Annual Progress Report (APR)

2025 Air Quality Annual Progress Report (APR) for Midlothian Council in fulfilment of Part IV of the Environment Act 1995, as amended by the Environment Act 2021

Local Air Quality Management

July 2025

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Executive Summary: Air Quality in Our Area

Air Quality in Midlothian

Midlothian covers 354 square miles and has a growing population in excess of 97,000 (June 2022 Census). It is the fastest growing local authority in Scotland with forecast population increase to be around 31% increase between 2018 and 2043 (rising to approximately 119,637).

It lies in the east-central lowlands, bordering the City of Edinburgh, East Lothian and the Scottish Borders local authority areas. Edinburgh is 20 minutes by car from Midlothian's centre and Edinburgh airport is 30 minutes away.

Its area encompasses seven urban centres and is surrounded by a hinterland of rural communities. Much of its population is within its seven urban centres of Bonnyrigg, Penicuik, Dalkeith, Mayfield, Gorebridge, Loanhead and Danderhall. The county is largely a countryside setting stretching from the Pentland Hills to the Moorfoots and Lammermuirs incorporating arable farming and livestock community. Some of this landscape is protected by Green Belt designation.

A schematic map of Midlothian is shown in Appendix D, Figure 1. The new town of Shawfair in the North East of Midlothian remains under development and will include approximately 4,000 new homes, schools, commercial and retail use.

There are currently no large industrial processes in very close proximity to housing in Midlothian and the main issues with regards to air quality are due to road traffic emissions, particularly in the town and village centres. Another issue is domestic solid fuel combustion due to the rural setting of Midlothian and limited mains gas supply to some villages. This issue was addressed in the village of Pathhead with the installation of a new gas main.

The report sets out the results of air quality monitoring carried out by Midlothian Council since the Annual Progress Report in 2024 and considers the potential impacts from a range of sources such as road traffic and other transport emissions, industrial processes, commercial and domestic fuel use and fugitive emission sources.

A network of Nitrogen Dioxide diffusion tubes is maintained throughout the district. The locations are shown in Appendix D, figures 2 to 8. The 2024 monitoring results indicate that concentrations measured at all locations are well within the annual mean air quality objective. Given that this has been the case for the past few years, a review of site locations was undertaken and as a result 10 of the 18 tubes sites were relocated for the 2025 reporting year. Details of the considerations made under the NO_2 monitoring location review are detailed in section 6.3.

Actions to Improve Air Quality

- Midlothian Council has previously achieved significant improvements in air quality in Dalkeith and in the village of Pathhead, two areas of historical concern.
- The improvement in Pathhead in terms of PM_{10}, allowed Midlothian Council to revoke the Pathhead AQMA which was declared in 2008. There are no outstanding Air Quality Managements Areas in Midlothian.
- Midlothian Council forms part of East Central Scotland Vehicle Emissions Partnership, together with West Lothian Council, East Lothian Council, Falkirk Council, Stirling Council and Scottish Government. The remit of the Vehicle Emissions Partnership is to promote a 'Switch Off' campaign help reduce vehicle emissions by encouraging drivers to switch off their engine whenever possible, educating the general public and by handling idling complaints.
- Midlothian Council supports and encourages the development of a 'green network' to promote active travel by walking and cycling and which will form part of the Central Scotland Green Network. Further information is available in the Midlothian Council Travel Plan, which is available on Midlothian Council website: www.midlothian.gov.uk. Midlothian Council is currently updating their travel plan.
- Initiatives to move towards a cleaner Council fleet have been in place for several years. Council staff have access to electric cars to use on local business trips, providing an eco-friendly way of travelling. This fleet has recently been increased.
- Midlothian Council encourages staff to actively travel to work, promoting a pool bike scheme to staff and promoting interest free loans to purchase a bicycle through the tax free Government 'Bike Purchase Scheme'.

Local Priorities and Challenges

Midlothian Council has committed to operating a revised programme of NO_2 monitoring in 2025. We continue participation in the East Central Scotland Vehicle Emission Partnership and will fulfil our obligations under the statutory monitoring and reporting requirements.

