



# 2023 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995  
Local Air Quality Management, as amended by the  
Environment Act 2021

June 2023

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## Executive Summary: Air Quality in Our Area

### Air Quality in Cannock Chase

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<sup>1,2</sup>.

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages<sup>3</sup>, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017<sup>4</sup>.

In 2022, Cannock Chase Council had three air quality management areas (AQMA), all of which were declared due to concentrations of NO<sub>2</sub> exceeding the annual air quality objective of 40µg/m<sup>3</sup> at a relevant receptor:

- AQMA 1, Watling Street, Cannock (Declared 2006)
- AQMA 2, Watling Street, Norton Canes (Declared 2014)
- AQMA 3, Fiveways, Norton Canes (Declared 2017)

Air quality in AQMA 1 and AQMA 3 continues to meet the air quality objective and both will be revoked in 2023.

Air quality in AQMA 2 also meets the annual air quality objective; air quality monitoring data will be reviewed in the 2024 ASR and, if current trends continue, revocation will be considered.

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<sup>1</sup> Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

<sup>2</sup> Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, January 2023

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

Monitoring data on air quality associated with fine particulate matter (PM<sub>2.5</sub>) is not available, although modelling suggests that two areas exceed the 10µg/m<sup>3</sup> annual mean target.

The existing air quality monitoring programme will be expanded in 2023 with new locations for NO<sub>2</sub> monitoring, as well as the anticipated installation of an automated particulate monitoring station.

Cannock Chase Council will continue with its efforts to improve local air quality by working with partner organisations on air quality awareness campaigns and transport management strategies.

Cannock Chase will encourage residents to reduce pollution by:

- Reviewing its arrangements for smoke control.
- Adopting a taxi licensing policy that encourages the transition to low and zero emission vehicles.
- Implementing planning policies that consider and mitigate the impacts of development on air quality, together with the publication of guidance for developers.

Cannock Chase Council will also reduce its own pollutant emissions by:

- Adopting a Green Transport Strategy.
- Adopting a Low Emission Vehicle Strategy.

## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan<sup>5</sup> sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM<sub>2.5</sub> targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and

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<sup>5</sup> Defra. Environmental Improvement Plan 2023, January 2023

reduce PM<sub>2.5</sub> in their areas. The Road to Zero<sup>6</sup> details 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.

## Conclusions and Priorities

Air quality monitoring data collected during 2022 does not suggest that the annual air quality objective for NO<sub>2</sub> of 40µg/m<sup>3</sup> is being exceeded at any of the monitoring locations. Indeed, the data suggests that improvements to air quality following the reduction in road traffic between 2020-2022 (due to Covid-19) are being sustained.

It is appropriate to revoke AQMA 1 and AQMA 3 (revocation orders came into force on 1 May 2023); additional monitoring is required in AQMA 2, although if current trends continue this may be considered for revocation.

Whilst the current Air Quality Action Plan is out of date, given the likelihood of AQMA 2 being revoked, such an update is not likely to be of any practical benefit at this time. Cannock Chase Council will therefore prioritise other actions in 2023.

## Local Engagement and How to get Involved

Cannock Chase District Council welcomes comments and suggestions on how to improve air quality. Enquiries can be directed as follows:

<b>Write to:</b>	Environmental Protection, Cannock Chase Council, Beecroft Road, Cannock, Staffordshire ST18 0YS
<b>Email:</b>	<a href="mailto:environmentalhealth@cannockchasedc.gov.uk">environmentalhealth@cannockchasedc.gov.uk</a>
<b>Telephone:</b>	01543 462621
<b>Website:</b>	<a href="https://www.cannockchasedc.gov.uk/residents/environmental-health/environmental-protection/air-quality-management">https://www.cannockchasedc.gov.uk/residents/environmental-health/environmental-protection/air-quality-management</a>

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<sup>6</sup> DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

All local authorities in Staffordshire regularly meet to discuss air quality issues and initiatives as part of the Air Quality Hub.

Cannock Chase Council also actively engaged with local primary schools through its 'Binworld' project, in which a local theatre group was commissioned to perform a musical to raise awareness of environmental issues.

## **Local Responsibilities and Commitment**

This ASR was prepared by the Environmental Health Department of Cannock Chase Council.

This ASR has been approved by: Joss Presland - Head of Operations

## **Endorsement from the Director of Health & Care, Staffordshire County Council**

Staffordshire County Council (SCC) is committed to working with partners to ensure that Staffordshire will be a place where improved health and wellbeing is experienced by all. Poor air quality has a negative impact on public health, with potentially serious consequences for individuals, families, and communities. Identifying problem areas and ensuring that actions are taken to improve air quality forms an important element in protecting the health and wellbeing of Staffordshire residents. Improving air quality is often a complex issue, presenting a multi-agency challenge – so it is essential that all agencies work together effectively to deliver improvements where they are needed.

As Director of Health and Care across Staffordshire I endorse this Annual Status Report which sets out the position in all the Local Authorities across Staffordshire and Stoke-on-Trent focusing on human made pollution with particulate matter.

The Air Aware project “phase 2” ran until March 2023 with Defra Funding. The Air Aware project continues with joint funding from Staffordshire Public Health and Connectivity Teams to March 2025. The project delivers behaviour change to increase active travel, decrease car use, and raise awareness of air quality issues through five elements. These are business and school engagement, communications and campaigns, electric vehicles, and air quality monitoring in three targeted locations, Burton, Leek, and Cannock. Campaigns include Anti-Idling, walking and cycle activities and Clean Air Day. These have been countywide engaging a large number of businesses and schools. The

programme focuses on reducing levels of NO and PM, which are monitored at key locations.

A number of the Staffordshire Authorities are currently involved in implementing measures to reduce levels of NO<sub>2</sub> within their areas, which are detailed elsewhere in their ASR. Since the update of the Environment Act 2021 there is now a statutory duty imposed on Local Authorities in England to reduce PM<sub>2.5</sub>, a number of the measures are complementary with those being undertaken to reduce NO<sub>x</sub>. A mapping exercise completed by the Staffordshire Air Quality Forum members details the measures currently in place which are considered to have an impact in reducing PM<sub>2.5</sub> within the County.

In addition, Levelling up Fund 2 Schemes will improve a number of major roads around the county, reduce journey times, put greener, cleaner buses on main roads, improve walking and cycling routes and reduce the impact of housing and commercial developments. They will benefit East Staffordshire, Cannock Chase, and Stafford Borough. Total package cost circa £20m.

Dr Richard Harling



**Director of Health and Care**

**Staffordshire County Council**

6th June 2023

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# 1 Local Air Quality Management

This report provides an overview of air quality in the District of Cannock Chase during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Cannock Chase 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 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

A summary of AQMAs declared by Cannock Chase District Council can be found in Table 2.1. The table presents a description of the AQMAs that were designated within the District of Cannock Chase. Appendix D: Maps of Monitoring Locations and AQMAs provides maps of the AQMAs and air quality monitoring locations in relation to the AQMAs. The relevant air quality objective for NO<sub>2</sub> is 40µg/m<sup>3</sup> (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 Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 1	Declared 28/7/2006	NO <sub>2</sub> annual mean	A5 Watling Street, Longford/Bridgtown and Wolverhampton Road, Wedges Mills	YES	44.7	26.6	6	Cannock Chase Council AQAP, November 2013	<a href="http://www.cannockchasedc.gov.uk/sites/default/files/aqap_nov13.pdf">http://www.cannockchasedc.gov.uk/sites/default/files/aqap_nov13.pdf</a>
AQMA 2	Declared 1/9/2014	NO <sub>2</sub> annual mean	A5 Watling Street, Churchbridge to Norton Canes	YES	36.2	28.9	3	AQMA declared after publication of latest AQAP	<a href="http://www.cannockchasedc.gov.uk/sites/default/files/aqap_nov13.pdf">http://www.cannockchasedc.gov.uk/sites/default/files/aqap_nov13.pdf</a>
AQMA 3	Declared 1/7/2017	NO <sub>2</sub> annual mean	Roads adjoining 'Five Ways Island', Heath Hayes	NO	45.9	36.6	4	AQMA declared after publication of latest AQAP	<a href="http://www.cannockchasedc.gov.uk/sites/default/files/aqap_nov13.pdf">http://www.cannockchasedc.gov.uk/sites/default/files/aqap_nov13.pdf</a>

Cannock Chase District Council confirms the information on UK-Air regarding their AQMAs is up to date.

Cannock Chase District Council confirms that all current AQAPs have been submitted to Defra.

**Note:**

AQMA 1 and AQMA 3 were formally revoked on 1 May 2023; they are included in Table 2.1 as they were active in 2022.

## 2.2 Progress and Impact of Measures to address Air Quality in Cannock Chase

Defra's appraisal of last year's ASR is presented in Table 2.2.

**Table 2.2 – 2022 ASR Appraisal.**

DEFRA Comment	Cannock Chase District Council Response
The report confirms air quality has improved in Cannock Chase District Council, and the Council are planning to revoke AQMAs 1 and 3 due to consecutive years of compliance. This is supported by an AQMA review attached as an additional appendix, which included detailed dispersion modelling of AQMA 3. The Council should continue close monitoring of AQMA 2 and provide an update on the status of their AQMAs in future ASRs.	AQMAs 1 and 3 were revoked on 1 May 2023; monitoring of air quality at AQMA 2 continues.
Trends have been presented with graphs illustrating the change in concentrations since 2017. However, discussion of temporal patterns is limited.	Trends are discussed in the 2023 ASR.
Reference to the Public Health Outcomes Framework has been made and this practice should continue going forward	Noted.
AQMA No.3 is missing the link for the AQAP in Table 2.1, this is most likely a typographical error, and should be amended to reflect the AQAP for AQMA No.1 & 3.	The latest AQAP was published in 2013, before AQMAs 2 and 3 were declared; the AQAP is not relevant to those AQMAs.
The choice of bias adjustment factors has been discussed, with the Council ultimately choosing to select the national factor as the automatic monitoring site is deemed not representative. It would be beneficial for the Council to provide the local bias adjustment factor for comparison to verify if the choice is reasonable.	The local bias factor has been calculated (but not used) from the 2022 data output.  The choice of bias adjustment factors is discussed in this report.
The Council have identified several significant planning applications submitted in 2021 which may pose as a new or changed source in the future. This is welcomed, the Council should keep reviewing air quality at these sites and provide updates in future ASRs.	Noted.

Progress on measures identified for completion in the 2022 ASR is outlined in Table 2.3.

**Table 2.3 – Progress on 2022 Air Quality Priorities**

Priority	Measure	2022 ASR Comments	2023 ASR Comments
1	Revoke AQMAs 1 and 3	This was a priority last year. However, staffing resource pressures interrupted the formal process. However, this process will be resurrected this year.	This was a priority for 2022; staff resource pressures limited progress.
2	Ongoing review of monitoring results in AQMA 2	This report demonstrates ongoing compliance with the annual mean NO <sub>2</sub> objective.	This report demonstrates Cannock Chase Council's ongoing commitment to review air quality within the district.
3	Develop an action plan for non-revoked AQMAs	This has been deferred until AQMAs 1 and 3 have been revoked. We are mindful that AQMA 2 may be revoked in the near future. Furthermore, the AQMA is based on exceedance at a single residential property and action plan measures are severely limited due to the source being a strategic trunk road.	This was deferred until AQMAs 1 and 3 have been revoked. AQMA 2 is likely to be revoked (probably in 2024), subject to further evidence of continued compliance with air quality objectives. AQMA 2 covers one relevant receptor; potential actions are limited as the primary source of NO <sub>2</sub> is an A Road.
4	Continue with current air quality monitoring	To support LAQM process. No changes planned. This is essential to evaluate air quality in the district.	A new location (A460) was established to monitor air quality for ecological purposes and is reported on in this report for completeness. The existing NO <sub>2</sub> monitoring locations were reviewed and an additional 5 locations will be established in 2023.
5	Support uptake of ULEV through On Street Residential Charging Scheme ('ORCS')	Led by CCDC's Project Manager (Capital). Work ongoing and awaiting public survey findings. The aim would be to provide on street electric vehicle charging infrastructure strategically throughout the district in locations where residents have little access to off street parking, and hence little scope for private charging facilities. A sustainable transport strategy is in development to support this process (see below).	The Ultra-Low Emission Vehicle Charging Delivery Strategy has been drafted and is currently under review.
6	Produce an Air Quality Developer Guide	A draft Air Quality Developer Guide has been produced. This requires a review and finalisation before publishing on the Cannock Chase Council's website.	There has been no additional progress due to staff resource pressures.
7	Partnership working with Staffordshire County Council	As detailed above. As the main transport and connectivity authority serving the area, SCC are well placed to influence air quality in the district and considered to be the main partner in action planning.	
8	Produce policies and procedures for developer contributions towards air quality mitigation measures	Current planning policies do allow for developer contributions towards off site mitigation measures. However, it is considered that detailed procedures would allow the process to occur in a more effective manner, particularly if a suite of mitigation measures were available. This would involve joint working between several departments including Planning Policy, Legal, Environmental Health and relevant Highways Authority. Unfortunately, demands on staff time have prevented progress in this area. This measure is also dependent on the next measure.	The Cannock Chase Council Local Plan 2018-2039 is in development; it is anticipated that this will be adopted in 2024. The current draft includes policies on sustainable transport.
9	Green Transport Strategy	Development of this strategy is ongoing and being led by CCDC's Project Manager (Capital). The aims of the document will be to: <ul style="list-style-type: none"> <li>Increasing the uptake of Active and Green Transportation whilst at the same reducing the use of petrol and diesel vehicle journeys</li> <li>To drive the uptake of electric vehicle, use, by implementing a detailed charging strategy which accounts for current and future demand across the district</li> <li>By working in close partnership with the Energy Savings Trust and Staffordshire County Council to increase the number of publicly available vehicle charging points</li> <li>Taking into account the reasons and choices of travel within the district</li> </ul> Though development of planning policies and strategic projects.	The strategy has been drafted and is currently under review.
10	Projects to support uptake of ultra-low emission vehicles (ULEVs) - Taxis	Although taxis are not considered to have a significant impact on AQMAs, they provide an important transport function for the district. Uptake of ULEVs will influence air quality in areas of high activity such as town centres and help make provision of charging infrastructure viable.	The <i>Hackney Carriage/Private Hire Driver, Vehicle &amp; Operator Licensing Policy</i> has been developed and is due to be adopted in July 2023.

