded within 10% of the AQS objective. During 2020 and 2021, DV06,07,08 recorded concentrations below 36 $\mu g/m^3$ (i.e. not within 10% of the AQS objective).

When compared to 2020 concentrations, results of the monitoring for 2021 show an overall increase in annual mean concentrations at most diffusion tube monitoring sites

except for co-location site DV11,16,17 and site DV30. The general increase of the NO_2 concentrations recorded in 2021 is likely due to the increased traffic emission as traffic activities have been gradually recovering from the impact of the Covid-19 pandemic.

During 2021, five new diffusion tube sites were added. DV37 (London Road, Deal) and DV38 (Roundabout, London Road, Deal) were installed in Deal area. DV39 was installed at St Edmund's School, Barton Road, Dover. DV40 and DV40a were installed at 1 St Martin's Road and 5 St Martin's Road respectively in Guston, Dover. To date, the monitoring results have reported NO_2 concentrations well below the AQS objective in these areas.

There have been no exceedances of the PM_{10} AQS objective within the past five years at the single PM_{10} monitoring location on Townwall Street (Dover Centre). There is currently no monitoring undertaken for $PM_{2.5}$ within the District. However, the annual mean $PM_{2.5}$ concentration at Dover Centre in 2021 was estimated in accordance with the methodology presented in LAQM.TG(22) to be 15.1 µg/m^3.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

A package of measures to improve air pollution within the district are to be identified in the updated AQAP that is due to be published this year. A draft AQAP was previously developed, although a decision was made in early 2018 to put the AQAP on hold due to the Council's need to focus on contingency planning for the UK's departure from the

[5] Defra. Clean Air Strategy, 2019

[6] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

European Union as Dover is a key area of impact. The AQAP has been further delayed due to the Covid-19 pandemic and resourcing issues. However, works are now underway for it to be published later in 2022 and internal consultation with stakeholders completed in September 2022. Dispersion modelling with a source apportionment study will allow identification of the key areas of exceedance and the sources that are contributing to the air quality exceedances in the area.

Additionally, the Council are in the process of preparing a new Local Plan to assess how future development will impact air quality within the area, with particular attention paid to any scenarios that will negatively impact air quality in sensitive areas, such as within AQMAs or within any of the internationally designated sites within the district. The Council welcomed the publics consultation on the draft Dover District Local Plan (Regulation 18)[7] for a period of eight weeks, which ended in March 2021. The updated LDS is expected to be available in September 2022, and it is anticipated that the Regulation 19 consultation will commence in Quarter 4 of 2022[8].

The Council's fleet has been updated to include a proportion of electric vehicles (EVs). An additional 7 EV chargers have been installed in the Council's car park in 2022 and there are plans to increase numbers for public use. The Council succeeded in their OLEV funding bid for 19 sites with 42 units to be completed 2022.

Dover faces a number of challenges to manage traffic associated with the Port, discussions are currently taking place with Central Government and National Highways to manage the expected major increase in housing stock in South East England coupled with proposals for the third Thames crossing.

Conclusions and Priorities

During 2021, there were no exceedances of the relevant annual mean objective for either NO_2 or PM_{10} across Dover. This is the second year with no exceedances recorded since the AQMAs were declared. The concentrations at most sites across the NO_2 diffusion tube network increased compared to 2020 concentrations likely due to increased traffic emission

[7] https://www.doverdistrictlocalplan.co.uk/uploads/pdfs/dover-district-draft-local-plan-regulation-18-document.pdf

[8] https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/New-District-Local-Plan/Home.aspx

as a result of recovered traffic activities from Covid-19 pandemic. All sites had recorded annual mean concentrations below 36 µg/m^3.

There have been no exceedances of the PM_{10} annual mean objective within the past five years.

The AQAP based upon detailed modelling of the AQMAs and taking into consideration Defra's proposals for 'tackling roadside nitrogen dioxide concentrations' is currently being updated. This will be placed in the context of identified significant developments in Dover, including re-development of the Western Docks through the Dover Western Docks Revival Project and work on the Dover Waterfront area. The potential impact upon air quality from these developments will be appraised through the Strategic Environmental Assessment approach and through requests for air quality assessments under the planning and development regime. The impacts of the Covid-19 pandemic upon the air quality and traffic within Dover have caused delays in the development of the AQAP, nevertheless the Council aims to complete this by the end of 2022.

The impacts of Brexit upon the port will continue to be a key influence in the coming years and any decisions made will be assessed in terms of the air quality impacts within Dover.

Local Engagement and How to get Involved

There are several ways that everyone can get involved to help improve air quality in Dover. Due to road traffic being the main source of pollutant emissions within the district you can look to move to more sustainable methods of transport. For example: looking to minimise unnecessary car journeys by choosing to walk, cycle, car-share or use public transport instead.

For further information regarding air quality the following links are provided:

- To download DDC's air quality monitoring data, you can visit: https://kentair.org.uk/data ;
- To report a nuisance or pollution problem, please fill in the form located here: https://forms.dover.gov.uk/nuisance ; and
- All other general enquiries should be made by either ringing 01304 872428 or emailing DDC.EnvProtection@DOVER.GOV.UK. You can also visit https://www.dover.gov.uk/Environment/Environmental-Protection/Air-Quality/Air-Quality-Monitoring.aspx.

Local Responsibilities and Commitment

This ASR was prepared by Bureau Veritas in conjunction with the Environmental Protection section of Dover District Council with the support and agreement of the following officers and departments:

Diane Croucher - Head of Regulatory Services

Andrzej Kluczynski - Environmental Protection & Crime Manager

This ASR has been approved by:

Cllr Martin Bates - Portfolio Holder for Transport, Licensing and Regulatory Services

If you have any comments on this ASR please send them to Brian Gibson at:

Dover District Council

Council Offices

White Cliffs Business Park

Whitfield, Dover CT16 3PJ

Telephone: 01304 872428

Email: DDC.EnvProtection@dover.gov.uk

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Dover District Council during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Dover District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Dover District Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within Dover District Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are for NO_2 annual mean.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance/Highest Concentration: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
A20 AQMA	2004 (amended in 2007 and 2009)	NO_2 Annual Mean	An area following the A20 from just west of the Limekiln Roundabout at the western end to a point c.140m from the Eastern Docks in Dover. No longer includes properties in Marine Parade and East Cliff to the east.	YES	49.8	30.2	Jul-07. New Draft AQAP has been completed. Internal/stakeholder consultation in progress.	https://www.dover.gov.uk/Environment/Environmental-Protection/Air-Quality/Dover-Air-Quality-Action-Plan-(No-2-A20).pdf
High Street/La	2007	NO_2 Annual Mean	An area encompassing roads	NO	50.5	35.9	Jul-07. New Draft AQAP has been.	https://www.dover.gov.uk/Environment/Environmental-Protection/Air-Quality/Dover-Air-Quality-Action-Plan-(No-2-A20).pdf

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance/Highest Concentration: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
dy-well AQMA			and properties between the junction of Effingham Crescent/High Street, and Priory Hill/High Street.				Internal/stakeholder consultation in progress.	

☒ **Dover District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Dover District Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Dover District Council

Defra's appraisal of last year's ASR concluded that "*the report is well structured, detailed, and provides the information specified in the Guidance*". Additional comments made are as follows:

1. *"Robust and accurate QA/QC procedures were applied. Calculations for bias adjustment and annualisation factors were outlined in detail. Distance-correction was not applicable for any of the passive monitoring sites.*
2. *The Council has included a discussion of the monitoring network and also the additional tubes put in place from 2019 to provide data, with improvements observed throughout the district in air quality. However, it should be noted that the impacts of Covid-19 may have influenced the concentrations and more realistic concentrations of pollutants could be identified in the next year reporting year.*
3. *Comments from last year's ASR have been mentioned and addressed. This is welcomed, and we encourage this to continue in future ASRs.*
4. *The Council is encouraged to adopt a revised AQAP as soon as possible with the previous AQAP outdated for greater than 5 years.*
5. *As part of the report discussing $PM_{2.5,}$ Council have appropriately included Public Health Outcomes Frameworks and provided details of $PM_{2.5}$ from Defra background maps in the absence of any monitoring in the district. These additions are welcomed in the report.*
6. *Council have provided a clear map of the diffusion tube monitoring network; trends are displayed and discussed in the report, this is welcomed.*
7. *Covid-19 impacts have been discussed in Appendix F and detailed information provided by the Council the surrounding impacts of the pandemic on air quality in the district. The Council have mentioned the AQAP was delayed and this could be added to the Appendix F as a medium impact within the Challenges and Constraints imposed by Covid-19 upon LAQM section.*
8. *Overall the report is detailed, concise and satisfies the criteria of relevant reporting standards. The Council should continue their good and thorough work."*

This year, the council will continue to review the long-term impact of COVID-19 on the annual concentration. The updated AQAP has been completed and the progress of the air quality measures are updated in the ASR.

Dover District Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 30 measures are included within Table 2.2, with the type of measure and the progress Dover District Council have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans and an update to these measures will be included in their new Action Plan to be adopted in 2022. Key completed measures are:

- DDC introduced Cycling to Work scheme in Oct 2021.
- DDC new Licensing Policy enable Electric, Hybrid or LPG converted vehicles to be licensed. A reduction in the licence fee provided for any vehicle that is electric, hybrid or LPG converted.

Dover District Council expects the following measures to be completed over the course of the next reporting year:

- DDC succeed in OLEV funding bid for 19 sites, 42 units to be completed 2022. Additional 7 ELV chargers have been installed at Council office car park and there are plans to increase numbers for public use.
- Dover Fastrack which will become a zero-emission bus service with a fleet of electric buses – has a new route under construction 2022.