How to Get Involved

Members of the public can find out further information on the ‘Switch Off’ Campaign, how they can get involved and can report concerns about smoky or idling vehicles on our partnership website: http://switchoffandbreathe.org

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1 Local Air Quality Management

This report provides an overview of air quality in Midlothian Council during 2024. 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 pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by Midlothian Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO_2)	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Particulate Matter (PM_{10})	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2021
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO_2)	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m^3	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003

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 must prepare publish and implement an Air Quality Action Plan (AQAP) within the shortest possible time and no later than 12 months of the date of AQMA Designation Order. The AQAP must set out measures the local authority intends to put in place in pursuit of the objectives within the shortest possible time Measures should be provided with milestones and a final date for completion. The action plan itself should have a timescale for completion and for revocation of the AQMA. Where measures to reduce air pollution may require a longer timescale an action plan shall be reviewed and republished within five years of initial publication and then five-yearly thereafter.

Midlothian Council currently does not have any AQMAs.

2.2 Implementation of Air Quality Action Plan(s) and/or measures to address air quality

In order to ensure that local authorities implement the measures within an action plan by the timescales stated within that plan, the Scottish Government expects authorities to submit updates on progress through the APR process. Although Midlothian Council does not have any AQMAs, therefore no requirement to publish an AQAP, it has however taken forward a number of measures within 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1.

Table 2.1 – Progress on Measures to Improve Air Quality

No	Measure	Category	Expected/ Actual Completion year	Organisations Involved	Status	Funding Status	Key Milestones	Progress	Barriers to implementation
1	East Central Scotland Vehicle Emissions Partnership (VEP)	Promoting low emission transport	2017 onwards	Midlothian, West Lothian, East Lothian, Falkirk & Stirling Councils and Scottish Government	Ongoing	Fully funded via VEP. Annual funding from S Gov Air Quality Resource (Action Planning) and Local Air Quality Management grants	All service requests are assessed by East Central Vehicle Emissions Partnership and used to identify any emerging trends	Ongoing Funding has been directly allocated to VEP scheme operators	Annual funding reviews
2	*'Midlothian On the Move': Active travel strategy for everyone 2024-2034*	Alternatives to private vehicle use Promoting travel alternatives	2024-2034	Midlothian Council	Ongoing	Part funded. Transport Scotland ATIF Tier 2 Fund Sustrans Network Funding Transport Scotland 'People and Place' funding	Full implementation by 2034 with annual delivery reviews	43 Council owned publicly accessible EV charging points within Midlothian (March 2024)	Annual funding reviews and applications
3	The development and extension of the National Cycle Network (NCN) (*Midlothian Local Development Plan 2017)*	Promoting travel alternatives	2017 onwards	Midlothian Council	Ongoing	2024/25 Sustrans Network Development Fund	New local plan (MLDP2) being developed MLDP2 evidence report prepared	Ongoing	None identified but will be considered in the Active Travel Strategy and MLDP2
4	Locating development where it can easily access the Borders Rail and other public transport	Policy guidance and development control	2017 onwards	Midlothian Council	Ongoing	Not funded	New local plan (MLDP2) being developed MLDP2 evidence report being prepared	Ongoing	None identified, will be considered in MLDP2

No	Measure	Category	Expected/ Actual Completion year	Organisations Involved	Status	Funding Status	Key Milestones	Progress	Barriers to implementation
5	*Midlothian Hybrid working Policy:* Promoting a reduction in work related travel, travel out with peak times.	Promoting travel alternatives	2017 onwards	Midlothian Council	Ongoing	Not funded	Digital service training rolled out to all staff	Ongoing	Variable level of IT competency across the workforce
6	Incorporating high speed broadband connections and other digital technologies in new housing developments to facilitate home working and reduction in travel (Midlothian Local Development Plan 2017)	Promoting travel alternatives	2017 onwards	Midlothian Council	Ongoing	Not funded. The 2017 MLD plan requires developers to deliver technology infrastructure as part of the development	New local plan (MLDP2) being developed. MLDP2 Evidence Report prepared.	Ongoing	None identified, but will be considered in MLDP2
7	A requirement for cycle parking to be incorporated into the layout of new housing development.	Promoting travel alternatives	2017 onwards	Midlothian Council	Ongoing	Not funded. The 2017 plan required developers to deliver cycle parking as part of their development.	New local plan (MLDP2) being developed. MLDP2 Evidence Report prepared.	Ongoing	None identified, but will be considered in MLDP2
8	Dedicated routes to encourage walking and cycling to work and for recreation and leisure.	Promoting travel alternatives	2017 onwards	Midlothian Council	Ongoing	Developer contributions 2022/23 onwards Sustrans “Places for Everyone” programme fund 2024/25 Sustrans Network Development Fund Transport Scotland ATIF Tier 1, ATIF Tier 2 and People and Place funds.	New local plan (MLDP2) being developed. MLDP2 Evidence Report prepared	Ongoing	None identified, but will be considered in MLDP2