Cannock Chase District Council air quality priorities for 2023 are presented in [Table 2.4](#).

**Table 2.4 – Air Quality Priorities for 2023**

Priority	Measure	Comment
1	Revoke AQMAs 1 and 3	AQMAs 1 and 3 to be formally revoked (this was completed on 1 May 2023).
2	Ongoing air quality monitoring and data review	Data collected in 2023 will be analysed as part of the 2024 ASR. Data to be subject to quality control.
3	Review current air quality monitoring arrangements	Additional diffusion tube locations (NO <sub>2</sub> ) established in January 2023. AURN PM <sub>2.5</sub> monitoring station establishment anticipated in 2023.
4	Review Cannock Chase Council Smoke Control Orders	Cannock Chase Council currently has 15 smoke control orders which, in aggregate, cover the whole district; the current arrangements (including Cannock Council's Enforcement Policy) are to be reviewed following changes to the Clean Air Act 1993.
5	Revision to Taxi Licensing Policy to encourage transition to low emissions vehicles	The <i>Hackney Carriage/Private Hire Driver, Vehicle &amp; Operator Licensing Policy</i> is due to be adopted in July 2023.
6	Adoption of a Green Transport Strategy	Cannock Chase Council is developing a Green Transport Strategy with the following key aims: <ul style="list-style-type: none"> <li>To increase the uptake of active and green transportation whilst reducing the number of car journeys across the district.</li> <li>To drive the uptake of ULEV vehicle use, whilst reducing the number of petrol and diesel vehicle journeys.</li> <li>To work with partners to support the future increase in number of publicly available vehicle charging/ fuelling points.</li> <li>To understand current reasons and choices of modes of transport within the district to understand how we can influence the uptake of future sustainable modes of transport and improve air quality.</li> <li>To help develop complementary planning policies and strategic projects.</li> <li>To set an example, by developing an ULEV local authority fleet, adopting a staff travel plan, running green events and engaging with businesses through economic development programmes.</li> </ul>
7	Adoption of an Ultra-Low Emission Vehicle Charging Delivery Strategy	Cannock Chase Council is developing an Ultra-low Emission Vehicle Strategy with the following key aims: <ul style="list-style-type: none"> <li>To work towards Cannock Chase Council's vehicle fleet producing zero emissions by 2030 or as early as practicable after that date.</li> <li>To provide adequate, safe and secure charging/fuelling locations across the District.</li> <li>To provide suitable dedicated charging locations within the district for our taxi operators.</li> </ul>
8	Develop planning policies that require developer contributions towards sustainable transport	The Cannock Chase Council Local Plan 2018-2039 is in development; it is anticipated that this will be adopted in 2024.  The current draft includes policies on sustainable transport.
9	Produce a Developer's Guide to Air Quality	A draft Air Quality Developer's Guide has been prepared. However, the guide requires a review to ensure alignment with the policies under the 2018-2039 Local Plan.  The Developer Guide should be published following adoption of the 2018-2039 Local Plan (anticipated in 2024).
10	Partnership working with Staffordshire County Council	Staffordshire County Council have significant influence on schools and run educational and business awareness campaigns, including 'Air Aware' and the 'Staffordshire Business and Environment Network'.  Staffordshire County Council have been successful in obtaining 'Levelling Up' funding to deliver local highways infrastructure improvements on the A34 at Cannock town centre and to provide a low/zero emission bus service between Stafford and Cannock. Subject to final approval, the project is scheduled for completion in 2024.
11	Develop an air quality management action plan for AQMA 2	Monitoring data suggests that air quality continues to meet the NO <sub>2</sub> objective; monitoring will continue with a view to revocation in 2024.  Development of an AQAP for AQMA 2 is an inefficient use of limited Council resources.

The principal challenges and barriers to implementation that Cannock Chase District Council anticipates facing are:

- Staff resource (time).
- Funding to deliver sustainable transport infrastructure.
- Cannock Chase District Council and Stafford Borough Council are moving toward a shared services model, which in the short to mid-term may present both challenges and opportunities to both councils.

Cannock Chase District Council and partner organisations have taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed or in progress are set out in [Table 2.5](#). Nine measures are included within [Table 2.5](#), with the type of measure and the progress Cannock Chase District Council have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within [Table 2.5](#).

**Table 2.5 – Progress on Measures to Improve Air Quality**

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Date	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	Air Aware - School Travel Plans	Promoting Travel Alternatives	School Travel Plans	2018	2023	Staffordshire County Council	DEFRA/ Staffordshire County Council	YES	Partially Funded	£100k - £500k	Implementation	Unknown	Number of schools participating	5 schools participated in the scheme, 3 of which are still engaged.	Air Aware has been incorporated into mainstream school engagement through Staffordshire County Council and public health funding.
2	Air Aware - School anti-Idling Campaigns	Public Information	Via other mechanisms	2019	2023	Staffordshire County Council	DEFRA/ Staffordshire County Council	YES	Partially Funded	< £10k	Implementation	Unknown	Number of schools participating	4 schools participated in the campaign.	Awareness campaign for those who drive to school. Participants sign a pledge and receive reminder emails.
3	Public awareness campaigns	Public Information	Via other mechanisms	2018	2040	Staffordshire County Council	DEFRA/ Staffordshire County Council	YES	Funded	£50k - £100k	Implementation	Unknown	N/A		
4	Staffordshire Business Environment Network	Promoting Travel Alternatives	Workplace Travel Planning	2012	2040	Staffordshire County Council	Staffordshire County Council	NO	Not Funded	< £10k	Implementation	Unknown	Number of businesses participating	100 businesses engaged. 40 received an environmental audit across Staffordshire. (2021-2022 figures)	
5	Home working	Promoting Travel Alternatives	Encourage / Facilitate home-working	2013	2040	Cannock Chase Council	N/A	NO	Not Funded	< £10k	Implementation	Unknown	N/A	Home working policy implemented in 2013.	
6	Cycle 2 Work Scheme	Promoting Travel Alternatives	Promotion of cycling	2015	2040	Cannock Chase Council	Cyclescheme	NO	Not Funded	< £10k	Implementation	Unknown	Number of staff taking up measure	No staff uptake in 2022.	
7	Employer Bus Travel Club	Alternatives to private vehicle use	Other	2020	2040	Arriva/Staffordshire County Council	Staffordshire County Council	NO	Not Funded	< £10k	Implementation	Unknown	Number of staff taking up measure	Unknown	
8	Active Travel Fund	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2021	2023	Staffordshire County Council	Department of Transport	NO	Funded	£1 million - £10 million	Implementation	Unknown	Length of cycle path installed/ upgraded	850m installed	Cycle route installed along Lichfield Road (A5190) and Hednesford Road (A4601) in 2022-2023.
9	Binworld	Public Information	Via other mechanisms	2023	2023	Cannock Chase Council	Cannock Chase Council/Wigan Leisure Trust	NO	Partially Funded	< £10k	Completed	Unknown	N/A	19 local primary schools participated in the scheme	A musical theatre group was commissioned to give 5 performances on environmental issues.

**Note:**

Staffordshire County Council taking other measures to address their pollutant emissions, which are detailed in their 2022 Climate Change Annual Report (see Table 2.6).

Cannock Chase District Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Staffordshire County Council.
- Energy Saving Trust.
- Staffordshire Air Quality Forum (liaison group representing local authority officers across Staffordshire).

Policies which are relevant to air quality are presented in Table 2.6.

**Table 2.6 – Plans and Strategies Aligned to Air Quality**

Plan or Strategy	Authority	Summary	Web Link
Costed Net Zero Action Plan	Cannock Chase Council	This policy identifies and assesses measures to achieve net zero carbon emissions by 2030.	<a href="https://www.cannockchasedc.gov.uk/sites/default/files/costed_net_zero_action_plan.pdf">https://www.cannockchasedc.gov.uk/sites/default/files/costed_net_zero_action_plan.pdf</a> (2.3Mb).
Cannock Chase Local Plan 2018-2039	Cannock Chase Council	The proposed Local Plan sets planning policy. Strategic objective 5 is focused on the provision of sustainable transport and communications infrastructure.	<a href="https://www.cannockchasedc.gov.uk/sites/default/files/06-local_plan_2018_to_2039_reg_19_consultation_rpt_cabinet_250822.pdf">https://www.cannockchasedc.gov.uk/sites/default/files/06-local_plan_2018_to_2039_reg_19_consultation_rpt_cabinet_250822.pdf</a> (10.3Mb).
		Planning policies require the potential impact of nitrogen emissions from development on the Cannock Chase Special Area of Conservation to be assessed.	<a href="https://www.cannockchasedc.gov.uk/residents/planning-building/planning-policy/cannock-chase-special-area-conservation-sac">https://www.cannockchasedc.gov.uk/residents/planning-building/planning-policy/cannock-chase-special-area-conservation-sac</a>
Climate Change Action Plan 2021-2025	Staffordshire County Council	This plan includes measures to reduce transport emissions. Progress is reported annually.	<a href="https://www.staffordshire.gov.uk/environment/Climate-change/Climate-change.aspx">https://www.staffordshire.gov.uk/environment/Climate-change/Climate-change.aspx</a>
Public Electric Vehicle Charging Infrastructure Strategy 2023	Staffordshire County Council	This strategy seeks to coordinate the development of electric vehicle charge points across the county.	<a href="https://www.staffordshire.gov.uk/Transport/Sustainable-travel/Electric-vehicles/02-SCC-Public-EV-Charging-Strategy-V3-3.pdf">https://www.staffordshire.gov.uk/Transport/Sustainable-travel/Electric-vehicles/02-SCC-Public-EV-Charging-Strategy-V3-3.pdf</a> (17Mb)
Cannock Chase District Integrated Transport Strategy 2013-2028	Staffordshire County Council	This strategy prioritises expenditure on transport improvements across Cannock.	<a href="https://www.staffordshire.gov.uk/Transport/transportplanning/documents/Documents/Cannock-Transport.pdf">https://www.staffordshire.gov.uk/Transport/transportplanning/documents/Documents/Cannock-Transport.pdf</a> (2.7Mb)
Local Transport Plan 2011	Staffordshire County Council	The Local Transport Plan is supported by a series of complementary policies: <ul style="list-style-type: none"> <li>• Bus Service Improvement Plan 2021</li> <li>• Local Cycling and Walking Infrastructure Plan 2021</li> <li>• Freight Strategy Plan 2019</li> <li>• Highways Infrastructure Asset Management Plan 2022</li> <li>• Rail Strategy 2016</li> </ul>	<a href="https://www.staffordshire.gov.uk/Transport/transportplanning/localtransportplan/home.aspx">https://www.staffordshire.gov.uk/Transport/transportplanning/localtransportplan/home.aspx</a>

## 2.3 PM<sub>2.5</sub> – 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<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Projected background concentrations of PM<sub>2.5</sub> across Cannock Chase District Council, based on 2018 data (with a resolution of 1km<sup>2</sup>), are presented as Figure 2.1.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 established the following targets for PM<sub>2.5</sub>:

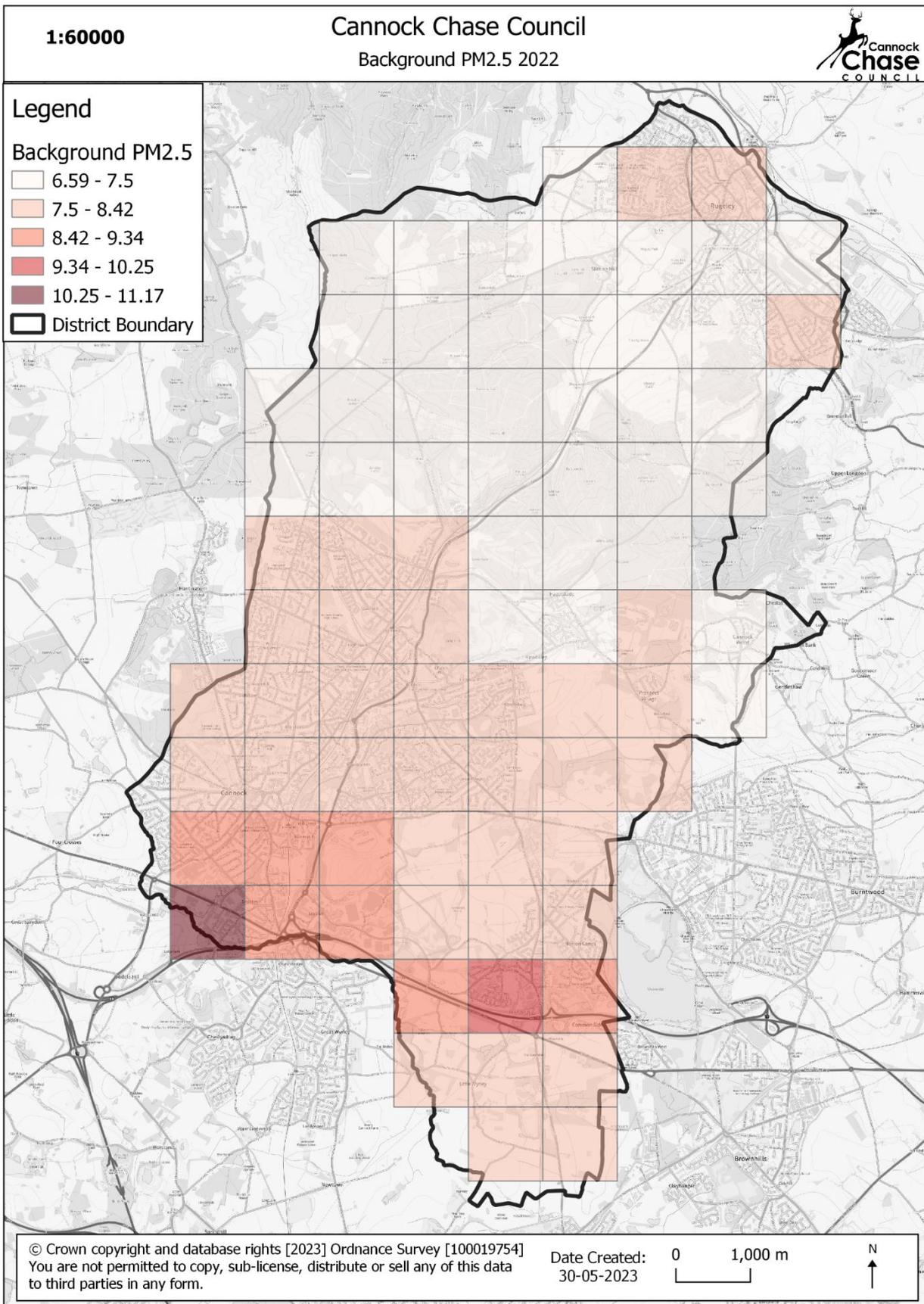
- 10µg/m<sup>3</sup> annual mean (to be achieved by 2040).
- A 35% reduction in population exposure by 2040 (2016-2018 baseline).

The modelled background concentration suggests that the highest concentration of PM<sub>2.5</sub> (at 11.2µg/m<sup>3</sup>) are to be found in Bridgtown, in the southwest of the District, with a further projected breach of the target in Norton Canes (10.2µg/m<sup>3</sup>).

Modelled peak concentrations of PM appear to coincide with the two major highways in the District (the M6 Toll and the A5/Watling Street).

Modelled PM<sub>2.5</sub> concentrations otherwise generally decrease from the southwest to the northeast, with lower levels over Cannock Chase Area of Outstanding Natural Beauty.

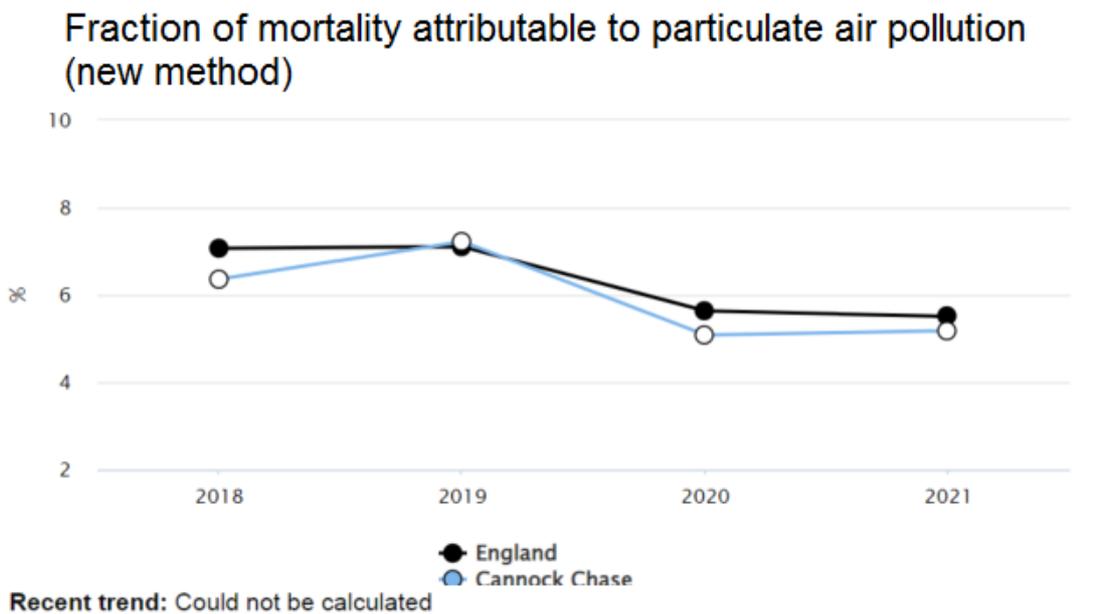
**Figure 2.1 – Background PM<sub>2.5</sub> across Cannock Chase District in 2022**



The contribution of particulate air pollution to mortality in Cannock Chase District (according to the Office for Health Improvement and Disparities ‘Public Health Outcomes Framework’) is presented as Figure 2.2. This data suggests that mortality associated with particulate air pollution is below the average for England, although this should be treated with care:

- Cannock Chase District was associated with coal mining; the last colliery closed in 1990. Coal miners are at a higher risk of developing respiratory ailments, the cause of which may primarily be linked to occupational exposure to coal dust, rather than poor air quality (although this also means that ex-miners are more sensitive to poor air quality).
- The figures for England take in rural and urban authorities, with highly variable standards of air quality.

**Figure 2.2 – Public Health Profile for Cannock Chase**



Period	Cannock Chase					England
	Count	Value	95% Lower CI	95% Upper CI		
2018	0	-	6.4%	-	-	7.1%
2019	0	-	7.2%	-	-	7.1%
2020	0	-	5.1%	-	-	5.6%
2021	0	-	5.2%	-	-	5.5%

Source: Background annual average PM<sub>2.5</sub> concentrations for the year of interest are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in Defra’s Automatic Urban and Rural Network (<https://uk-air.defra.gov.uk/interactive-map>). By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background PM<sub>2.5</sub> concentrations for each lower tier LA are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC). Concentrations of total PM<sub>2.5</sub> are used for estimating the mortality burden attributable to particulate air pollution (COMEAP, 2022).

At the time of writing, an application for lawful development has been submitted to allow deployment of a particulate matter monitoring station (as part of the Automatic and Urban Rural Network (AURN)) adjacent to Watling Street. The proposed location coincides with the highest modelled concentration of PM<sub>2.5</sub>.

Assuming that the monitoring station is installed, Cannock Chase Council will assess the published data and the implications for local air quality management, the findings of which will be reported on in future ASRs.

Cannock Chase District Council is taking the following measures to address PM<sub>2.5</sub>:

- 15 smoke control orders were made by the Council between 1988 and 1997, which aggregate to cover the whole district. This arrangement is to be reviewed following legislative changes to the Clean air Act 1993.

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

This section sets out the monitoring undertaken in 2022 by Cannock Chase District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

Automatic (continuous) monitoring for NO<sub>2</sub> was undertaken within Cannock Chase District at one site during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring site. The page presents automatic monitoring results for Cannock Chase 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

Cannock Chase District Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 16 sites during 2022. 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.

A new monitoring location (A460) was initiated in 2022, the purpose of which is to monitor background concentrations of NO<sub>2</sub> for the Cannock Chase Special Area of Conservation; there are no relevant receptors (for the purposes of this report) at that location, but the data is included for information.

Monitoring location data (Ordnance Survey grid references and distances to the kerb/receptor) were updated in May 2023 as part of a quality control exercise, which resulted in several corrections being made.

## 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<sub>2</sub>)

Table A.4 and Table A.5 in Appendix A compare the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. 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 2022 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.

Table A.6 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past five years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

The monitoring data is discussed below.

#### AQMA 1

The monitoring results suggest:

- BTL-B (aka 87 Watling Street) exhibits a steady trend between 2018-2022.
- 54 WS and 67 WS exhibit a reducing trend between 2018-2020, since when trends have remained steady.

All monitoring results comfortably meet the annual objective - the greatest concentration of NO<sub>2</sub> in 2022 was 26.6µg/m<sup>3</sup>.

## AQMA 2

The monitoring results exhibit a broadly similar trend to those observed in AQMA 1, although 268 WSB shows an erratic trend. It should be noted that 268 WSB is closer to the dual carriageway (at 1.2m) than 268 WS and 268 WSA.

The data for 268 WS and 268 WSA appears to be closely correlated; the tubes are located at 1.9m and 5.2m from the carriageway, respectively. The close correlation suggests that road transport emissions dissipate within 1.9m of the carriageway, especially given the consistently higher trend observed in 268 WSB. The location of these tubes (on opposite sides of the carriageway, and thus with potentially different traffic flows) is unlikely to account for these trends.

The data from 268 WS suggest that the air quality objective is being met. Whilst there is now three years of continuous data which all returned annual concentrations of NO<sub>2</sub> below 30µg/m<sup>3</sup>, two of those years represent low traffic flows due to Covid-19. However, that air quality has not noticeably deteriorated following the return to normal societal activity is encouraging.

Should air quality continue to meet air quality objectives, consideration may be given to revoking AQMA 2.

## AQMA 3

The monitoring results again exhibit a broadly similar trend to those observed in AQMA 1 and AQMA 2.

Monitoring at HHFW shows a slightly upward trend in NO<sub>2</sub> concentrations, with the 2022 data returning a concentration of 36.6µg/m<sup>3</sup>, although the relevant receptor at this location (a public house) is on the first floor - where previous modelling (presented in the 2022 ASR) had determined likely compliance with the air quality objective. This location exhibits elevated concentrations of NO<sub>2</sub> (relative to other monitoring locations in AQMA 3) due to traffic congestion near a busy roundabout.

A similar trend to HHFW is noted at CNKRD, although at 26.7µg/m<sup>3</sup>, this comfortably meets the air quality objective.

Monitoring results from HH01 and FW01 (both situated at primary schools) comfortably meet the air quality objective, as do the results from HHMS (which is co-located with an automated monitoring station).

### Non-AQMA Locations

Monitoring results outside of AQMA 1, AQMA 2 and AQMA 3 suggest that air quality comfortably complies with the air quality objective.

### Summary

Monitoring data suggests that improvements in air quality following Covid-19 are being maintained, as pollutant levels have not yet returned to 2020 levels; this may be indicative of wider societal movement toward home working, as well as continued improvements in UK vehicle composition (i.e. the general move from diesel to petrol and electric/hybrid vehicles, and tightening emission standards).

The monitoring data continues to support the revocation of AQMA 1 and AQMA 3.

Monitoring will continue at AQMA 2; should current trends continue, then revocation should be considered.

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
HHMS	Cannock A5190 Roadside	Roadside	401392	309954	NO <sub>2</sub>	YES AQMA 3	Chemiluminescent	3.6	6.6	1.8

**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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MORT	Cannock Mortuary	Urban Background	397541	309735	NO <sub>2</sub>	No	NA	NA	No	U/K
BTL-B	87 Watling Street, Bridgtown	Roadside	397952	308567	NO <sub>2</sub>	AQMA 1	0	4.7	No	2.1
67 WS	67 Watling Street, Bridgtown	Roadside	398051	308512	NO <sub>2</sub>	AQMA 1	-0.2	7.5	No	2.0
54 WS	54 Watling Street, Bridgtown	Roadside	398250	308428	NO <sub>2</sub>	AQMA 1	0	4.9	No	2.1
268 WS	268 Watling Street	Roadside	400726	307423	NO <sub>2</sub>	AQMA 2	0.3	1.9	No	2.0
268 WSA	268 Watling Street A	Roadside	400635	307478	NO <sub>2</sub>	AQMA 2	NA	5.2	No	1.5
268 WSB	268 Watling Street B	Roadside	400864	307385	NO <sub>2</sub>	AQMA 2	NA	1.2	No	2.1
HHFW	Five Ways Inn, Heath Hayes	Roadside	401565	309939	NO <sub>2</sub>	AQMA 3	0	1.5	No	2.3
CNKRD	Cannock Road, Heath Hayes	Roadside	401465	309956	NO <sub>2</sub>	AQMA 3	11.8	1.5	No	2.1
HHMS1, HHMS2, HHMS3	Cannock A5190 AURN	Roadside	401392	309954	NO <sub>2</sub>	AQMA 3	6.6	3.6	Yes	2.0
HF	Horsefair, Rugeley	Roadside	404475	317730	NO <sub>2</sub>	No	0	6.4	No	2.4
LICH RD	A5190 Lichfield Road, Cannock	Roadside	398976	309865	NO <sub>2</sub>	No	12.9	1.6	No	2.4
HH01	Heath Hayes Academy, Cannock	Roadside	401630	310593	NO <sub>2</sub>	AQMA 3	NA	1.6	No	2.7
FW01	Five Ways Primary, Heath Hayes	Roadside	400900	310607	NO <sub>2</sub>	AQMA 3	NA	2.0	No	2.8
GM01	Gorsemoor Primary, Heath Hayes	Roadside	400723	310186	NO <sub>2</sub>	No	NA	5.1	No	2.0
A460	A460, Rugeley	Roadside	403009	315930	NO <sub>2</sub>	No	NA	1.5	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.