Dover District Council worked to implement these measures in partnership with the following stakeholders during 2021:

- Kent County Council (KCC);
- National Highways;
- Kent Energy Centre;
- Kent & Medway Air Quality Partnership (KMAQP);

Dover District Council anticipates that the measures stated above and in Table 2.2 will assist to achieve compliance in A20 AQMA and High Street/Lady-well AQMA. This will be reviewed and updated in the forthcoming AQAP.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Encourage Council Travel Plan opportunities and seek to facilitate uptake of sustainable modes of transport; disincentivise use of car travel on council business	Promoting Travel Alternatives	Workplace Travel Planning	2009	Ongoing	DCC	DCC	No			Ongoing	Below annual mean AQS objectives	% modal shift to car share / public transport / walking / cycling	Ongoing	Quality Bus Partnership with Stagecoach in East Kent and Kent County Council. The partnership agreement, signed in April 2009, commits each party to work together towards the improvement of bus travel in Dover District.
2	Work together with KCC to encourage the uptake of Employer and School Travel Plans within the District; including School start time variations and walking to school incentives/ encouragement	Promoting Travel Alternatives	School Travel Plans	Ongoing	Ongoing	DCC/KCC	DCC/KCC	No			On-going	Below annual mean AQS objectives	No. of travel plans in place Reduction in school vehicle drop-offs / pick-ups	On-going	Approximately 73% of primary and 89% of secondary schools in Dover District have approved school travel plans
3	Work with KCC to improve the facilities for cycling and walking within Dover; promote cycle-to-work scheme and bike rental scheme	Promoting Travel Alternatives	Promotion of cycling	Ongoing	Ongoing	DCC/KCC	DCC/KCC	No			On-going	Below annual mean AQS objectives	%modal shift to cycling/walking, No. miles new cycle lanes/routes Number of bikes available and rentals	On-going	Includes Dover District Cycling Plan. 2019 Updated DDC website published local cycle routes and introduced Betteshanger cycle tracks. DDC introduced Cycling to Work scheme in Oct 2021.
4	Work together with developers to improve sustainable transport links serving new developments.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Ongoing	Ongoing	DCC	DCC	No			On-going	Below annual mean AQS objectives	No. planning applications where improvements secured	Planning conditions included in all major developments to install ELV charging points	Part of general and continual efforts of DDC Environmental Protection
5	Work with KCC to improve public transport services and encourage the use of more sustainable transport modes	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	Ongoing	Ongoing	DCC/KCC	DCC/KCC	No			On-going	Below annual mean AQS objectives	% modal shift to public transport	On-going	Part of general and continual efforts of DDC Environmental Protection
6	Local air quality monitoring within the District to ensure a high standard of data is achieved	Public Information	Other	Ongoing	Ongoing	DCC	DCC	No			On-going	Below annual mean AQS objectives	Recorded Concentration	Completed Annually, renewed in 2018. Two automatic sites decommissioned, but more diffusion tubes added to compensate X4 Zephyr real time instruments purchased for indicative monitoring (potential traffic changes with Brexit)	General trend of reduction in concentrations monitored
7	Make details of the Action Plan measures and annual progress	Public Information	Via the Internet	2008	Ongoing	DCC	DCC	No			On-going	Below annual mean	Availability of recently published	On-going	Documents freely available. Part of general and continual efforts of

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
	reports available on the Website											AQS objectives	reports on the Website		DDC Environmental Protection. AQAP to be updated in 2022 after revision of AQMA boundaries. Bureau Veritas progressing, draft due in 2022
8	Work with KMAQP on promotional activities to raise the profile of air quality in Dover	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	Ongoing	Ongoing	DDC/KMAQP	DDC/KMAQP	No			On-going	Below annual mean AQS objectives	% improvement in energy efficiency, SAP rating	On-going	Dover DC as member of K&MAQP worked with KCC on Kent and Medway Energy and Low Emissions Strategy (ELES)
9	Work with Kent Energy Centre to promote and implement energy efficiency measures in Dover	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	Ongoing	Ongoing	DDC/Kent Energy Centre	DDC/Kent Energy Centre	No			On-going	Below annual mean AQS objectives	% improvement in energy efficiency, SAP rating	On-going	Dover DC as member of K&MAQP worked with KCC on Kent and Medway Energy and Low Emissions Strategy (ELES)
10	Local Plan policy and guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2022	Ongoing	DCC/KCC	DCC/KCC	TBC			Planning	Below annual mean AQS objectives	Implementation of policy	Local Plan timetable: Regulation 18 draft since November 2021; Local Plan dated to 2040	The DDC draft local plan already includes sustainable travel initiatives.
11	Road improvements along the High Street / Ladywell	Traffic Management	UTC, Congestion management, traffic reduction	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 To be confirmed if considered for further assessment.	Reduction in NO_2 concentrations		KCC have adjusted traffic light timing historically. Further improvements will be considered.
12	Cycle-to-work schemes	Promoting Travel Alternatives	Promotion of cycling	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Small impact upon NO_2 concentrations from measure individually, estimated to be less than 1µg/m3 based upon a low to medium uptake.	Number of bikes	DDC introduced Cycling to Work scheme Oct 2021	
13	Signage and cycle parking	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Small impact upon NO_2 concentrations from measure individually, estimated to be less than 1µg/m3 based upon a low to medium uptake.	Number of signage and cycle parking		
14	District wide promotion of active travel	Promoting Travel Alternatives	Intensive active travel campaign	2022	Ongoing	DCC/KCC	DCC/KCC	TBC			Planning	NO_2 Measure to increase public awareness	Number of promotion events		DDC webpages can link to active travel - KCC looking to update Local Transport Plan - Mark Welch lead. DDC run

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
			& infrastructure												Wellbeing at Work initiatives.
15	Provision of high quality, bespoke and accessible information on sustainable travel	Public Information	Other	2022	Ongoing	DCC/KCC	DCC/KCC	TBC			Planning	NO_2 Measure to increase public awareness	Number of campaigns		DDC officers input in to KCC Low Emission Strategy.
16	Behaviour change campaigns to reduce single occupancy car trips	Public Information	Other	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Number of campaigns		Officers are encouraged to car share where site visits permit.
17	Reducing vehicle idling	Traffic Management	Anti-idling enforcement	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure largely to increase public awareness, but will help reduce pollutant levels in key hotspot areas	Reduction in NO_2 concentrations		
18	Flexible working and home working encouraged	Promoting Travel Alternatives	Encourage / Facilitate home-working	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Number of campaigns		Flexible working and home working policy has already been in place.
19	Educational campaigns for schools	Public Information	Other	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Number of campaigns		As part of a 'Schools Group' DDC partner in a successful Defra bid for a 'Digital Schools Resource' led by Canterbury CC
20	District wide Clean Air Days	Public Information	Other	2022	2022	DCC/KCC	DCC/KCC	TBC			Planning	NO_2 Measure to increase public awareness	Number of campaigns	part of Kent initiative 2022	As part of Kent initiative April 15th 2022
21	Taxi/Private Hire Vehicle Policy license fees	Promoting Low Emission Transport	Taxi Licensing conditions	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Implementation of policy	Part of DDC Licensing Policy	DDC new Licensing Policy. 4.3.3: Vehicle Specifications enable Electric, Hybrid or LPG converted vehicles to be licensed. This Authority offers a reduction in the licence fee for any vehicle that is electric, hybrid or LPG converted of 25%.
22	Retrofitting or upgrade of private hire vehicles / taxis to LPG/retrofitting subsidies for local cab owners	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Implementation of policy		
23	Collaboration with bus operators to introduce ultra-low emission vehicles into the fleets	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2022	2022	DCC	DCC	TBC			Planning	NO_2 To be confirmed if considered for further assessment. NOx emission reduction will be able to be calculated annually depending on the change in fleet composition	Fleet composition	Part of Construction of Dover Fastrack 2022	Dover Fastrack which will become a zero-emission bus service with a fleet of electric buses – has a new route under construction 2022.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
24	Procuring low emission vehicles for the LGV and HGV fleet, council-owned fleets and refuse fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 To be confirmed if considered for further assessment. NOx emission reduction will be able to be calculated annually depending on the change in fleet composition	Fleet composition		DDC Environmental Protection team currently runs two ELVs.
25	Alternative fuel (EV) infrastructure development	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Small impact upon NO_2 concentration from measure individually, estimated to be less than 1µg/m3 based upon a low to medium uptake.	Number of EV charging points		DDC succeed in OLEV funding bid for 19 sites, 42 units to be completed 2022. Additional 7 ELV chargers have been installed at Council office car park and there are plans to increase numbers for public use.
26	Clean bus corridors	Promoting Low Emission Transport	Low Emission Zone (LEZ)	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 To be confirmed if considered for further assessment. NOx emission reduction will be able to be calculated annually depending on the change in fleet composition	Fleet composition		
27	On and off-street parking charges linked to vehicle emissions standards	Promoting Low Emission Transport	Priority parking for LEV's	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Small impact upon NO_2 concentrations from measure individually, estimated to be less than 1µg/m3 based upon a low to medium uptake.	Number of discounted permits		
28	Parking restrictions	Traffic Management	Emission based parking or permit charges	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Implementation of policy		
29	Waiting and loading restrictions / Keep clear zones	Traffic Management	Other	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Implementation of policy		

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
30	Business delivery time variations away from peak hours	Freight and Delivery Management	Delivery and Service plans	2022	Ongoing	DCC	DCC	TBC			Planning	NO_2 Measure to increase public awareness	Reduction in NO_2 concentrations		

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Currently there is no monitoring of $PM_{2.5}$ completed within Dover. However, in accordance with LAQM.TG(22), $PM_{2.5}$ concentrations can be estimated from PM_{10} monitoring using either a local PM_{Coarse} (the fraction of PM between 10µm and 2.5µm, i.e. PM_{10} minus $PM_{2.5}$), or a nationally derived correction PM_{Coarse} which is updated annually. As there is no local monitoring for $PM_{2.5}$ the nationally derived correction PM_{Coarse} of 5.7 was applied to the PM_{10} concentration (20.8 µg/m^3) at the automatic monitoring site Dover Centre. The estimated $PM_{2.5}$ concentration in 2021 at the automatic monitoring site Dover Centre was 15.1 µg/m^3. The main sources of PM_{10} pollutant emissions within Dover Centre are linked with port activities; regular cross-channel ships and large volumes of road traffic arising as a result of associated transport of goods along the A2 and A20 entering and leaving the town.

The Defra 2021 background maps for Dover (2018 based)[9] show that all background concentrations of $PM_{2.5}$ are far below the annual mean EU limit value of 25µg/m^3 for $PM_{2.5}$. The average background concentration for Dover Centre is 8.7µg/m^3. The highest background concentration is estimated to be 10.8µg/m^3 within the 1 x 1km grid square with the centroid grid reference of 623500,151500. This grid square is located near Spinney Lane in Aylesham, outside of any AQMAs. There is an industrial estate within the village including a waste recycling centre on Spinney Lane. The industrial and agricultural activities in, and surrounding, the village may contribute to the $PM_{2.5}$ concentration at this location.