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Midlothian Council does not undertake any automatic (continuous) monitoring within the authority's area.

3.1.2 Non-Automatic Monitoring Sites

Midlothian Council undertook non- automatic (passive) monitoring of NO_2 at 18 sites during 2024. Table A. in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.1.3 Other Monitoring Activities

No other monitoring activities were undertaken in 2024.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for annualisation and bias. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.2 in Appendix A compares the adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3 at non automatic monitoring sites. Charts A.1 to A.6 present these trends in $N0_2$ data per area since 2020.

For diffusion tubes, the full 2024 dataset of monthly mean values is provided in Appendix B.

There are no exceedances of the air quality objective for NO_2 in 2024 or any of the 4 years proceeding this. For this reason, Midlothian Council is not declaring an AQMA.

3.2.2 Particulate Matter (PM_{10})

Midlothian Council does not monitor for PM_{10}.

3.2.3 Particulate Matter ($PM_{2.5}$)

Midlothian Council does not monitor for $PM_{2.5}$.

3.2.4 Sulphur Dioxide (SO_2)

Midlothian Council does not monitor for SO_2

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

Midlothian Council does not monitor for Carbon Monoxide, Lead or 1,3-Butadiene

4 New Local Developments

There have been no major developments in Midlothian in 2024 which may adversely affect air quality.

4.1 Road Traffic Sources

In Midlothian there have been no new changes to road traffic sources in 2024 which may impact on air quality such as:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed
- Roads with significantly changed traffic flows.
- Roads with new/changed layout
- Bus or coach stations.

4.2 Other Transport Sources

In Midlothian there have been no other changes to major transport source in 2024 such as:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

4.3 Industrial Sources

There have been no major developments in Midlothian in 2024 which required AQIA or met the criteria of:

- **Industrial installations**: new or proposed installations for which an air quality impact assessment has been carried out.
- **Industrial installations**: existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- **Industrial installations**: new or significantly changed installations with no previous air quality impact assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.

4.4 Commercial and Domestic Sources

In 2024 work continued on the new 'Destination Hillend' development. This development required an Environmental Impact Assessment of which an Air Quality Impact assessment (AQIA) formed part. This AQIA concluded that the development of Destination Hillend will have negligible impact on air quality in the surrounding area. There have been no developments in 2024 within Midlothian which met the criteria of:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.
- Combined Heat and Power (CHP) plant.

4.5 New Developments with Fugitive or Uncontrolled Sources

There has been no newly constructed/operational:

- Landfill sites
- Quarries
- Unmade haulage roads on industrial sites.
- Waste transfer stations, etc
- Other potential sources of fugitive particulate matter emissions.

within Midlothian Council area in 2024.

5 Planning Applications

As the fastest growing Local Authority, Midlothian Council has received a number of planning applications some of which could have an impact on local air quality.

Planning application 24/00338/DPP relates to a mixed use development in Loanhead including Class 1A (shops), Class II (assembly and leisure) and class 4 (business) with associated infrastructure. NO_2 monitoring during the past 5 years in Loanhead has recorded annual mean levels significantly below the statutory objective of 40 $\mu g/m^3$.

Planning application 24/00415/DPP - Erection of high school, ASN facility, community facilities, swimming pool and veterinary clinic; formation of sports pitches, car parking, access roads and SUDS; and associated works at Land East and West of Seafield Moor Road, Bilston, Roslin.

Planning application 24/00102/S42 seeks to amend current conditions in relation to a peat workings site in Penicuik to address recent amenity complaints. NO_2 monitoring during the past 5 years in Penicuik has recorded annual mean levels significantly below the statutory objective of 40 $\mu g/m^3$.