(3) Location 'MORT' was discontinued in October 2022 due to a loss of access; a new equivalent location, 'MORT-2' was established in January 2023.

(4) Distances to relevant exposures and kerbs were verified and updated as part of a QC exercise in May 2023.

(5) OS grid references were updated as part of a QC exercise in May 2023.

**Table A.3 – Details of New Non-Automatic Monitoring Sites**

Diffusion Tube ID	Site Name	Comment
A460	A460, Rugeley	Monitoring undertaken for ecological purposes associated with the Cannock Chase Special Area of Conservation. There are no relevant receptors nearby (for local air quality management purposes) but the monitoring data is included here for completion.

**Table A.4 – Annual Mean NO<sub>2</sub> Monitoring Results: Automatic Monitoring (µg/m<sup>3</sup>)**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2022 (%) <sup>(2)</sup>	2018	2019	2020	2021	2022
HHMS	401392	309954	Roadside	98.9	98.9	17.5	21.5	14.4	15.7	13.8

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

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

**Notes:**

The annual mean concentrations are presented as µg/m<sup>3</sup>.

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

All means have been “annualised” as per LAQM.TG22 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%).

**Table A.5 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2022 (%) <sup>(2)</sup>	2018	2019	2020	2021	2022
MORT	397541	309735	Urban Background	76.8	62.6	22.4	16.1	13.2	15.6	13.0
BTL-B	397952	308567	Roadside	100	87.3	24.6	25.6	25.6	27.0	25.9
67 WS	398051	308512	Roadside	92.5	79.3	25.0	33.8	17.9	20.1	18.6
54 WS	398250	308428	Roadside	100	87.3	34.3	31.2	24.7	21.9	26.6
268 WS	400726	307423	Roadside	100	87.3	39.0	37.0	27.6	27.1	28.9
268 WSA	400635	307478	Roadside	100	87.3	<b>41.8</b>	<b>41.5</b>	28.2	29.0	28.2
268 WSB	400864	307385	Roadside	100	87.3	<b>50.0</b>	<b>57.0</b>	31.6	18.4	38.7
HHFW	401565	309939	Roadside	100	87.3	<b>44.5</b>	<b>43.9</b>	31.4	32.5	36.6
CNKRD	401465	309956	Roadside	100	87.3	25.2	34.2	25.0	25.7	26.7
HHMS1, HHMS2, HHMS3	401392	309954	Roadside	84.3	87.3	17.2	31.2	16.2	19.3	17.1
HF	404475	317730	Roadside	100	70.6	29.8	23.3	24.1	25.8	25.2
LICH RD	398976	309865	Roadside	100	87.3		19.4	23.4	26.2	24.8
HH01	401630	310593	Roadside	100	87.3		19.4	14.1	17.6	14.9
FW01	400900	310607	Roadside	100	87.3		13.0	18.3	25.1	19.0
GM01	400723	310186	Roadside	100	87.3		15.4	12.9	16.1	14.2
A460	403009	315930	Roadside		87.3					16.8

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

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<sup>3</sup>.

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

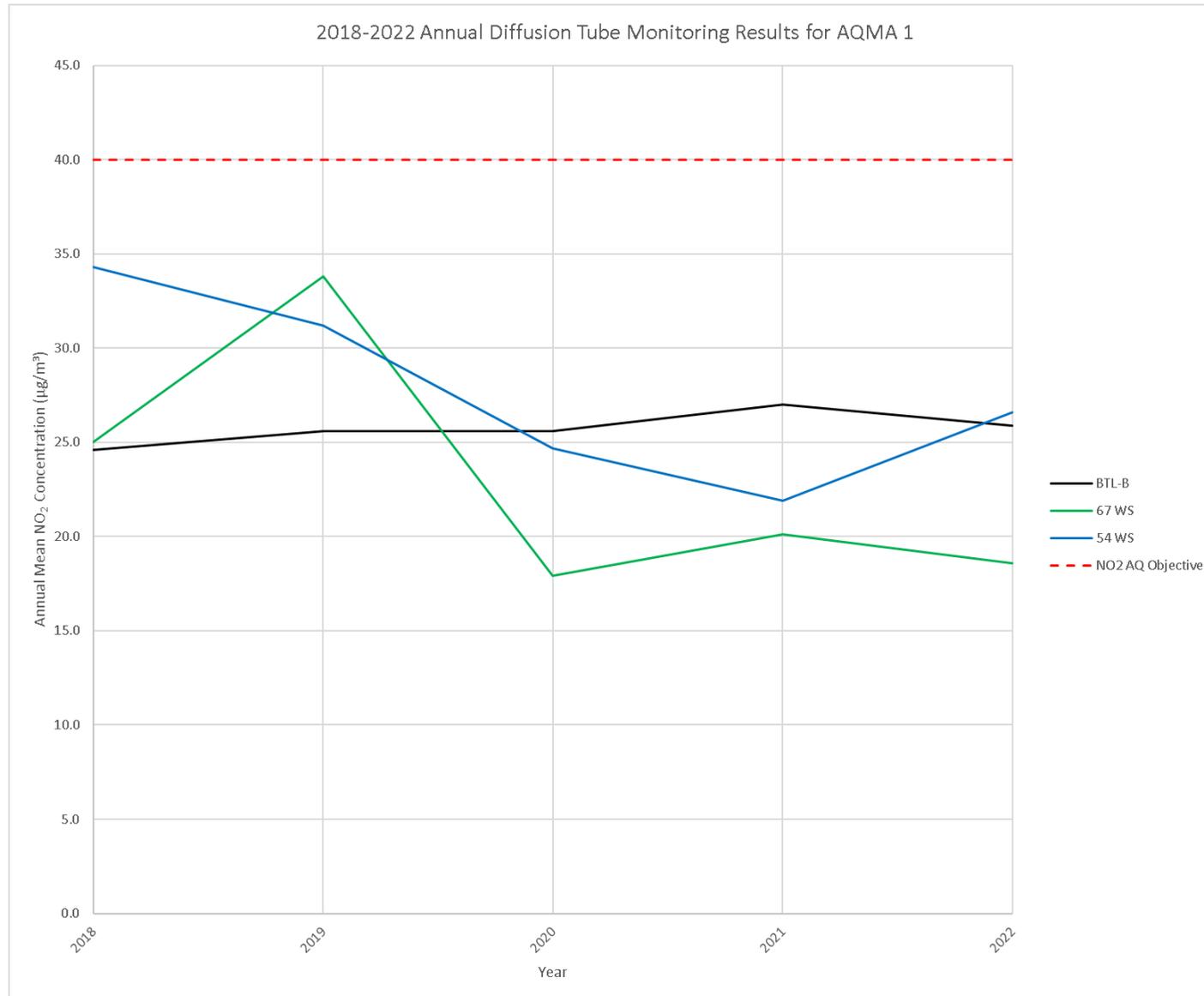
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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%).

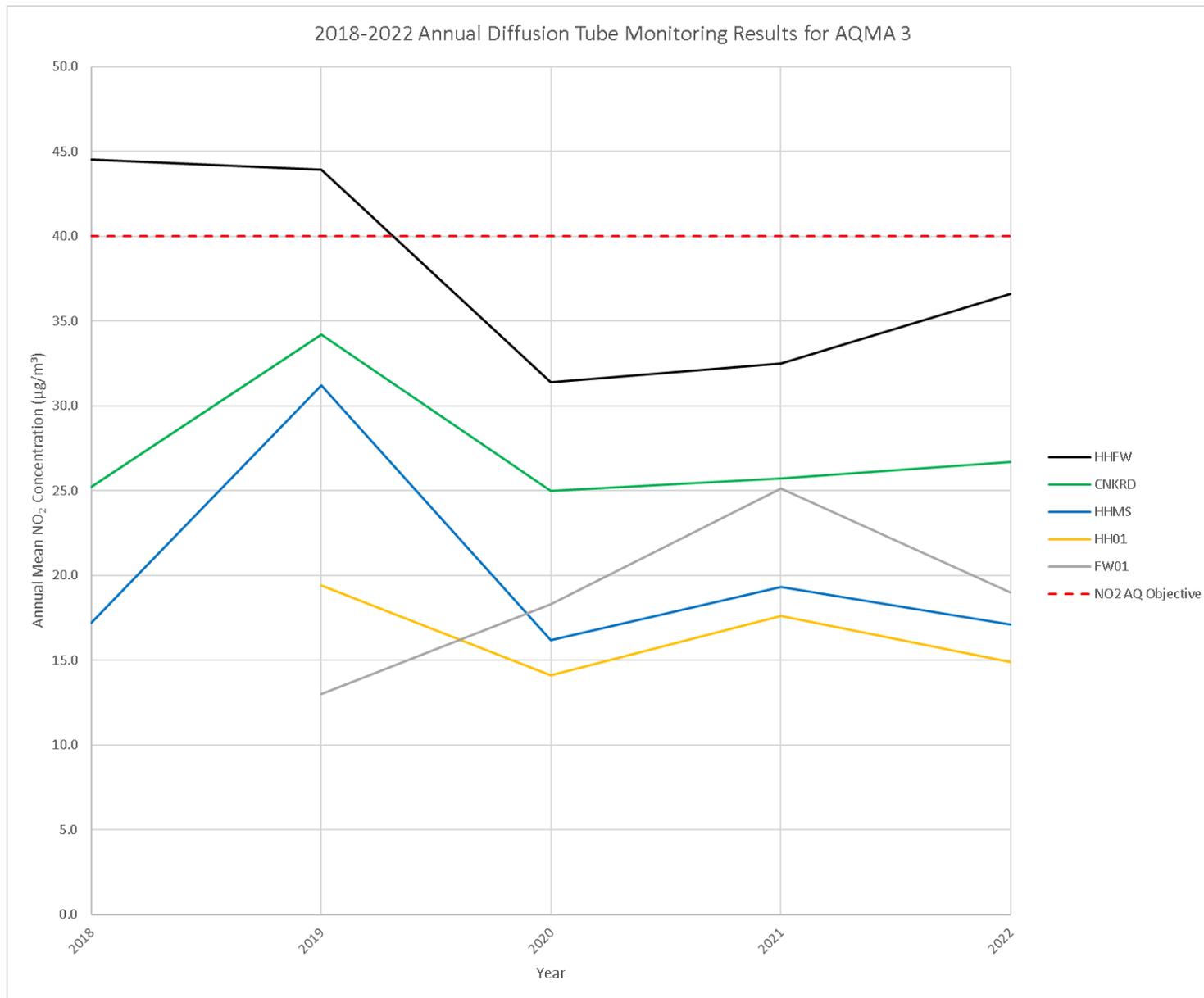
**Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations in AQMA 1**



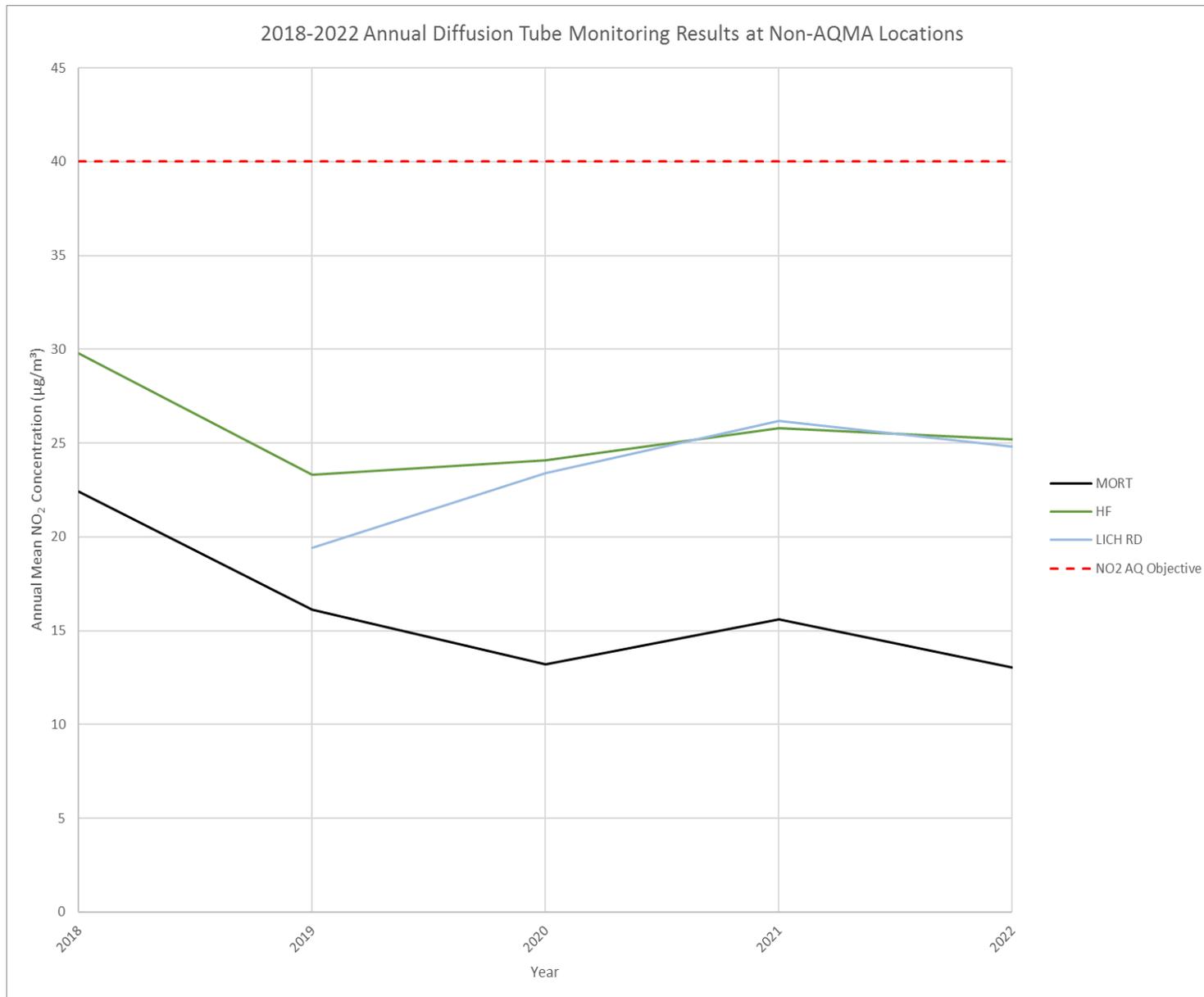
**Figure A.2 – Trends in Annual Mean NO<sub>2</sub> Concentrations in AQMA 2**