[9] Defra Background Mapping data for local authorities (2018-based), available online at https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

The Public Health Outcomes Framework data tool[10] compiled by Public Heath England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2020 (latest available dataset is 2020) fraction of mortality attributable to $PM_{2.5}$ pollution in Dover is 5.6%, which is below South East region's average of 6.0% and the same as the national average of 5.6%.

There are currently no designated smoke control areas within Dover. However, information is provided within the air quality section of the Council's website available at https://www.dover.gov.uk/Environment/Environmental-Protection/Air-Quality/Home.aspx .

It is proposed, as suggested in LAQM.TG(22) that action in relation to $PM_{2.5}$ monitoring and reduction actions are reviewed with Kent County Council Public Health Team whilst developing the updated AQAP to consider whether any specific additional actions are required. The Council recognise the importance of considering $PM_{2.5}$ and also that long-term exposure (over several years) to elevated concentrations of particulate matter ($PM_{2.5}$) at levels typically experienced in urban areas reduces life expectancy between several months and a few years. Dover Council has contributed to and supports the Kent and Medway Energy and Low Emissions Strategy, published in June 2020[11]. The strategy highlighted that in 2017 there were an estimated 922 deaths associated with $PM_{2.5}$ exposure across Kent and Medway. The Kent and Medway Energy and Low Emissions Strategy has therefore included particulate matter as one of the key indicators of success across the region. Furthermore, the draft AQAP considers measures that specifically target $PM_{2.5}$ concentrations. At the time of writing this report Dover Council has agreed to support Bureau Veritas in the Central Management and Co-ordination Unit (CMCU) for the UK Automatic Urban and Rural Network (AURN) on behalf of the Environment Agency (EA) and the Department of Environment, Food and Rural Affairs (Defra) in respect of a potential PM2.5 Phase II Expansion programme.

[10] Public Health Outcomes Framework, Public Health England. data tool available online at https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/1/ati/101/are/E07000108

[11] https://www.kent.gov.uk/__data/assets/pdf_file/0009/112401/Kent-and-Medway-Energy-and-Low-Emissions-Strategy.pdf

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2021 by Dover District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Dover District Council undertook automatic (continuous) monitoring at one site during 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The https://kentair.org.uk/data page presents automatic monitoring results for Dover District Council, with automatic monitoring results also available through the UK-Air website .

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Dover District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 21 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater

than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Error! Reference source not found. and Table A.3 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

As there have been no diffusion tube monitoring sites with an annual mean greater than 60 µg/m^3, it is assumed that there have been no exceedances of the 1-hour mean objective of 200 µg/m^3 .

One diffusion tube monitoring location within DDC recorded data capture less than 75% during 2021, the results of this location has been annualised and the details are provided in Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC.

The NO_2 results for 2021 have been bias adjusted using a national bias adjustment factor of 0.78. Full details of the bias adjustment and QA/QC monitoring procedures are provided in Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC.

The concentrations recorded at all sites excluding DV-11,16,17 and DV-30 in DDC increased in 2021 and the concentrations at all sites were below the annual mean objective of 40 µg/m^3 and not within 10% of the AQS objective. The highest concentration of 35.9 µg/m^3 is recorded at DV-06,07,08 Town Hall 1, located within the High Street/Ladywell AQMA.

Figure A.1 to Figure A.3 shows the trends of monitoring concentration outside AQMA, in the A20 AQMA and in the Ladywell/High Street AQMA respectively. The general increase of NO_2 concentrations from 2020 to 2021 is likely due to the recovery of traffic activities from impacts of the Covid-19 pandemic and thus increasing traffic emissions during 2021.

3.2.2 Particulate Matter (PM_{10})

Table A.4 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

Table A.5 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

The PM_{10} monitoring site is located in Dover Centre within the A20 AQMA. During 2021, there have been no exceedances in PM_{10} annual mean concentrations. The annual mean concentration has decreased from last years concentration of 22.7 µg/m^3 to 20.8 µg/m^3. There has been no 24-hour mean greater than 50 µg/m^3 during 2021, compared to one instance during 2020.

As the data capture was lower than 75% at Dover Centre site, with only 60.2% of the monitoring concentrations being recorded, the PM_{10} data has been annualised in line with LAQM.TG(22).

3.2.3 Particulate Matter ($PM_{2.5}$)

There is currently no monitoring of $PM_{2.5}$ within Dover. However, in accordance with LAQM.TG(22), the $PM_{2.5}$ concentrations can be estimated from PM_{10} monitoring using either a local PM_{10} and $PM_{2.5}$ monitoring PM_{coarse} split (the fraction of PM between 10µm and 2.5µm, i.e. PM_{10} minus $PM_{2.5}$), or a nationally derived correction PM_{coarse} of 4.9 for background site and 5.7 for roadside site in 2021. As there is no local monitoring for $PM_{2.5}$, the nationally derived correction PM_{coarse} of 5.7 has been applied to the PM_{10} concentration (20.8 µg/m^3) at the automatic monitoring site Dover Centre. The estimated $PM_{2.5}$ concentration in 2021 at the automatic monitoring site Dover Centre was therefore 15.1 µg/m^3 in line with TG(22).

3.2.4 Sulphur Dioxide (SO_2)

There is currently no SO_2 monitoring in Dover, however historically Dover conducted SO_2 monitoring in the previously declared Eastern Docks AQMA.

The AQMA was declared for exceedances of the 15-minute SO_2 objective in the Eastern Docks area in 2002. Since this time, sulphur emissions from ferry ships using the Port of Dover have reduced. Monitoring data showed that the air quality objectives were being

met at the port, with no exceedances since 2006. Residents within the AQMA were consulted via letter in 2013 and no comments were received, the AQMA was therefore revoked in 2014 and monitoring was discontinued.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
Dover Centre	A20 Townwall Street, Dover	Roadside	632302	141465	PM_{10}	YES	TEOM	N/A	2.5	2

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DV-01	High St	Roadside	631376	141949	NO_2	NO	2.0	1.5	No	2.6
DV-04	Christchurch Way	Urban Background	630905	143362	NO_2	NO	6.0	-	No	1.6
DV-05	Bench St	Urban Centre	631997	141296	NO_2	YES - A20	4.0	30.0	No	3.0
DV-06, DV-07, DV-08	Town Hall 1	Roadside	631597	141748	NO_2	YES - High St/Ladywell	0.0	2.5	No	3.0
DV-10	Townwall St (TEOM)	Roadside	632302	141465	NO_2	YES - A20	-	2.5	Y(TEOM)	2.0
DV-11, DV-16, DV-17	Gateway	Roadside	632318	141422	NO_2	YES - A20	0.0	12.0	No	3.0
DV-12, DV-18, DV-19	St Martins	Roadside	631577	140468	NO_2	YES - A20	0.0	10.0	No	3.0
DV-23	Snargate A	Roadside	631727	140966	NO_2	YES - A20	0.0	15.0	No	3.0
DV-24	Snargate B	Roadside	631802	141079	NO_2	YES - A20	0.0	10.0	No	3.0
DV-25	Snargate C	Roadside	631854	141164	NO_2	YES - A20	0.0	15.0	No	3.0
DV-28	Sunny Corner, Old Folkestone Road, Dover	Urban Background	630717	140020	NO_2	NO	3	15	No	2.0
DV-30	19 High Street	Kerbside	631550	141772	NO_2	NO	0.0	5.0	No	2.0
DV-31	3 Ladywell	Kerbside	631602	141771	NO_2	NO	2.0	2.0	No	2.0
DV-32	1 Marine Parade	Roadside	632646	141496	NO_2	YES - A20	2.0	4.0	No	2.0
DV-33	24 Marine Parade	Roadside	632836	141572	NO_2	NO	10.0	5.0	No	2.0
DV-36	Sholden Primary School	Roadside	635696	152325	NO_2	NO	0.0	2.0	No	2..0
DV-37	London Road, Deal	Kerbside	636161	151957	NO_2	NO	5	2.0	No	2.0
DV-38	Roundabout, London Road, Deal	Kerbside	636259	151914	NO_2	NO	2.0	1.5	No	2.0
DV-39	St Edmund's School, Barton Road, Dover	Roadside	631418	142455	NO_2	NO	5	2.5	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DV-40	1, St Martin's Road, Guston, Dover	Urban Background	632064	143993	NO_2	NO	10	N/A	No	2.0
DV-40a	5, St. Martin's Road, Guston, Dover	Urban Background	632069	144006	NO_2	NO	5	N/A	No	2.0

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
DV-01	631376	141949	Roadside	82.7	82.7	33.2	31.2	30.8	25.5	26.2
DV-04	630905	143362	Urban Background	100.0	100.0	17.8	16.2	15.3	12.7	13.7
DV-05	631997	141296	Urban Centre	100.0	100.0	33.6	28.8	24.4	20.3	22.1
DV-06, DV-07, DV-08	631597	141748	Roadside	100.0	100.0	**45.4**	**40.4**	39.8	33.7	35.9
DV-10	632302	141465	Roadside	100.0	100.0	**45.4**	38.3	35.9	26.4	28.3
DV-11, DV-16, DV-17	632318	141422	Roadside	100.0	100.0	33.2	29.9	28.1	23.1	22.1
DV-12, DV-18, DV-19	631577	140468	Roadside	100.0	100.0	36.6	34.5	31.5	26.5	27.2
DV-23	631727	140966	Roadside	100.0	100.0	38.0	34.3	31.2	25.3	27.7
DV-24	631802	141079	Roadside	92.3	92.3	**42.8**	39.0	33.7	26.1	27.6
DV-25	631854	141164	Roadside	100.0	100.0	35.4	32.6	29.3	28.9	30.2
DV-28	630717	140020	Urban Background	100.0	100.0	22.9	-	-	-	14.1
DV-30	631550	141772	Kerbside	48.1	48.1	**40.9**	**40.5**	**40.4**	35.7	33.9
DV-31	631602	141771	Kerbside	100.0	100.0	36.7	31.2	31.5	23.5	26.5
DV-32	632646	141496	Roadside	100.0	100.0	**40.1**	35.4	31.7	26.7	28.5
DV-33	632836	141572	Roadside	92.3	92.3	37.2	37.6	35.9	28.4	29.5
DV-36	635696	152325	Roadside	100.0	100.0	-	-	18.5	14.9	16.4
DV-37	636161	151957	Kerbside	100.0	100.0	-	-	-	-	29.5
DV-38	636259	151914	Kerbside	75.0	75.0	-	-	-	-	34.0
DV-39	631418	142455	Roadside	82.7	82.7	-	-	-	-	19.9
DV-40	632064	143993	Urban Background	100.0	100.0	-	-	-	-	11.5
DV-40a	632069	144006	Urban Background	100.0	100.0	-	-	-	-	10.0