There have been three applications relating to the extension of the duration of permissions at Temple Quarry extraction and processing sites.

- Planning application 24/00161/S42, seeks amendment of consent 12/00384/DPP to extend the timeframe of quarry extraction operations. It was supported by an environmental impact assessment report and Environmental Health were consulted for comment.
- Planning application 24/00162/S42 also seeks amendment of consent 12/00387/DPP to extend the timeframe of operations at a quarry processing plan. This application was also accompanied by an environmental impact assessment report and Environmental Health were consulted for comment.
- Planning application 24/00163/S42 seeks amendment of consent 12/00388/DPP to extend the timeframe of operations and was accompanied by an environmental impact assessment and Environmental Health were consulted for comment

Planning application 24/00423/DPP - Extraction and processing of sand and gravel, construction of field conveyor system including underpass, and post extraction restoration works in Gorebridge. This relates to a new extraction site close to the existing site and was accompanied by an environmental impact assessment. Environmental Health were consulted and reported no objection in terms of air quality. This application is pending consideration.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

In 2024 all passive Diffusion Tubes measured NO_2 below the statutory annual mean objective. The highest reading Diffusion Tube (ED1, Dalkeith) recorded an annual mean of 19.6 µg/m^3 of NO_2 which is significantly below the statutory objective of 40 µg/m^3. No NO_2 monitoring sites breached the short-term statutory objective in 2024.

Only three of the diffusion tube sites showed a slight increase from 2023 levels, all of which were less than 1µg/m^3. The remaining 15 sites returned static or decreased levels since 2023 and all decreases were less than 2µg/m^3. The 5 year data supports a stable trend of NO_2 levels at monitoring sites being significantly below the statutory objective.

6.2 Conclusions relating to New Local Developments

As in the last few years, a large number of sites in Midlothian are currently under development for housing, following allocation in the Midlothian Local Development plan. Sites within the wider Shawfair area, which contains the villages of Millerhill, Danderhall and Newton and extending to Cauldcoats Farm, close to the boundary with the City of Edinburgh Council continue to be developed.

6.3 Proposed Actions

The last detailed review of diffusion tubes took place in 2019 and advice from appraisal of Midlothian's 2023 Annual Progress Report was to review site locations.

We consulted with the Scottish Environmental Protection Agency and internally with Midlothian Council Climate Change Officer, Planning Services and Roads & Transportation Services. We also paid consideration to:

- The 2025-2027 delivery programme for adoption of the Midlothian Local Development Plan (2017) - The current development plan for Midlothian Development plans and policies | Midlothian Council)
- Midlothian Local Development Plan interactive map: https://www.midlothian.gov.uk/info/205/planning_policy/458/housing_land_audit

- The 2024 Housing Land Audit for the location, scale and programming of new housing development https://www.midlothian.gov.uk/info/205/planning_policy/458/housing_land_audit

As a result of our review we have relocated 10 of the 18 monitoring sites. The locations for 2025 monitoring are shown below in table 6.1 and their geographical spread across Midlothian Council is shown in Appendix D Figure 9.

Table 6.1 – Revised NO2 locations from 2025

Site ID	Location
SF1	Harelaw, Shawfair
MH1	Cocklerow Gardens, Millerhill
ED1	Edinburgh Rd, Dalkeith
ND1	Newmills Rd, Dalkeith
EB1	Eskbank Rd, Dalkeith
BD1	Buccleuch St, Dalkeith
DC1	Dalkeith Campus
LW3	Lasswade High School, Bonnyrigg
BR1	High St, Bonnyrigg
LW1	High St, Lasswade
LW2	High St, Lasswade
SN1	Straiton Road, Loanhead
SN2	Straiton Rd, Loanhead
P2	Edinburgh Rd, Penicuik
BN1	Moorfoot View, Bilston
NG1	Murderdean Rd, Newtongrange
MF1	Blackot Drive, Mayfield
GB1	Swan Crescent, Gorebridge