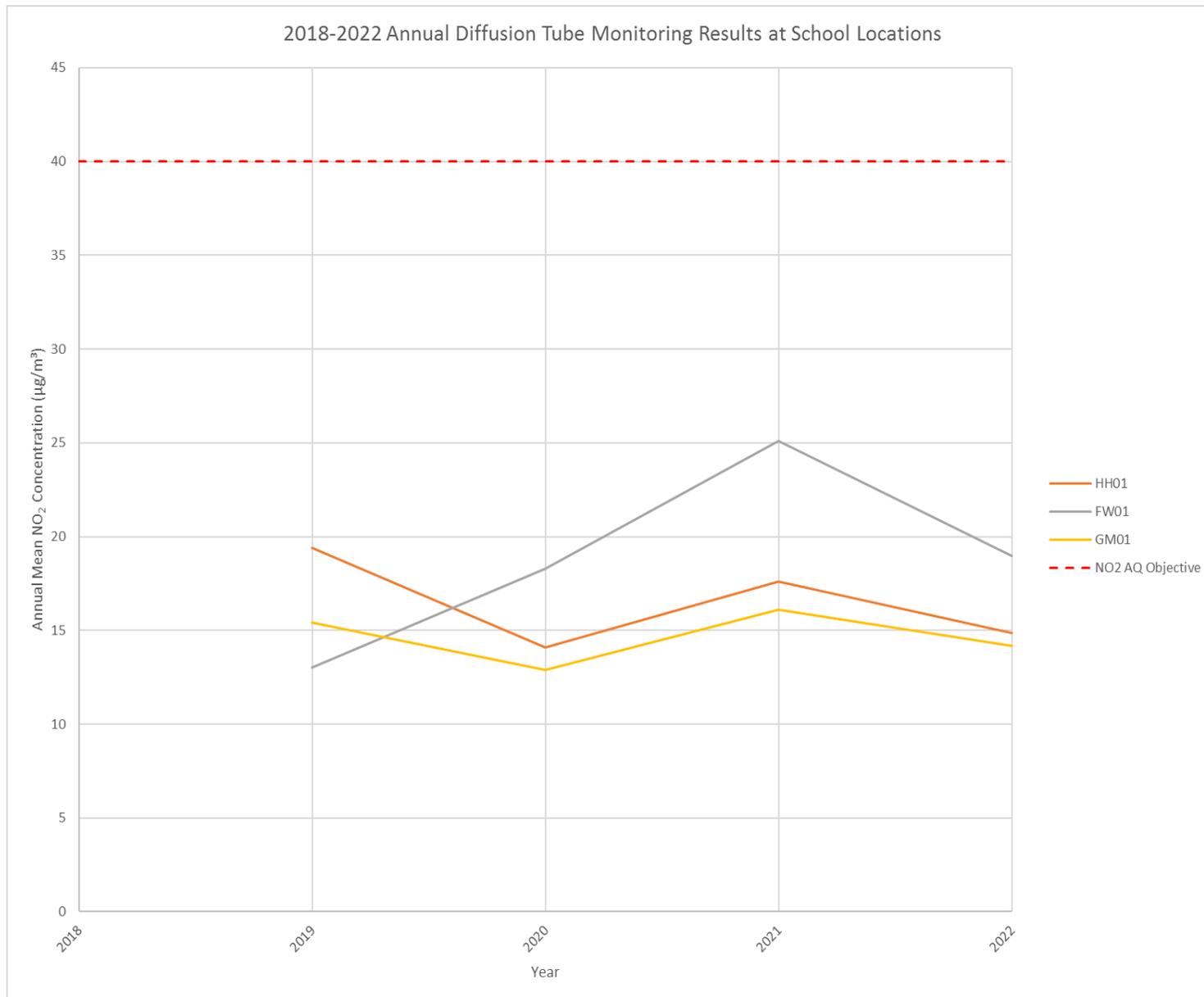
**Figure A.3 – Trends in Annual Mean NO<sub>2</sub> Concentrations in AQMA 3**



**Figure A.4 – Trends in Annual Mean NO<sub>2</sub> Concentrations in Non-AQMA Locations**



**Figure A.5 – Trends in Annual Mean NO<sub>2</sub> Concentrations at School Locations**



**Table A.6 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2022 (%) <sup>(2)</sup>	2018	2019	2020	2021	2022
HHMS	401392	309954	Roadside	98.9	98.9	0	0	0	0	0

**Notes:**

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m<sup>3</sup> have been recorded.

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-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%).

## Appendix B: Full Monthly Diffusion Tube Results for 2022

**Table B.1 – NO<sub>2</sub> 2022 Diffusion Tube Results (µg/m<sup>3</sup>)**

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 (0.87)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MORT	397541	309735		13.8	18.1	12.2	10.2	9.2	10.5	14.7	13.5				12.9	13.0		
BTL-B	397952	308567		31.2	29.6	27.0	25.4	26.6	29.8	28.4	33.1	30.6	35.0	32.5	29.8	25.9		
67 WS	398051	308512		20.1	28.4	20.3	15.4	13.9	19.6	21.1	25.2	22.0	27.1		21.4	18.6	18.6	
54 WS	398250	308428		24.6	37.2	34.4	26.3	24.3	26.9	33.1	33.1	31.2	34.8	27.2	30.5	26.6		
268 WS	400726	307423		21.4	<b>43.0</b>	33.5	29.8	28.7	33.8	38.3	31.2	28.1	36.2	36.0	33.2	28.9		
268 WSA	400635	307478		33.9	34.4	25.0	32.9	30.4	33.7	34.5	33.0	29.5	35.9	33.4	32.4	28.2		
268 WSB	400864	307385		<b>48.8</b>	<b>50.9</b>	<b>44.2</b>		37.3		<b>40.2</b>	<b>55.9</b>		<b>47.2</b>	<b>51.1</b>	<b>46.8</b>	38.7		
HHFW	401565	309939		31.3	<b>49.3</b>	<b>44.8</b>	39.0	39.4	38.1	<b>45.6</b>	<b>48.3</b>	35.2	<b>43.1</b>	<b>45.1</b>	<b>42.0</b>	36.6		
CNKRD	401465	309956		25.9	36.8	27.7	26.3	26.2	26.1	32.3	31.4	30.7	34.9	36.7	30.7	26.7		
HHMS1	401392	309954		18.7	25.1	21.1	14.3	13.5	15.0	20.3	19.1	18.6		24.7	-	-		Triplicate Site with HHMS1, HHMS2 and HHMS3 - Annual data provided for HHMS3 only
HHMS2	401392	309954		18.7	24.2	19.2	15.7		15.9	19.2	19.1	19.6	24.5	28.1	-	-		Triplicate Site with HHMS1, HHMS2 and HHMS3 - Annual data provided for HHMS3 only
HHMS3	401392	309954		18.9			15.6	12.8	14.4	19.9	19.2	18.5	24.8	26.5	-	-		Triplicate Site with HHMS1, HHMS2 and HHMS3 - Annual data provided for HHMS3 only
HF	404475	317730		32.9			27.3	26.3	26.4	25.3	27.5	31.0	32.3	33.4	29.0	25.2		
LICH RD	398976	309865		29.3	32.1	24.4	26.3	27.3	21.8	24.6	28.3	32.7	38.2	28.7	28.5	24.8		
HH01	401630	310593		19.1	18.5	13.8	13.0	14.0	13.6	13.4	17.5	21.8		26.4	17.1	14.9		
FW01	400900	310607		25.4	22.8	16.5	17.1	17.7	17.8	16.5	23.5	24.1	29.4	31.1	21.8	19.0		
GM01	400723	310186		18.3	18.2	12.4	13.1	11.9	11.0	13.6	13.0	18.9	24.1	24.9	16.3	14.2		
A460	403009	315930		19.1	18.9	18.0	17.8	19.4	18.3	20.6	19.5	19.4	22.4	19.2	19.3	16.8		

- All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- Local bias adjustment factor used.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- Cannock Chase District Council confirms that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

**Table B.2 – 2022 Diffusion Tube Monitoring Data Notes**

Month	Data Removed	Comments
January	All diffusion tubes - deployed 30/11/2021, collected 9/2/2022 (~1,704 hours).	Diffusion tubes were not collected in January and were therefore overexposed. The data is unreliable and has been removed.
February		
March	HHMS3 (21.5µg/m <sup>3</sup> ) - deployed 1/3/2022 HF (25.0µg/m <sup>3</sup> ) - deployed 1/3/2022	HHMS2 and HF were exposed for two months (March and April); these have been removed from the dataset.
April	HHMS3 (21.5µg/m <sup>3</sup> ) - collected 3/5/2022 (1,512 hours) HF (25.0µg/m <sup>3</sup> ) - collected 3/5/2022 (1,511 hours)	HHMS2 and HF were exposed for two months (March and April); these have been removed from the dataset.
May	268 WSB (24µg/m <sup>3</sup> )	The data for 268 WSB is significantly lower than the results for April (34.4µg/m <sup>3</sup> ) and June (32.9µg/m <sup>3</sup> ); an insect was identified within this tube.
June		
July	268 WSB (14.9µg/m <sup>3</sup> )	The data for 268 WSB is significantly below the results for June (32.9µg/m <sup>3</sup> ) and August (40.2µg/m <sup>3</sup> ).
August		
September		
October	1 - 268 WSB (14.5µg/m <sup>3</sup> ) 2 - MORT not collected (location inaccessible)	1 - The data for 268 WSB is significantly lower than the results for September (55.9µg/m <sup>3</sup> ) and November (47.2µg/m <sup>3</sup> ), in contrast to the trend exhibited by other diffusion tubes.
November	1 - HH01 (6.9µg/m <sup>3</sup> ) 2 - MORT not collected (location inaccessible) 3 - HHMS 1 missing.	1 - Data appears to be erroneous.
December	1 - MORT not collected (location inaccessible) 2 - 67 WS missing	

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

### New or Changed Sources Identified Within Cannock Chase District Council During 2022

Table C.1 provides information on planning applications that were submitted in 2022 with the potential to impact air quality.

**Table C.1 – Significant Planning Applications in 2022**

Planning Reference	Registration Date	Location	Proposal	Comments
CH/22/0132	1 April 2022	Wyrley Common	Change of use to mixed outdoor recreation, including a go-kart track.	The proposed development is close to AQMA 2; an air quality assessment was submitted as part of an environmental statement. Application withdrawn on 7 February 2023.
CH/22/0177	5 May 2022	Bridge Inn, Chads Moor	Demolition of Inn and construction of drive thru' coffee shop.	An air quality assessment was submitted in support of the application. Application approved 5 August 2022.
CH/22/0318	17 August 2022	Norton Hall Lane, Norton Canes	55 dwellings	An air quality assessment was submitted in support of the application.
CH/22/0376	10 October 2022	Land north of Priory Avenue, Rugeley	75 dwellings (outline)	An air quality assessment was submitted in support of the application.
CH/22/0398	1 November 2022	Land at junction of Avon Road and Hunter Road, Cannock	Residential care home	An air quality assessment was submitted in support of the application.

**Note:**

Planning applications can be viewed on the Council's website

<https://planning.agileapplications.co.uk/cannock/search-applications/>

## QA/QC of Diffusion Tube Monitoring

### Staffordshire County Council Highways Laboratory

#### NO<sub>2</sub> diffusion tube analysis QC results

##### AIR PT Scheme (LGC)

Results for each round are classified on z-scores for each tube as SATISFACTORY ( $\leq 2$ ), QUESTIONABLE (between 2 and  $<3$ ) and UNSATISFACTORY ( $>3$ ).