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **Diffusion tube data has been bias adjusted.**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations at All Monitoring Locations outside AQMAs

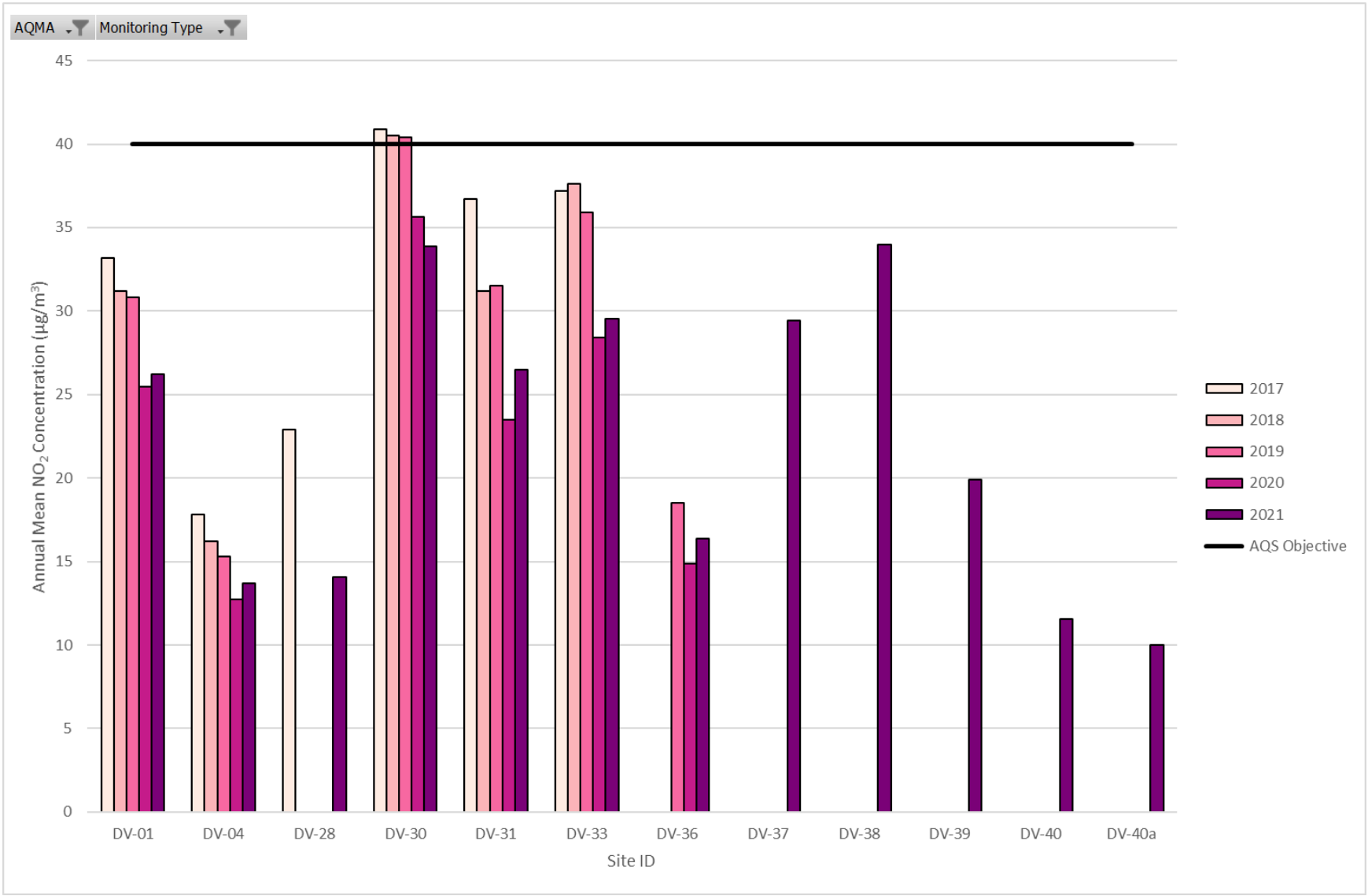


Figure A.2 – Trends in Annual Mean NO_2 Concentrations at All Monitoring Locations in the A20 AQMA

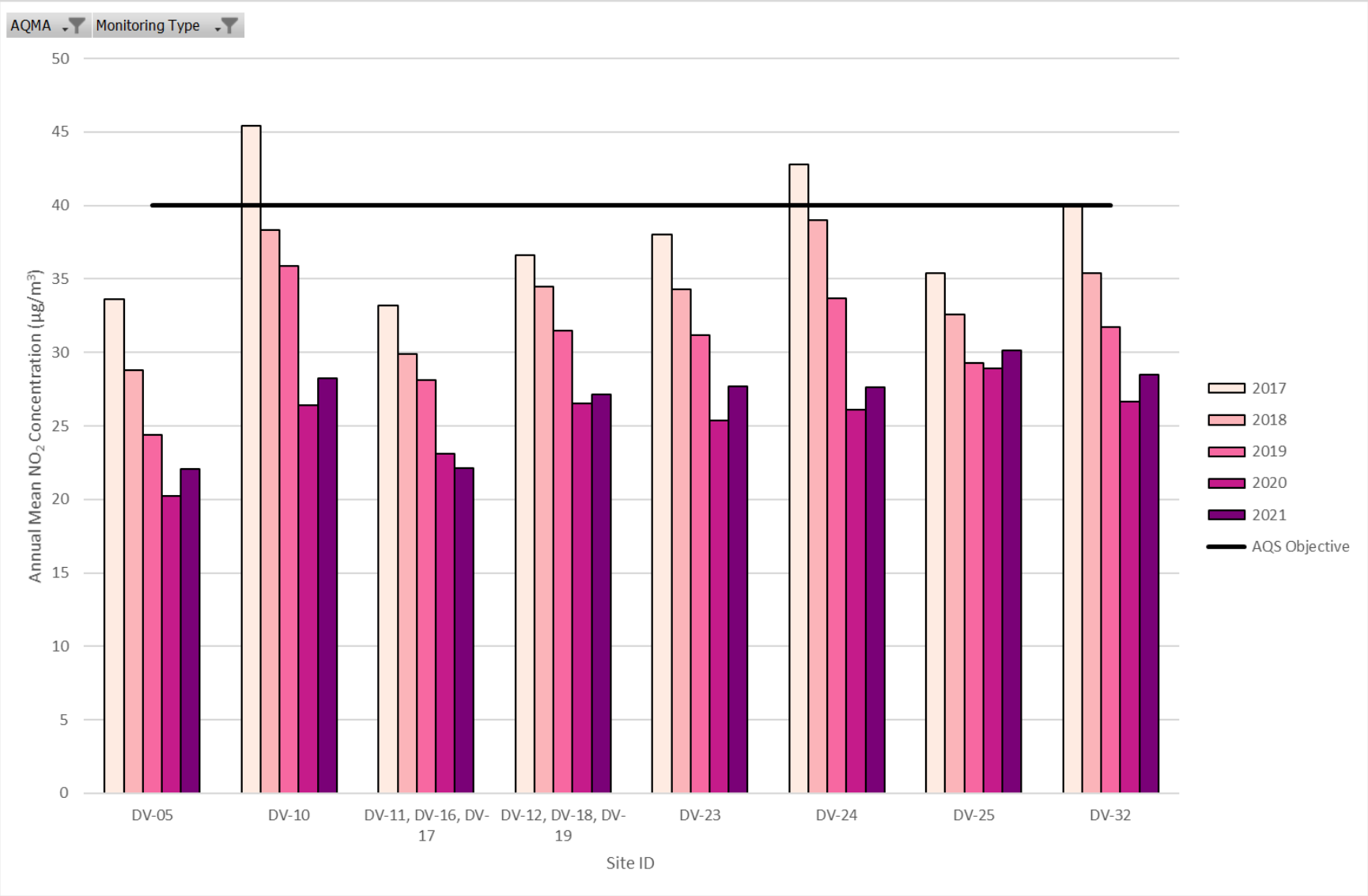


Figure A.3 – Trends in Annual Mean NO_2 Concentrations at the Monitoring Location in the Ladywell/High Street AQMA