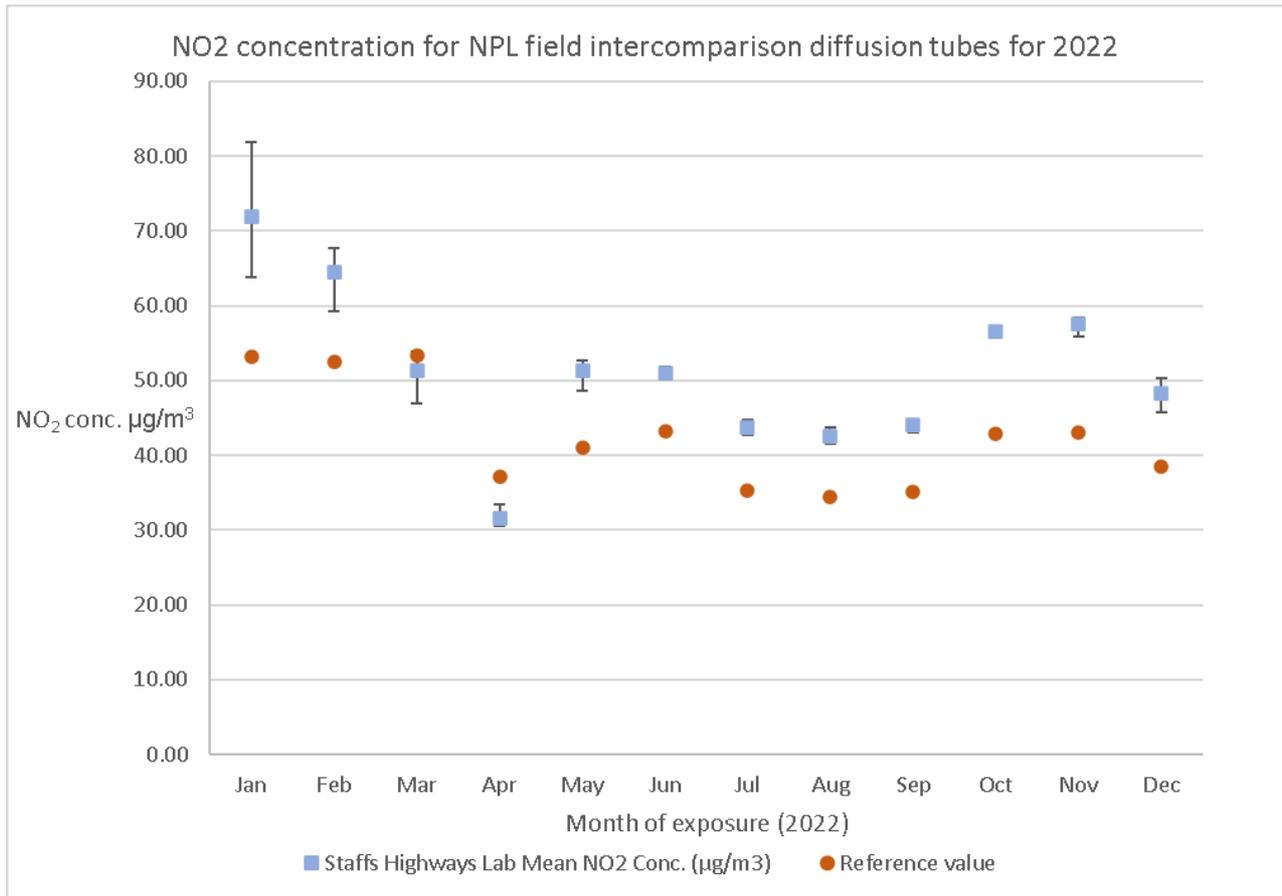
- Round 49 – Feb 2022. 100% satisfactory results.
- Round 50 – July 2022. 100% satisfactory results.
- Round 52 – Sept 2022. 0% satisfactory, 100% unsatisfactory results. Investigation into the results for this round showed issues with the full extraction of the analyte from the tube and issues with training of new member of staff. This did not affect results for other samples. Additional samples of the following round were ordered, and analysis completed with 100% satisfactory results.
- Round 53 – Nov 2022. 100% satisfactory results.

PT Round	z-scores	Performance
49 – Feb 2022	-0.11, -0.03, -0.22, 0.00	100% SATISFACTORY
50 – July 2022	-1.00, -0.78, -1.20, -1.48	100% SATISFACTORY
52 – Sept 2022	-4.75, -4.26, -4.04, -4.09	0% SATISFACTORY, 100% UNSATISFACTORY
53 – Nov 2022	-0.16, -1.79, -1.33, -0.61	100% SATISFACTORY

For the more information on the AIR PT Scheme and older results see the Defra website:

<https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/>

**Field Intercomparison (NPL)**



Our performance for all results of 2022 was classified as ‘GOOD’ (CoV <20). The chart below shows our results (blue squares), compared to the reference value (orange dots) for each month.

**Bias Factor**

The bias adjustment factor spreadsheet on the Defra website was updated in March 2023. The overall bias factor for Staffordshire Highways Laboratory for 2022 (including the Field Intercomparison result and all the co-location results from participating local authorities, total of 12 studies) was 0.87.

For the most up to date information on bias factors see the Defra website:

<https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/>

## Diffusion Tube Annualisation

**Table C.2 – Annualisation Summary (concentrations presented in  $\mu\text{g}/\text{m}^3$ )**

Site ID	Annualisation Factor Telford Hollinswood	Annualisation Factor Walsall Woodlands	Annualisation Factor West Bromwich Kenwick Park	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
MORT	1.1334	1.2418	1.1105	1.1619	12.9	15.0
268 WSB	0.9215	0.9382	0.9893	0.9496	46.8	44.5

### Notes:

Annualisation was calculated using data from the three nearest continuous monitoring stations; the station at Burton-on-Trent (Horninglow) did not capture sufficient data to be included, whilst the next nearest urban background location was Birmingham (Ladywood), which was not selected due to its urban location.

## Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 ASR has 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.TG22 provides guidance on 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  $\text{NO}_x/\text{NO}_2$  continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Cannock Chase District Council have applied the national bias adjustment factor of 0.87 to the 2022 monitoring data. A summary of bias adjustment factors used by Cannock Chase District Council over the past five years is presented in Table C.3.

The national bias factor (0.87) has been selected over the local factor (0.7) due to the limited availability of diffusion tube data (i.e. that no data was available for January 2022) and the significant deviation from the national bias adjustment factor (which is emphasised by low bias variation (between 0.81 and 0.86) across equivalent datasets).

**Table C.3 – Bias Adjustment Factor**

Monitoring Year	Local or National	Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.87
2021	National	03/22	0.86
2020	National	03/21	0.85
2019	National	Not recorded	0.93
2018	National	Not recorded	0.88

**Table C.4 – Local Bias Adjustment Calculation**

	Local Bias Adjustment
Periods used to calculate bias	11
Bias Factor A	0.7 (0.66-0.76)
Bias Factor B	42% (31% - 52%)
Diffusion Tube Mean ( $\mu\text{g}/\text{m}^3$ )	19.6
Mean CV (Precision)	3.4%
Automatic Mean ( $\mu\text{g}/\text{m}^3$ )	13.8
Data Capture	99%
Adjusted Tube Mean ( $\mu\text{g}/\text{m}^3$ )	14 (13-15)

**Notes:**

A local bias adjustment factor has been calculated for 2022, but not used.

**NO<sub>2</sub> Fall-off with Distance from the Road**

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1.

**Table C.5 – NO<sub>2</sub> Fall off With Distance Calculations (concentrations presented in µg/m<sup>3</sup>)**

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
67 WS	7.5	7.3	18.6	15.9	18.6	Diffusion tube mounted on façade of property that does not face Watling Street.

**Notes:**

Data held by the Cannock Chase Council on the distances of monitoring sites and relevant receptors to the kerb were verified and updated in May 2023 as part of a QC exercise.

### QA/QC of Automatic Monitoring

All management of the Cannock A5190 Roadside monitoring site is undertaken by Bureau Veritas; information on this site is available here: [https://uk-air.defra.gov.uk/networks/site-info?uka\\_id=UKA00623](https://uk-air.defra.gov.uk/networks/site-info?uka_id=UKA00623).

Please note the discrepancy between the website provided location (401394, 309957) and Cannock Chase Council's derived location (401392, 309954), which is possibly due to website location being derived from Google Maps (which uses the Mercator projection); Cannock Chase Council derived the location from its geographical information system (which uses the OSGB36).

# Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map of District and Air Quality Monitoring Locations

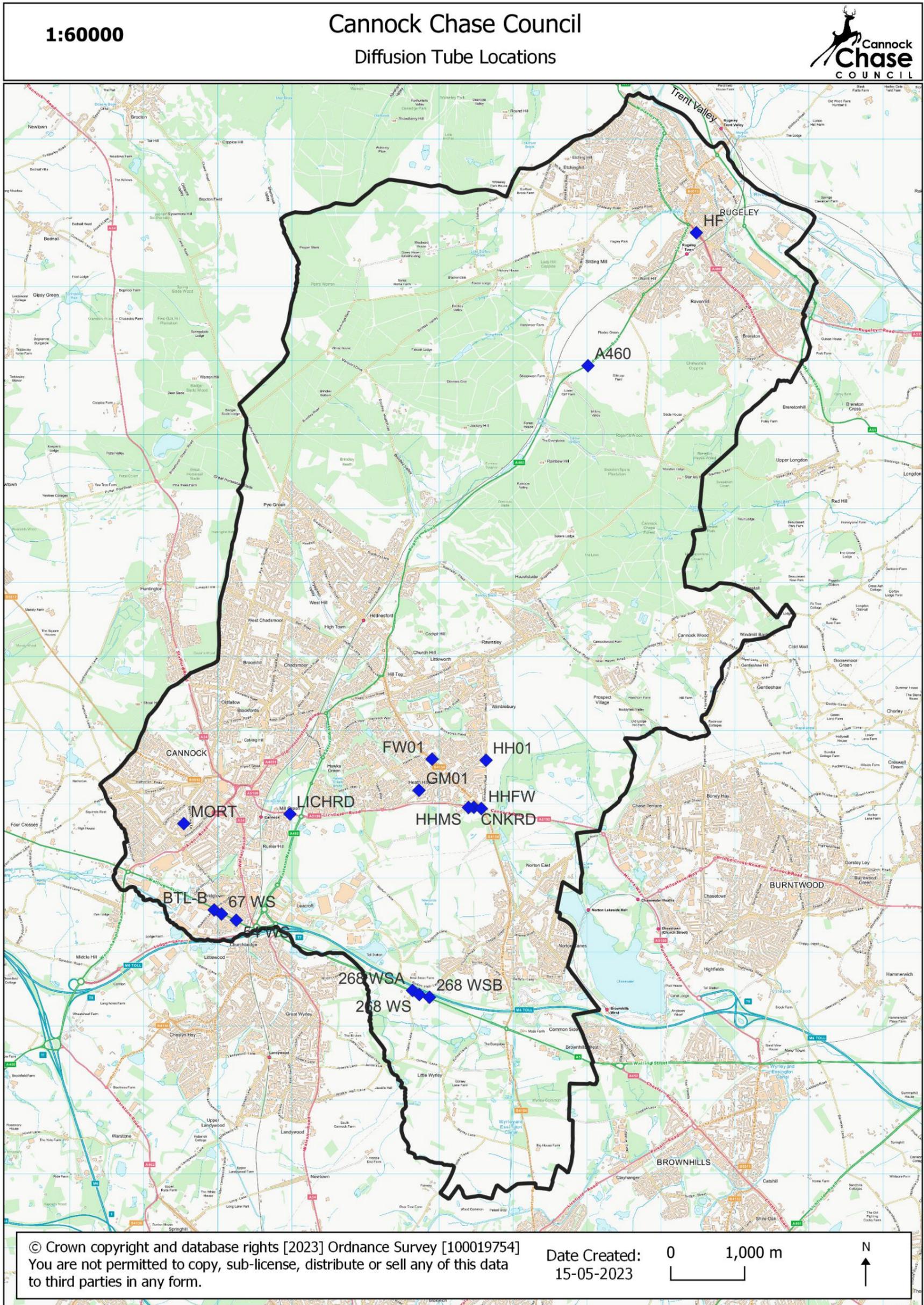


Figure D.2 – Map of District, Air Quality Monitoring Locations and AQMAs

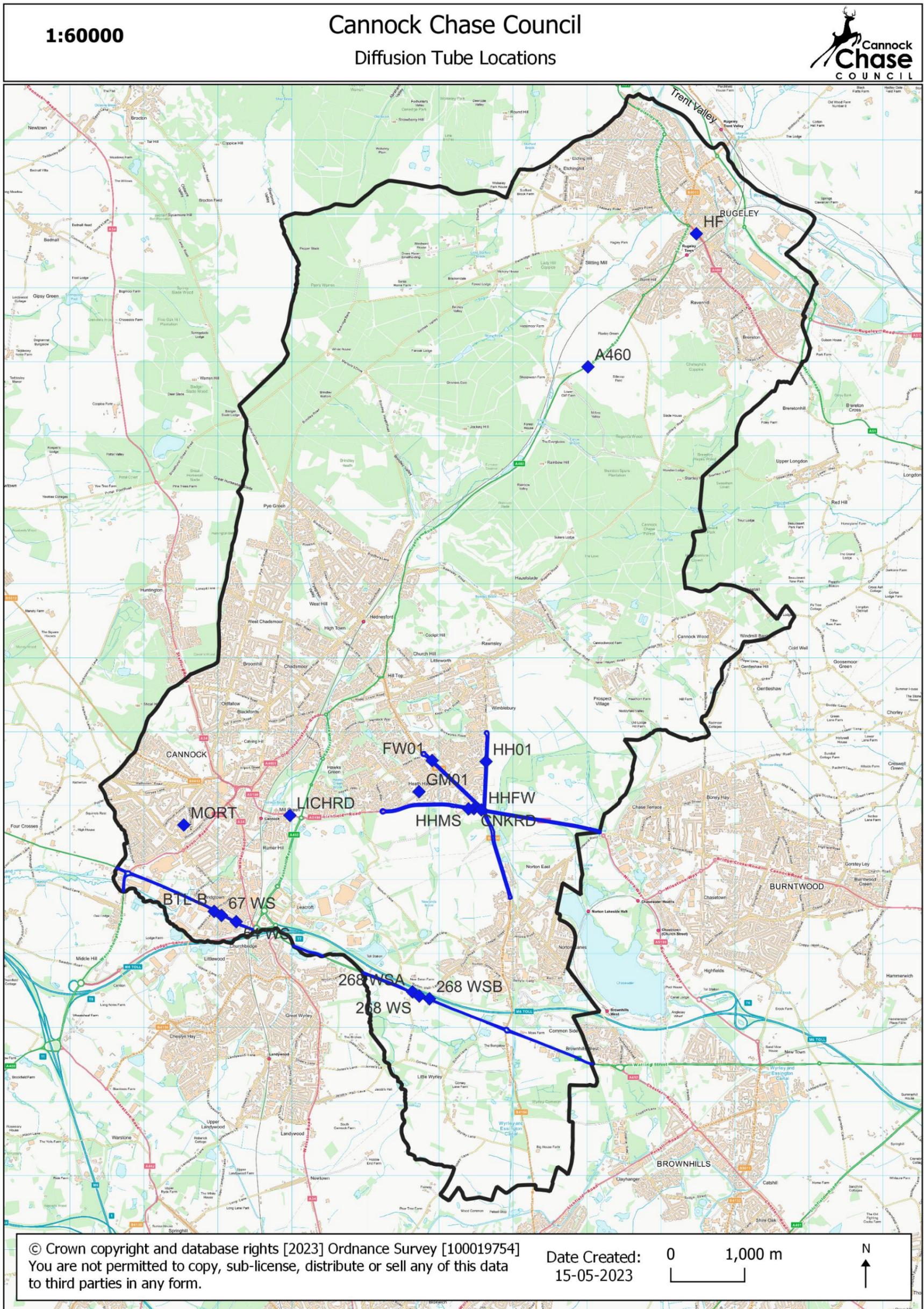


Figure D.3 – AQMA 1 Overview

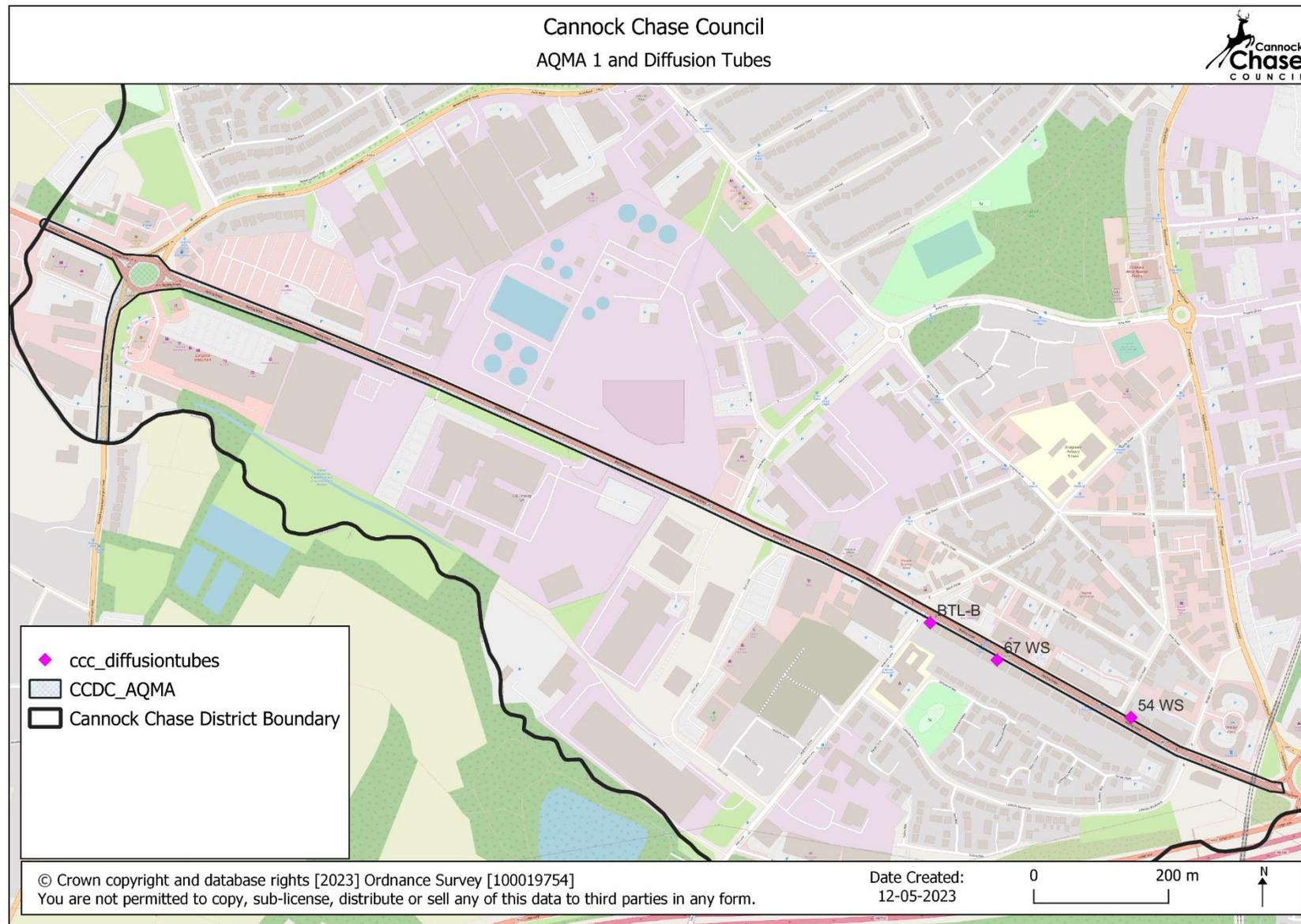


Figure D.4 – AQMA 1 Monitoring Locations

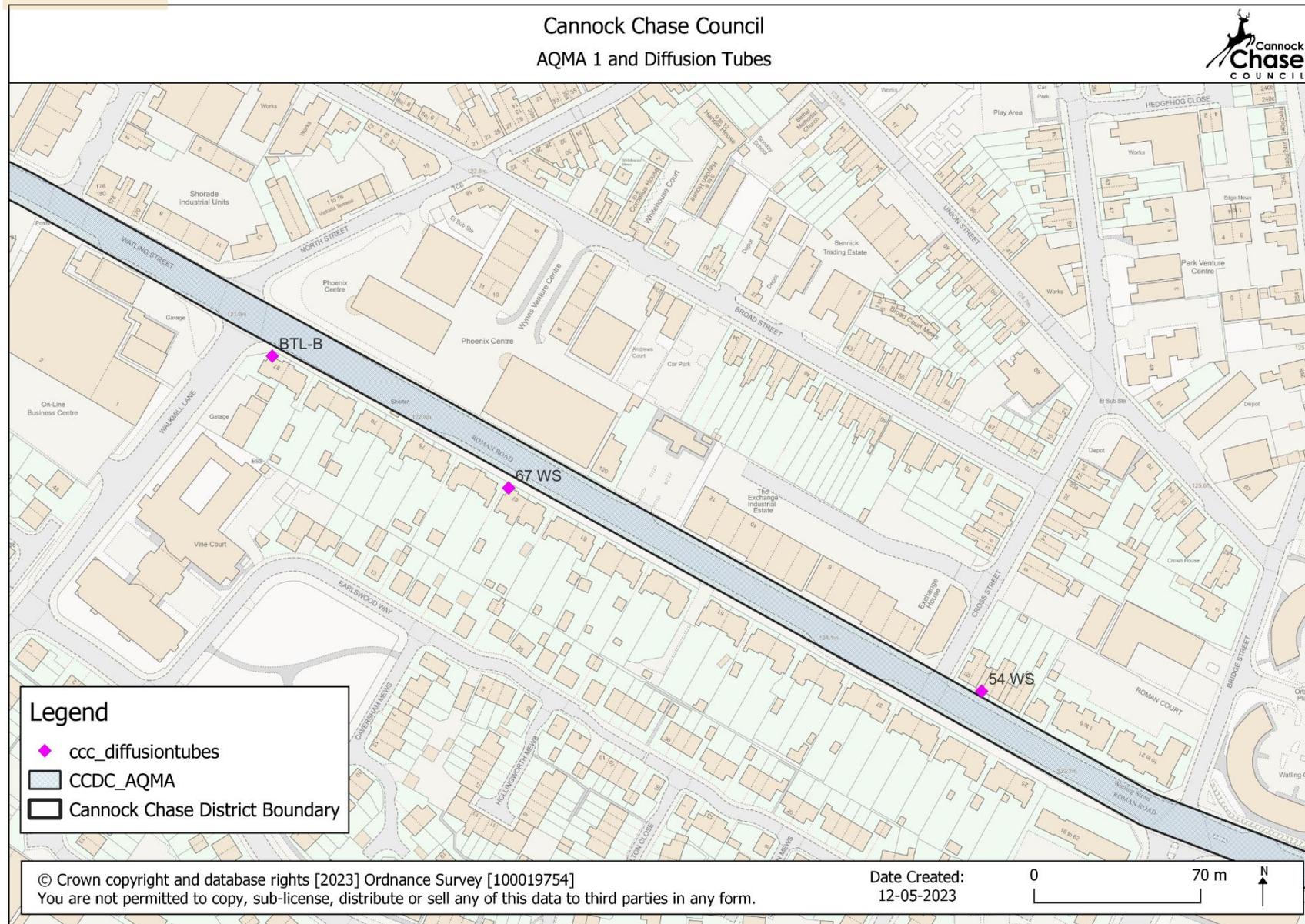


Figure D.5 – AQMA 2 Overview

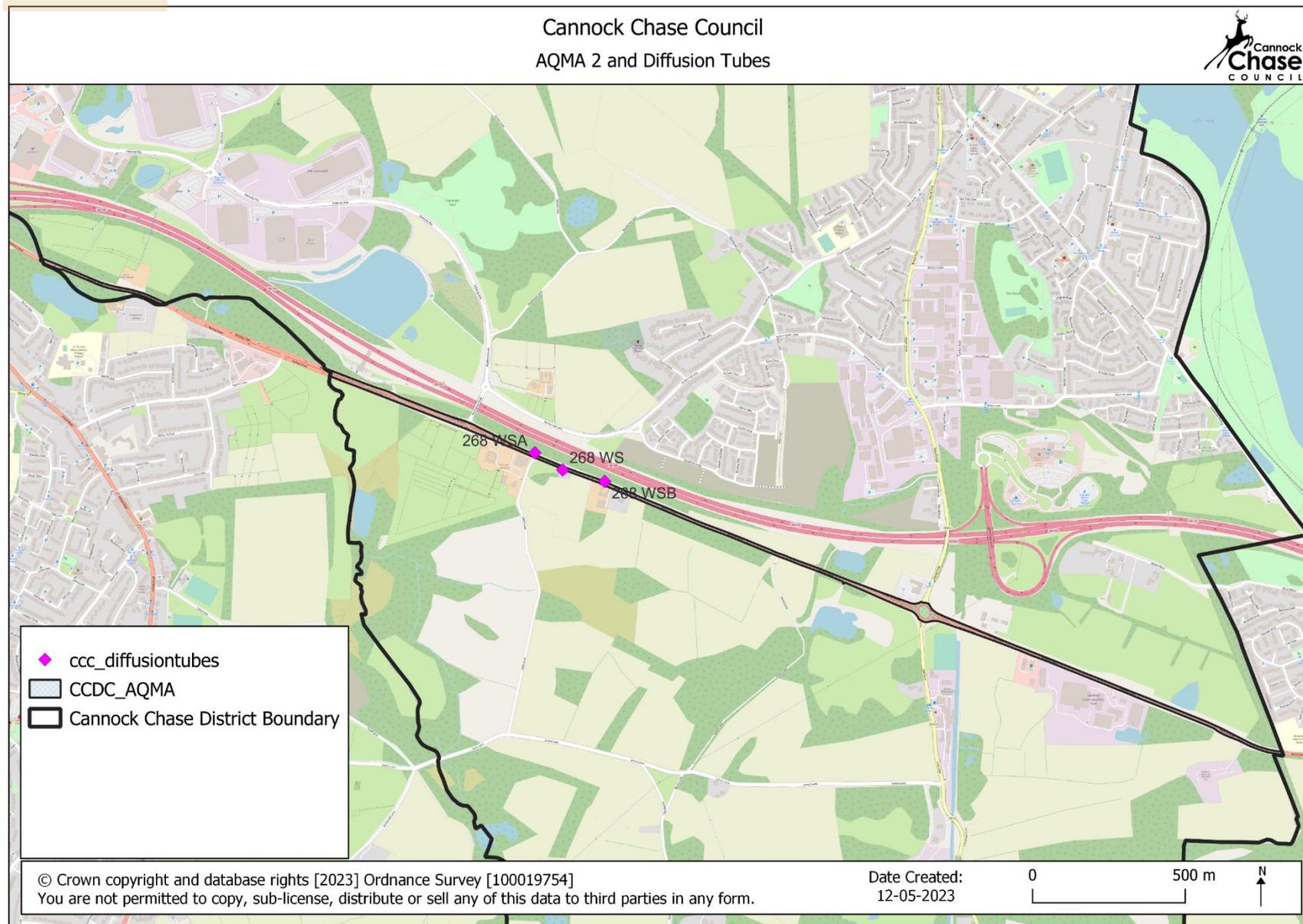


Figure D.6 – AQMA 2 Monitoring Locations

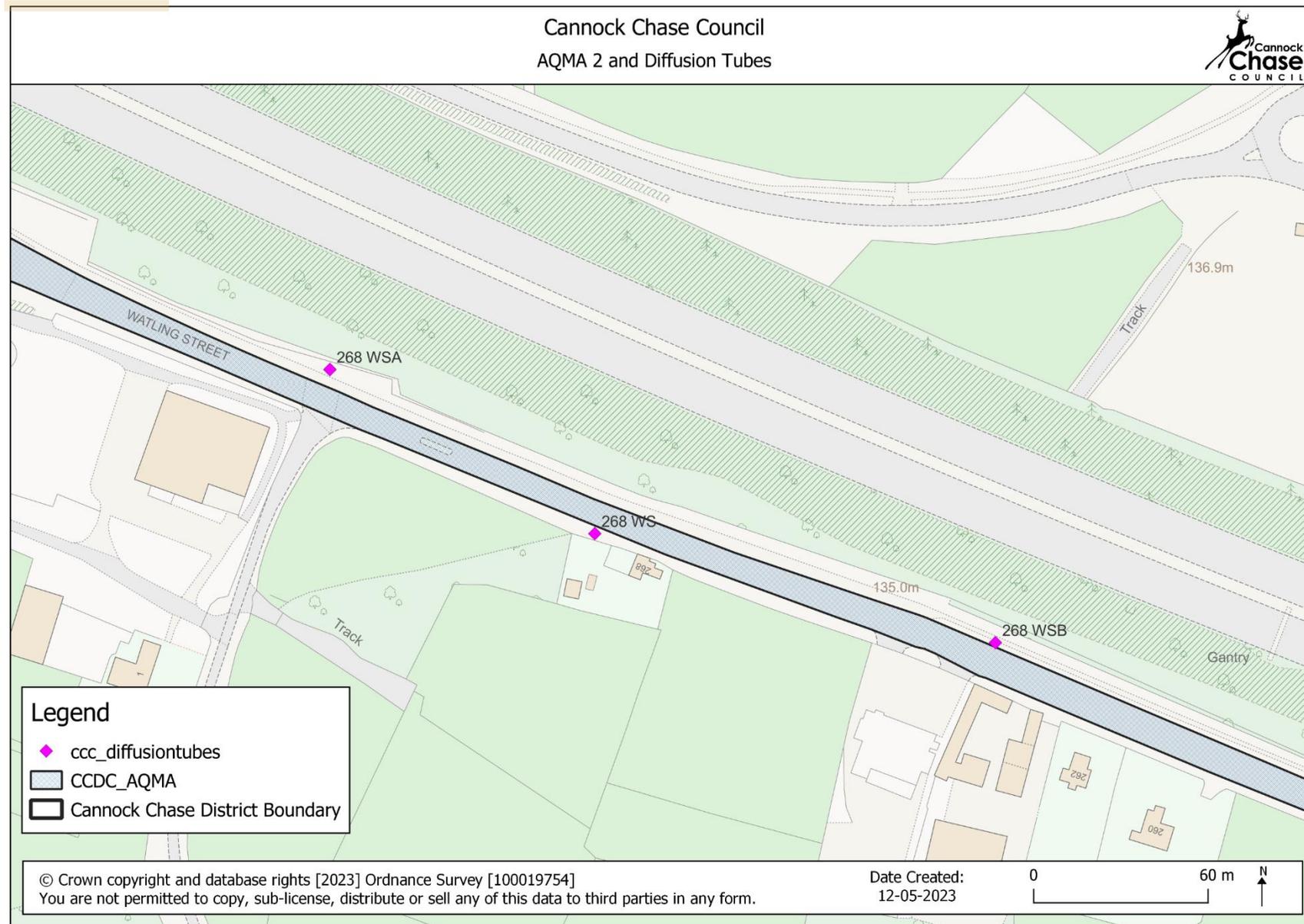


Figure D.7 – AQMA 3 Overview

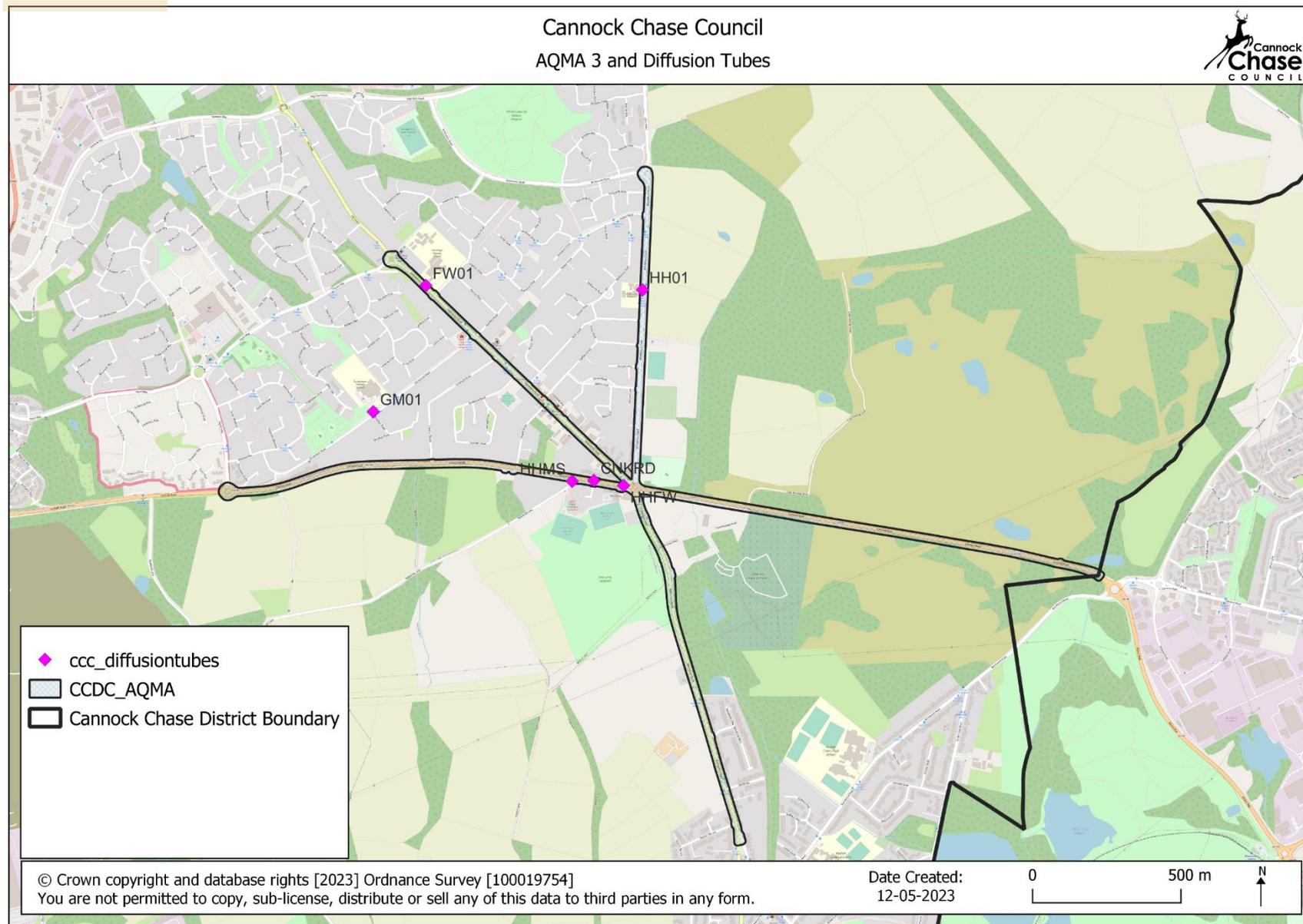
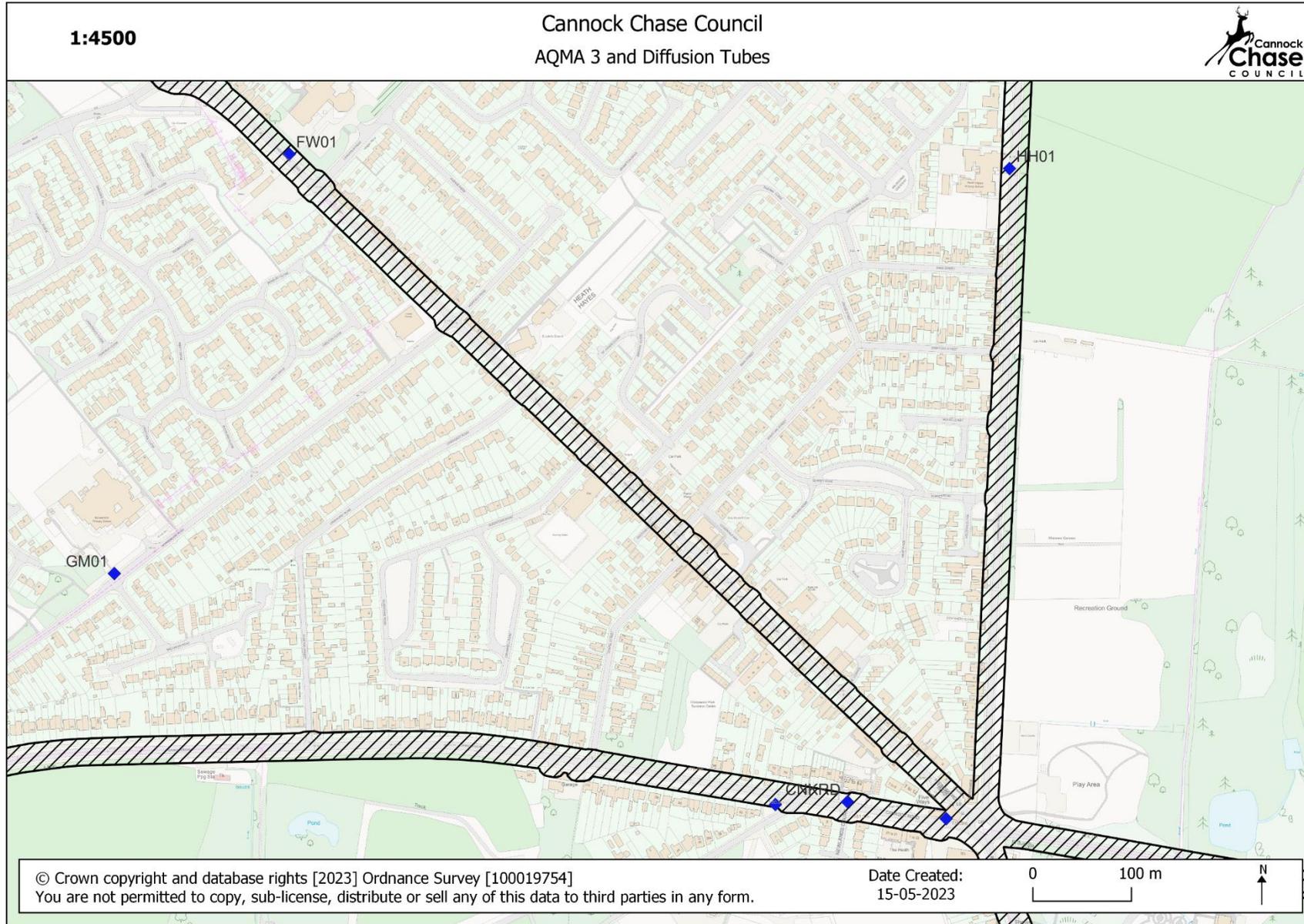


Figure D.8 – AQMA 3 Monitoring Locations



## Appendix E: Summary of Air Quality Objectives in England

**Table E.1 – Air Quality Objectives in England<sup>7</sup>**

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO <sub>2</sub> )	40µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM <sub>10</sub> )	40µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	125µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	266µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>7</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## 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
AURN	Automatic and Urban Rural Network - The AURN is the UK's largest automatic monitoring network and is the main network used for compliance reporting against the Ambient Air Quality Directives. It includes automatic air quality monitoring stations measuring oxides of nitrogen (NO <sub>x</sub> ), sulphur dioxide (SO <sub>2</sub> ), ozone (O <sub>3</sub> ), carbon monoxide (CO) and particles (PM <sub>10</sub> , PM <sub>2.5</sub> ). These sites provide high resolution hourly information which is communicated rapidly to the public using a wide range of electronic, media and web platforms.
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 <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

- 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.