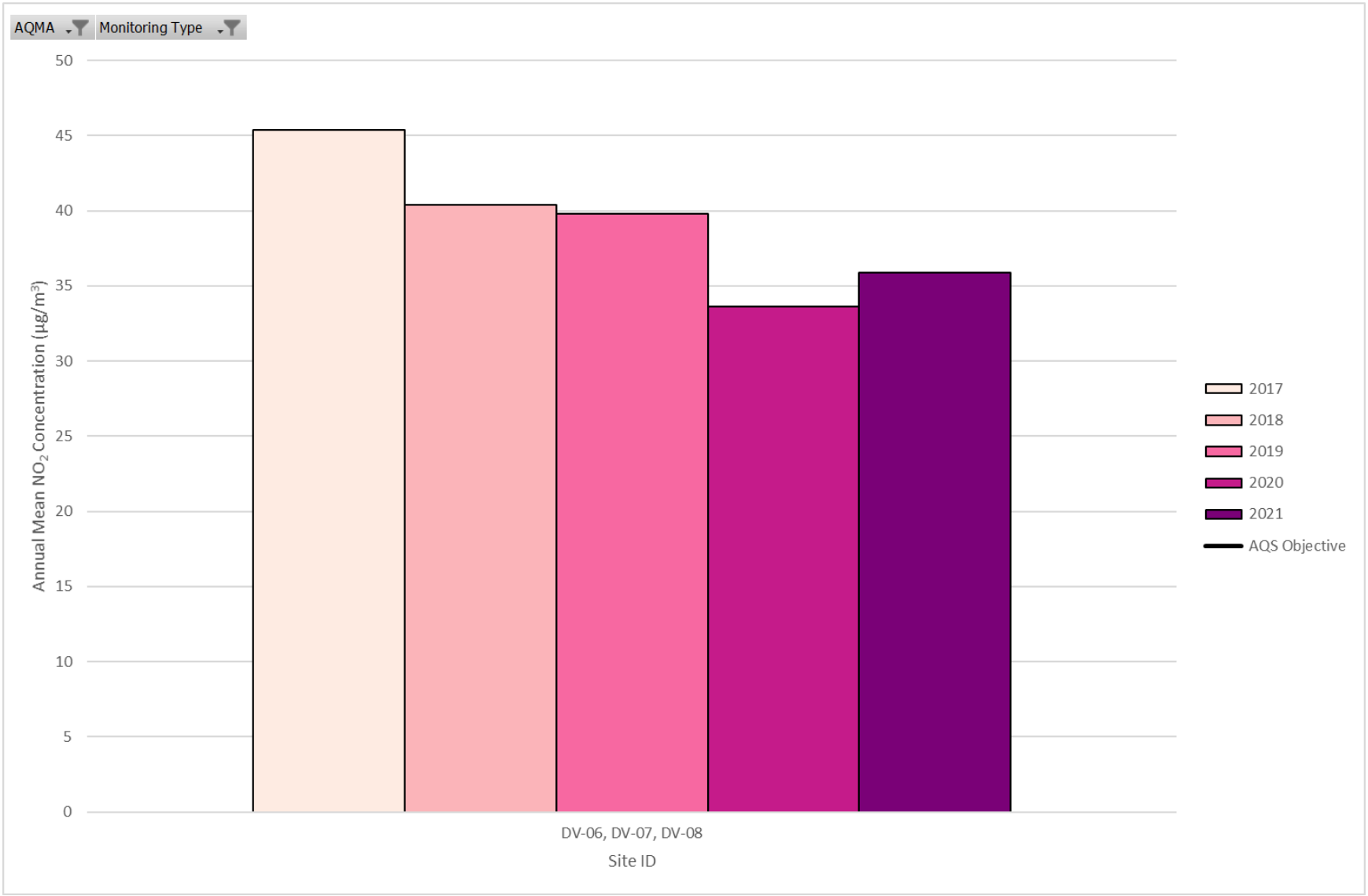


Table A.4 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
Dover Centre	632302	141465	Roadside	60.2	60.2	27.0	26.0	22.0	22.7	20.8

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.**

Notes:

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the PM_{10} annual mean objective of 40$\mu g/m^3$ are shown in **bold**.

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.4 – Trends in Annual Mean PM_{10} Concentrations

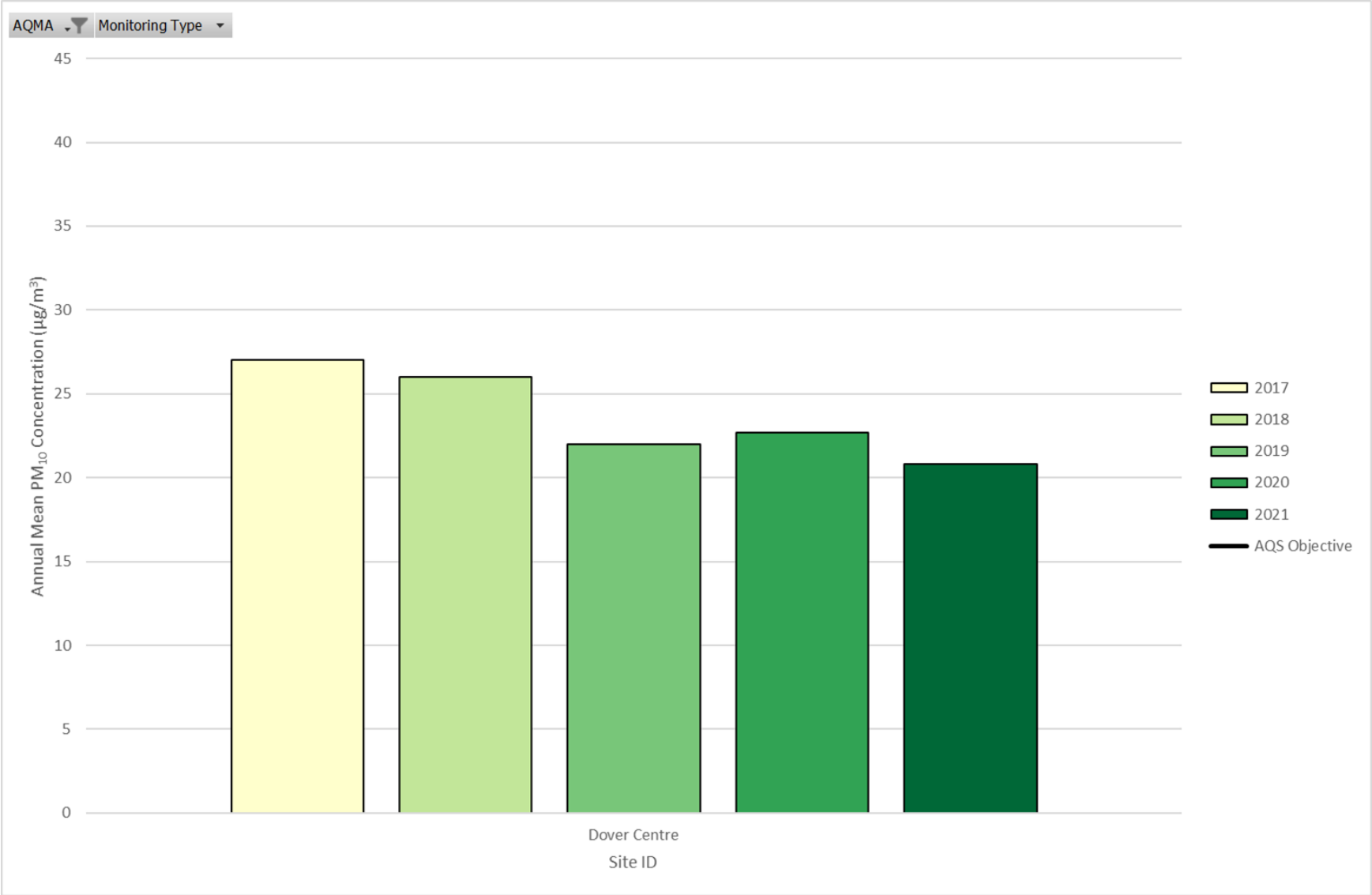


Table A.5 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
Dover Centre	632302	141465	Roadside	60.2	60.2	20	7	8	1	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

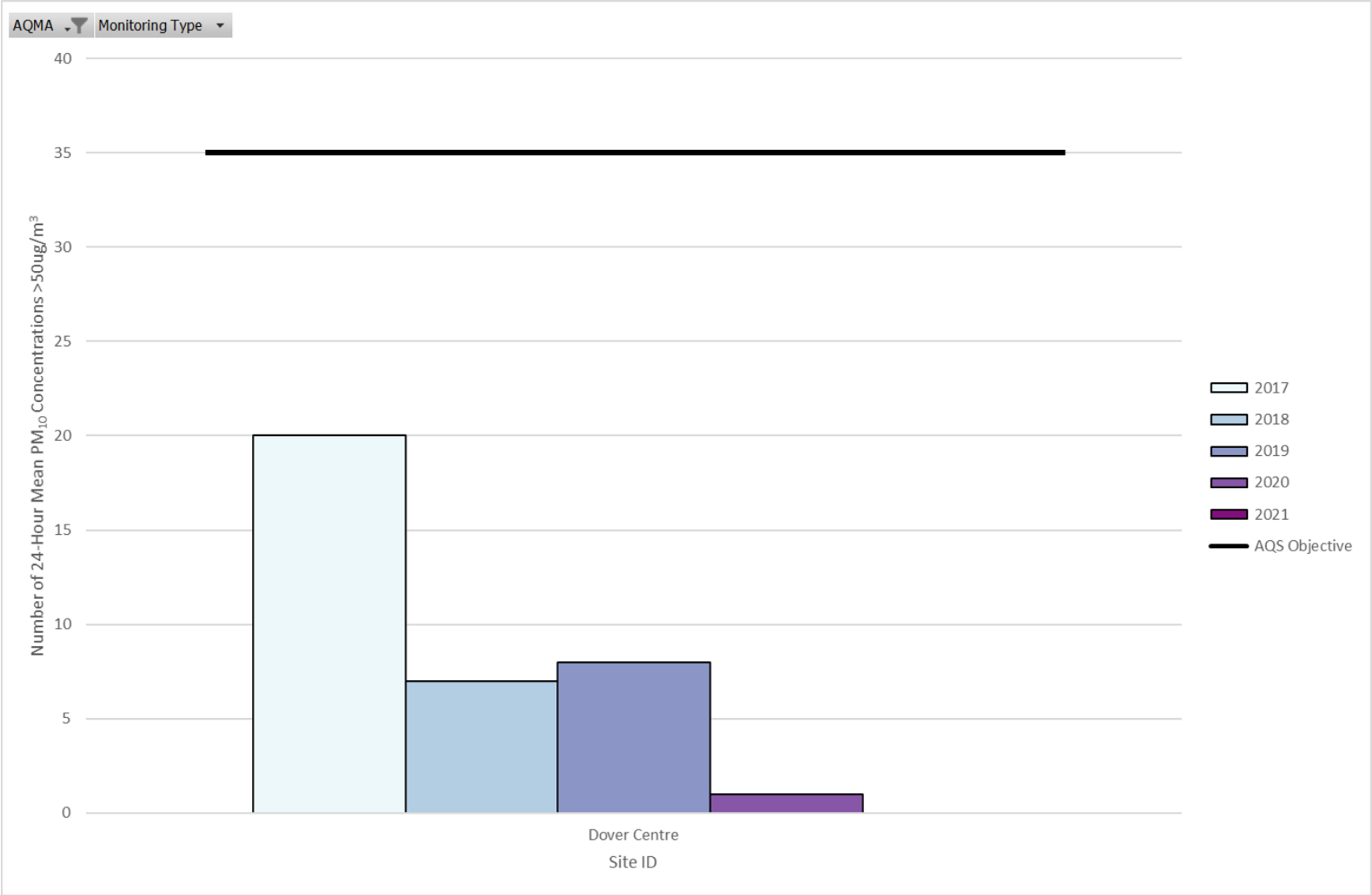
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.5 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3



Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DV-01	631376	141949	39.3	31.5	32.4	33.3	30.2	-	34.4	23.1	39.2	36.5	36.2		33.6	26.2	-	
DV-04	630905	143362	21.8	24.1	15.4	15.5	16.2	18.7	16.0	8.6	19.0	17.4	19.2	18.9	17.6	13.7	-	
DV-05	631997	141296	36.4	34.9	29.7	23.7	29.2	32.8	23.5	17.8	33.1	29.5	18.2	30.5	28.3	22.1	-	
DV-06	631597	141748	38.9	42.7	41.4	37.3	41.0	50.5	42.2	33.0	50.7	48.7	48.1	43.2	-	-	-	Triplicate Site with DV-06, DV-07 and DV-08 - Annual data provided for DV-08 only
DV-07	631597	141748	57.3	47.1	43.8	38.3	37.0	50.7	40.6	35.3	48.0	45.9	50.9	57.7	-	-	-	Triplicate Site with DV-06, DV-07 and DV-08 - Annual data provided for DV-08 only
DV-08	631597	141748	53.1		49.3	37.9	43.3	63.0	47.8	31.4	48.2	59.7	61.7	46.1	45.1	35.9	-	Triplicate Site with DV-06, DV-07 and DV-08 - Annual data provided for DV-08 only
DV-10	632302	141465	40.6	45.3	31.9	30.2	38.6	42.4	35.8	16.3	42.2	37.2	38.2	36.0	36.2	28.3	-	
DV-11	632318	141422	29.4	13.9	25.5	24.4	32.1	33.8	32.0	20.9	35.0	33.1	29.7	30.8	-	-	-	Triplicate Site with DV-11, DV-16 and DV-17 - Annual data provided for DV-17 only
DV-12	631577	140468	35.5	38.6	37.4	29.9	35.1	35.6	32.2	24.0	45.9	34.9	36.4	32.7	-	-	-	Triplicate Site with DV-12, DV-18 and DV-19 - Annual data provided for DV-19 only
DV-16	632318	141422	32.9	34.8	22.2	24.9	22.1	30.8	31.0	20.1	34.8	34.8	29.4	28.6	-	-	-	Triplicate Site with DV-11, DV-16 and DV-17 - Annual data provided for DV-17 only
DV-17	632318	141422	33.6	32.3	21.1	24.8	24.7	32.8	27.4	11.0	35.4	32.4	27.9	30.2	28.4	22.1	-	Triplicate Site with DV-11, DV-16 and DV-17 - Annual data provided for DV-17 only
DV-18	631577	140468	41.2	44.7	33.0	33.5	24.0	31.7	36.3	28.7	46.3	34.5	31.1	32.6	-	-	-	Triplicate Site with DV-12, DV-18 and DV-19 - Annual data provided for DV-19 only
DV-19	631577	140468	36.1	36.9	33.6	33.6	28.7	35.3	38.9	28.4	45.8	36.3	33.8	30.8	34.8	27.2	-	Triplicate Site with DV-12, DV-18 and DV-19 - Annual data provided for DV-19 only
DV-23	631727	140966	37.5	37.5	34.5	36.8	37.4	42.1	32.2	25.6	40.0	36.0	39.2	27.4	35.5	27.7	-	
DV-24	631802	141079	35.1	42.7	32.1	27.1	34.2	35.2	34.4	-	40.5	37.7	37.1	33.6	35.4	27.6	-	
DV-25	631854	141164	38.2	35.4	38.6	38.4	25.0	47.3	39.1	33.7	45.8	44.8	42.3	35.3	38.7	30.2	-	
DV-28	630717	140020	13.9	27.1	16.6	13.0	18.9	20.3	23.4	10.1	25.4	15.5	15.3	16.9	18.0	14.1	-	
DV-30	631550	141772	48.9	36.8	-	-	-	51.8	46.4	34.6	-	-	45.5	-	44.0	33.9	-	
DV-31	631602	141771	30.9	35.1	32.8	30.0	28.9	42.0	35.6	27.2	39.3	37.4	36.9	31.2	33.9	26.5	-	
DV-32	632646	141496	35.4	41.3	37.2	32.7	36.7	43.0	39.1	30.5	39.8	33.5	35.4	34.0	36.6	28.5	-	
DV-33	632836	141572	43.1	36.4	44.1	32.8	34.5	41.0	24.4	29.1	47.6	36.7	-	46.9	37.9	29.5	-	
DV-36	635696	152325	22.5	24.6	23.2	18.0	20.1	22.0	18.4	12.8	24.4	23.2	19.7	23.1	21.0	16.4	-	
DV-37	636161	151957	36.3	32.7	31.1	26.1	27.0	34.3	29.3	36.8	56.8	48.6	46.9	47.2	37.8	29.5	-	
DV-38	636259	151914	31.4	50.7	43.5	47.9	48.3	56.6	45.5	-	34.8	33.2	-	-	43.5	34.0	-	
DV-39	631418	142455	33.2	29.2	24.8	-	20.5	-	23.6	16.7	27.1	26.2	28.5	25.3	25.5	19.9	-	
DV-40	632064	143993	16.3	22.6	13.7	10.0	14.5	15.5	15.4	10.1	17.3	15.8	11.8	14.3	14.8	11.5	-	
DV-40a	632069	144006	18.3	19.1	11.7	10.6	8.4	15.5	13.7	8.5	13.6	11.0	10.6	12.6	12.8	10.0	-	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☐ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Dover District Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

New or Changed Sources Identified Within Dover District Council During 2021

Several new development applications have been progressed in 2021. Table C.1 details a list of planning applications which relevant information. If it is a major development, then Dover District Council are requesting that an Air Quality Assessment (AQA) is completed.

Table C.1 - Planning Applications within Dover District Council (2021)

Reference	Location	Details	Status	Comments
21/00402	Land South West Of Sandwich Road, Sholden, CT14 0AD	Outline application for the erection of up to 110 dwellings with associated parking and means of access (all matters reserved except for access)	Granted March 22	Air quality assessment has been submitted.
21/01822	Land On The West Side Of Cross Road Deal CT14 9LA	Outline planning application for the erection of up to 140 dwellings including affordable housing, with public open space, landscaping, and vehicular access (all matters reserved except for access)	Await Decision	Air quality assessment has been submitted.
20/01125	Site At Cross Road Deal CT14 9LA	Outline application for the erection of up to 100 dwellings (with landscaping, appearance, layout and scale to be reserved)	Granted Feb 21	Air quality assessment has been submitted.

Additional Air Quality Works Undertaken by Dover District Council During 2021

Dover District Council has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by SOCOTEC Didcot, formerly called Environmental Scientifics Group (ESG) Didcot utilising the 50% triethanolamine (TEA) in acetone preparation method. A bias adjustment of 0.78 for the year 2021 (based on 23

studies) has been derived from the national bias adjustment calculator, as shown in Figure C.1.

SOCOTEC Didcot is a UKAS accredited laboratory and participates in the AIR-PT Scheme for NO_2 tube analysis and the Annual Field Intercomparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre.

In the 2021 AIR-PT result, AIR-PT AR042 (January – March 2021) SOCOTEC scored 100%. The results for April to December 2021 have not been published. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ±2. Additionally, the precision of the NO_2 diffusion tubes (50% TEA in Acetone) supplied by SOCOTEC Didcot has been classified as 'good' for 20 observations (23 observations in total) in 2021. This precision reflects the laboratory's performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Further information on the precision summary results can be found on the LAQM website.

Diffusion Tube Annualisation

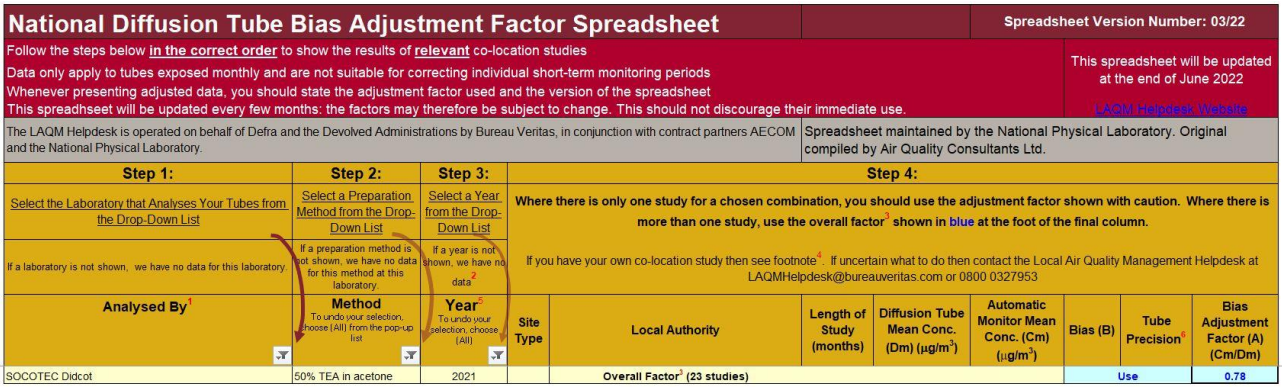
Annualisation was required for only one non-automatic monitoring sites during 2021; DV30. The annualisation was carried out by calculating an annualisation factor using background concentrations from the three closest background monitoring sites to Dover; Canterbury, Rochester Stoke and Thurrock. Details of the calculations are provided in Table C.3.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Dover District Council have applied a national bias adjustment factor of 0.78 to the 2021 monitoring data as shown in Figure C.1. A summary of bias adjustment factors used by Dover District Council over the past five years is presented in Table C.2.

Figure C.1 National Diffusion Tube Bias Adjustment Factor



National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/22

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2022

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory	If a year is not shown, we have no data[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2021		Overall Factor[3] (23 studies)				Use		0.78

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	03/22	0.78
2020	National	06/21	0.76
2019	National	03/20	0.75
2018	National	03/19	0.76
2017	National	03/18	0.77

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within Dover District Council required distance correction during 2021

QA/QC of Automatic Monitoring

Dover District Council's 2021 automatic air quality monitoring site's data has been ratified by Air Quality Data Management (AQDM) to the LAQM.TG(22) standards. The instruments used to validate the data undergo regular calibrations. For LAQM reporting, the EU Reference Equivalent PM_{10} has been calculated by running the Volatile Correction Model (VCM) on the TEOM data.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The Council undertook monitoring of PM_{10} based on TEOM analysers at one location during 2021. TEOMs collect particles on a small oscillating filter. The change in oscillation frequency of the filter is proportional to the change in PM_{10} and $PM_{2.5}$ concentrations. TEOMs are operated at 50°C and as such lose volatile components of the PM_{10} and $PM_{2.5}$. Therefore, the monitoring results have been corrected using the Volatile Correction Model[12]. The monitoring results are downloaded as gravimetric equivalent from the Kentair website[13]. The website managers of the Kentair website are responsible for the PM_{10} adjustment.

Automatic Monitoring Annualisation

Annualisation was required for Dover District Council's one automatic monitoring location since data capture was less than 75% but greater than 25%. The PM_{10} data has been annualised in line with the methodology described in LAQM.TG(22).

[12] https://www.volatile-correction-model.info

[13] http://www.kentair.org.uk/

Table C.3 – Diffusion Tube Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Canterbury	Annualisation Factor Rochester Stoke	Annualisation Factor Thurrock	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DV-30	1.0081	0.9439	1.0092	0.9871	44.0	43.4	

Table C.4 – Automatic Monitoring Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Rochester Stoke	Annualisation Factor Thurrock	Annualisation Factor Eastbourne	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
Dover Centre	1.069	1.045	1.051	1.055	19.8	20.8	

Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – Map of Monitoring Site: A20 AQMA East

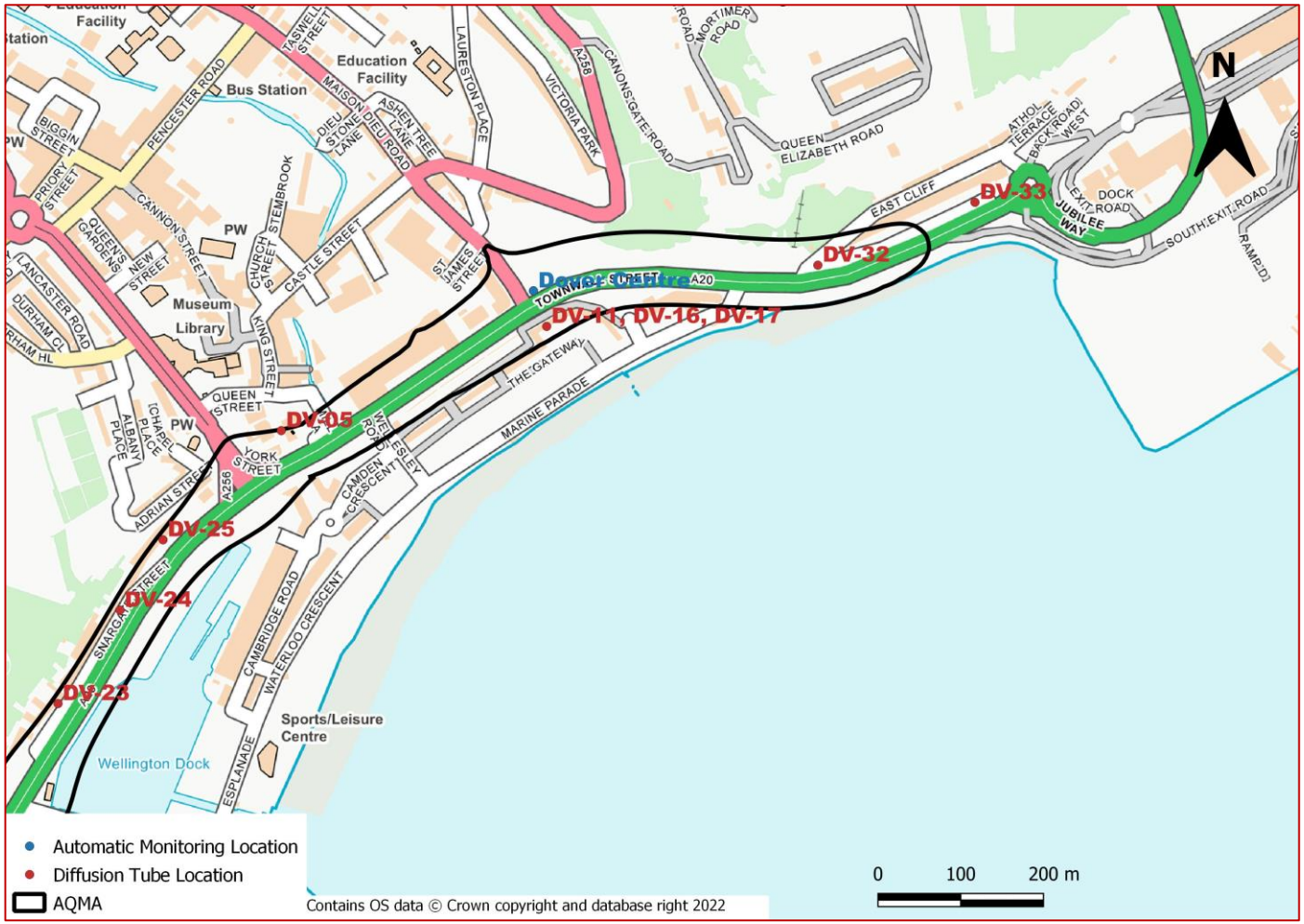


Figure D.2 – Map of Non-Automatic Monitoring Site: A20 AQMA West

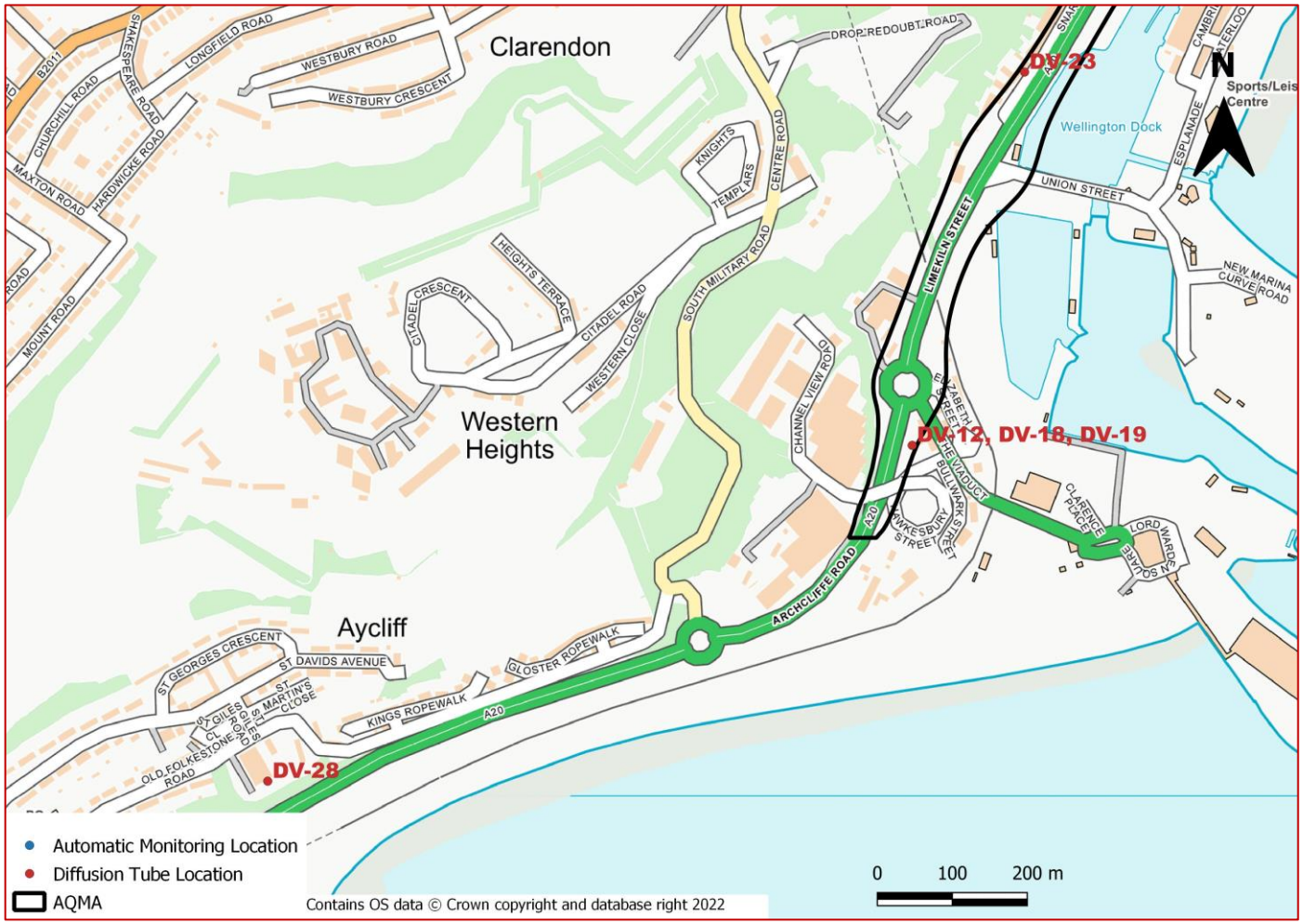


Figure D.3 – Map of Non-Automatic Monitoring Site: High Street AQMA

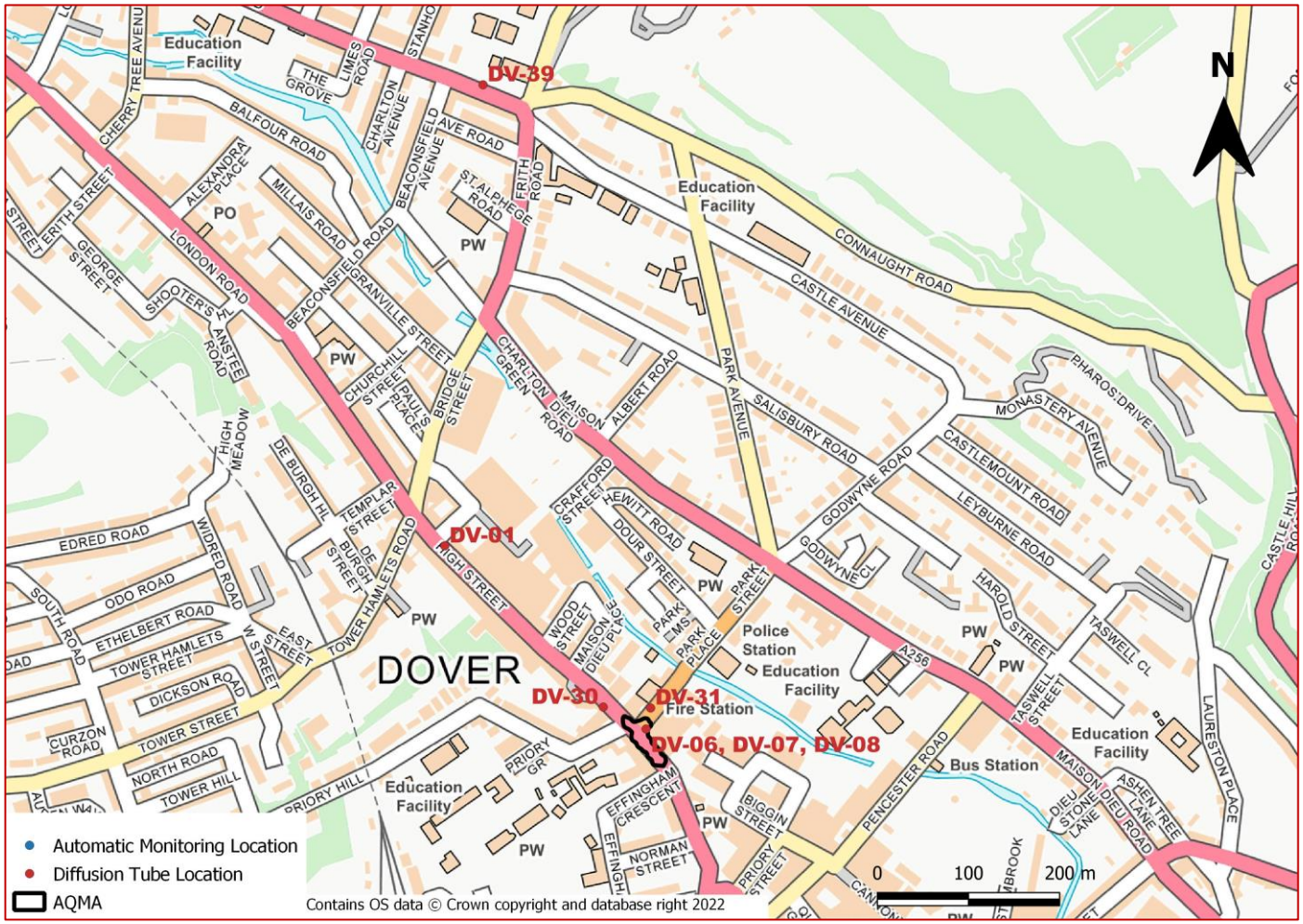


Figure D.4 – Map of Non-Automatic Monitoring Site: Buckland Valley

Figure D.5 – Map of Non-Automatic Monitoring Site: Dover Road

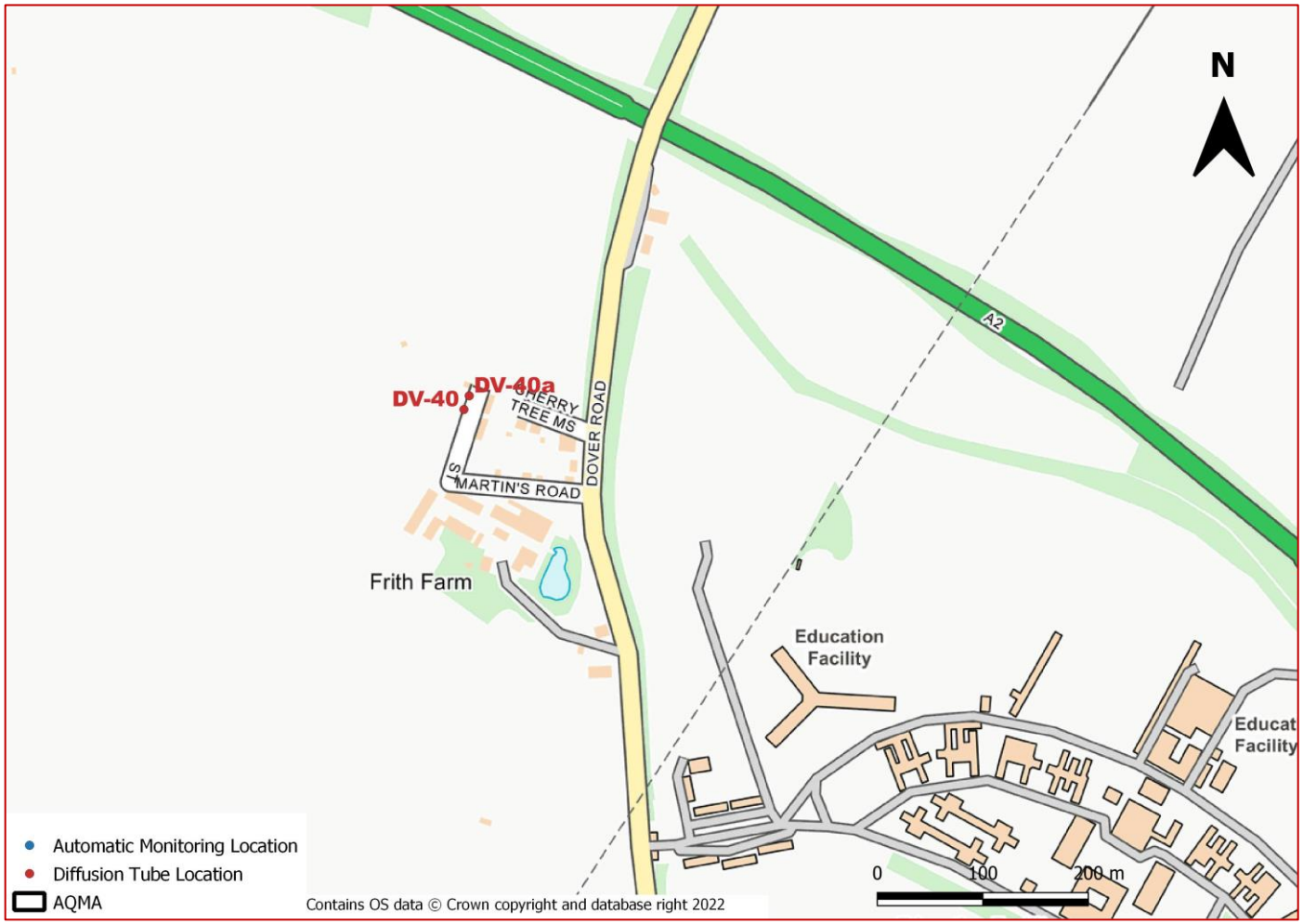
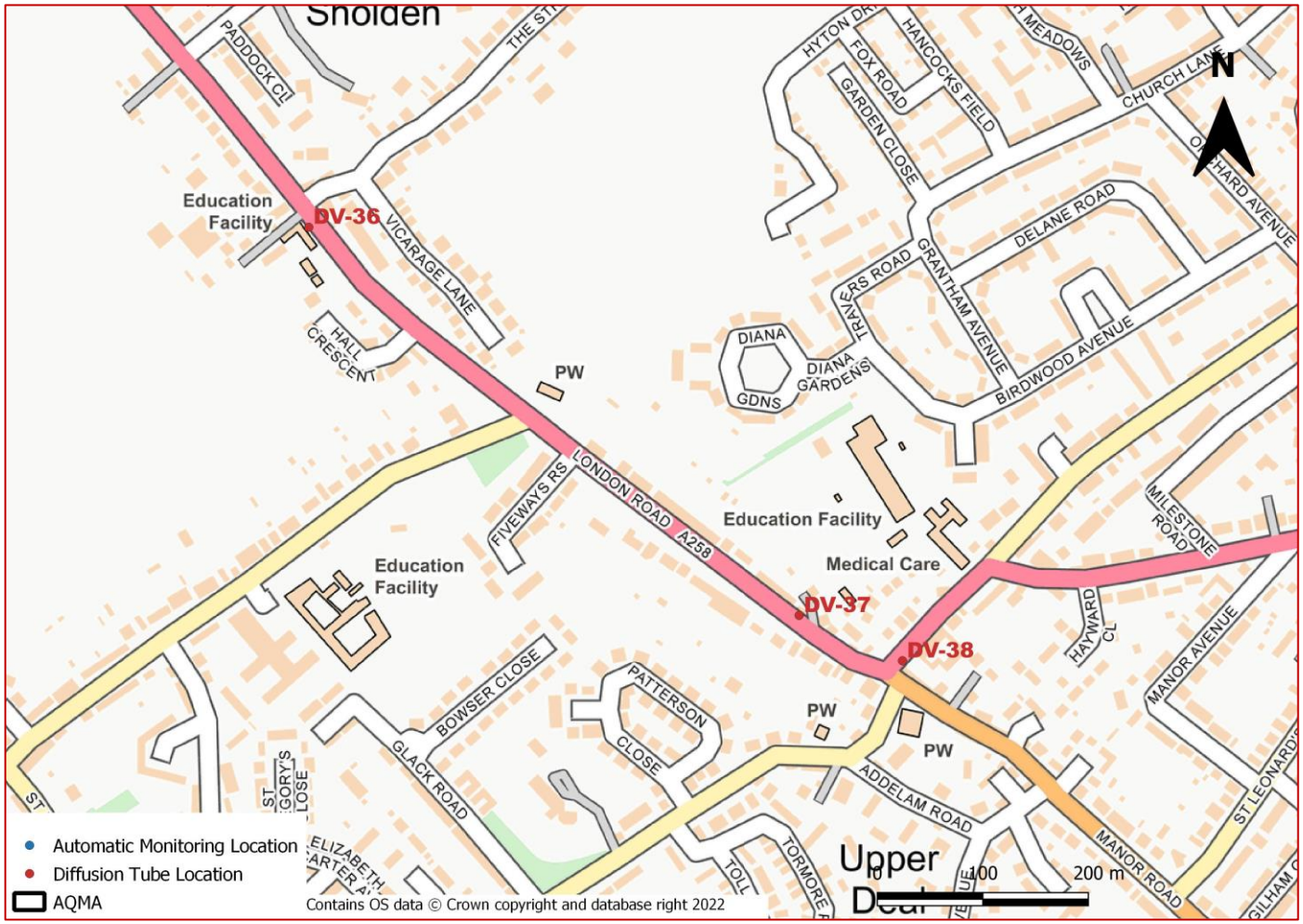


Figure D.6 – Map of Non-Automatic Monitoring Site: Sholden and Upper Deal



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[14]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	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
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[14] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

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
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
DDC	Dover District Council

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Dover District Council Annual Status Report 2021. Published by Dover District Council
- Dover District Council Annual Status Report 2020. Published by Dover District Council
- Dover District Council Annual Status Report 2019. Published by Dover District Council
- Dover District Council Annual Status Report 2018. Published by Dover District Council