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with Continuous Analyser?	Tube Height (m)
SWN	Shawfair	Roadside	330662	670904	NO_2	N	0	1.5	N	2.2
SWS	Shawfair	Roadside	330309	669685	NO_2	N	0	1.5	N	2.3
ED1	Dalkeith	Roadside	333206	667372	NO_2	N	0.1	1.5	N	2.2
ND1	Dalkeith	Roadside	333410	667059	NO_2	N	2	1.5	N	2.25
DL1	Dalkeith	Roadside	333247	667073	NO_2	N	0	1.5	N	2.4
BD1	Dalkeith	Roadside	333055	667183	NO_2	N	0.1	1.5	N	2.3
DDC	Dalkeith	Roadside	334887	667957	NO_2	N	0	1.5	N	2.15
PD1	Pathhead	Roadside	339601	664172	NO_2	N	3	1.5	N	2.45
BER	Bonnyrigg	Roadside	331798	665894	NO_2	N	0	1.5	N	2.45

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with Continuous Analyser?	Tube Height (m)
BCR	Bonnyrigg	Roadside	331424	664808	NO_2	N	0	1.5	N	2.2
BR1	Bonnyrigg	Roadside	330895	665229	NO_2	N	0	1.5	N	2.2
LW1	Lasswade	Roadside	330343	666138	NO_2	N	0	1.5	N	2.15
LW2	Lasswade	Roadside	330470	666125	NO_2	N	0	0.5	N	2.2
LH1	Loanhead	Roadside	328242	665585	NO_2	N	2.3	0.9	N	2.2
PGP	Penicuik	Roadside	324824	662115	NO_2	N	0	1.5	N	2.3
PBH	Penicuik	Roadside	324168	661503	NO_2	N	0	1.5	N	2.55
P2	Penicuik	Roadside	323677	661000	NO_2	N	2.5	2.5	N	2.2
SN2	Loanhead	Roadside	327262	666588	NO_2	N	0	3.6	N	2.3

Notes:

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

(2) N/A if not applicable.

Table A.2 – 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 2024 (%) [2]	2020	2021	2022	2023	2024
SWN	330662	670904	Roadside	n/a	100.0	21.4	18.0	16.6	15.0	14.7
SWS	330309	669685	Roadside	n/a	100.0	14.3	15.8	7.7	11.6	9.6
ED1	333206	667372	Roadside	n/a	100.0	21.3	23.1	18.5	19.6	19.6
ND1	333410	667059	Roadside	n/a	92.5	22.3	21.6	19.5	20.7	18.3
DL1	333247	667073	Roadside	n/a	100.0	21.5	20.8	16.8	15.9	16.8
BD1	333055	667183	Roadside	n/a	92.5	19.0	19.5	15.3	15.4	16.8
DDC	334887	667957	Roadside	n/a	90.6	7.1	6.1	4.5	6.6	5.9
PD1	339601	664172	Roadside	n/a	100.0	9.2	10.4	7.4	8.7	8.5
BER	331798	665894	Roadside	n/a	100.0	13.8	8.8	7.7	8.3	8.0
BCR	331424	664808	Roadside	n/a	100.0	8.1	7.5	6.1	7.6	5.5
BR1	330895	665229	Roadside	n/a	100.0	17.6	17.4	14.0	16.0	11.8

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 2024 (%) [2]	2020	2021	2022	2023	2024
LW1	330343	666138	Roadside	n/a	100.0	20.9	16.5	13.6	13.8	13.3
LW2	330470	666125	Roadside	n/a	90.6	28.0	23.2	19.5	20.0	19.1
LH1	328242	665585	Roadside	n/a	100.0	17.0	12.6	11.7	12.7	11.1
PGP	324824	662115	Roadside	n/a	100.0	7.1	6.7	5.3	6.7	6.3
PBH	324168	661503	Roadside	n/a	100.0	11.6	8.2	7.6	9.5	7.4
P2	323677	661000	Roadside	n/a	100.0	19.2	14.4	13.2	13.5	13.3
SN2	327262	666588	Roadside	n/a	100.0	26.5	21.7	19.6	17.8	18.9

☒ **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:

Exceedances of the NO_2 annual mean objective of 40 µg/m^3 are shown in bold.
NO_2 annual means exceeding 60 µg/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.TG(22) 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%)

Chart A.1 – Dalkeith Annual Mean NO2 Monitoring

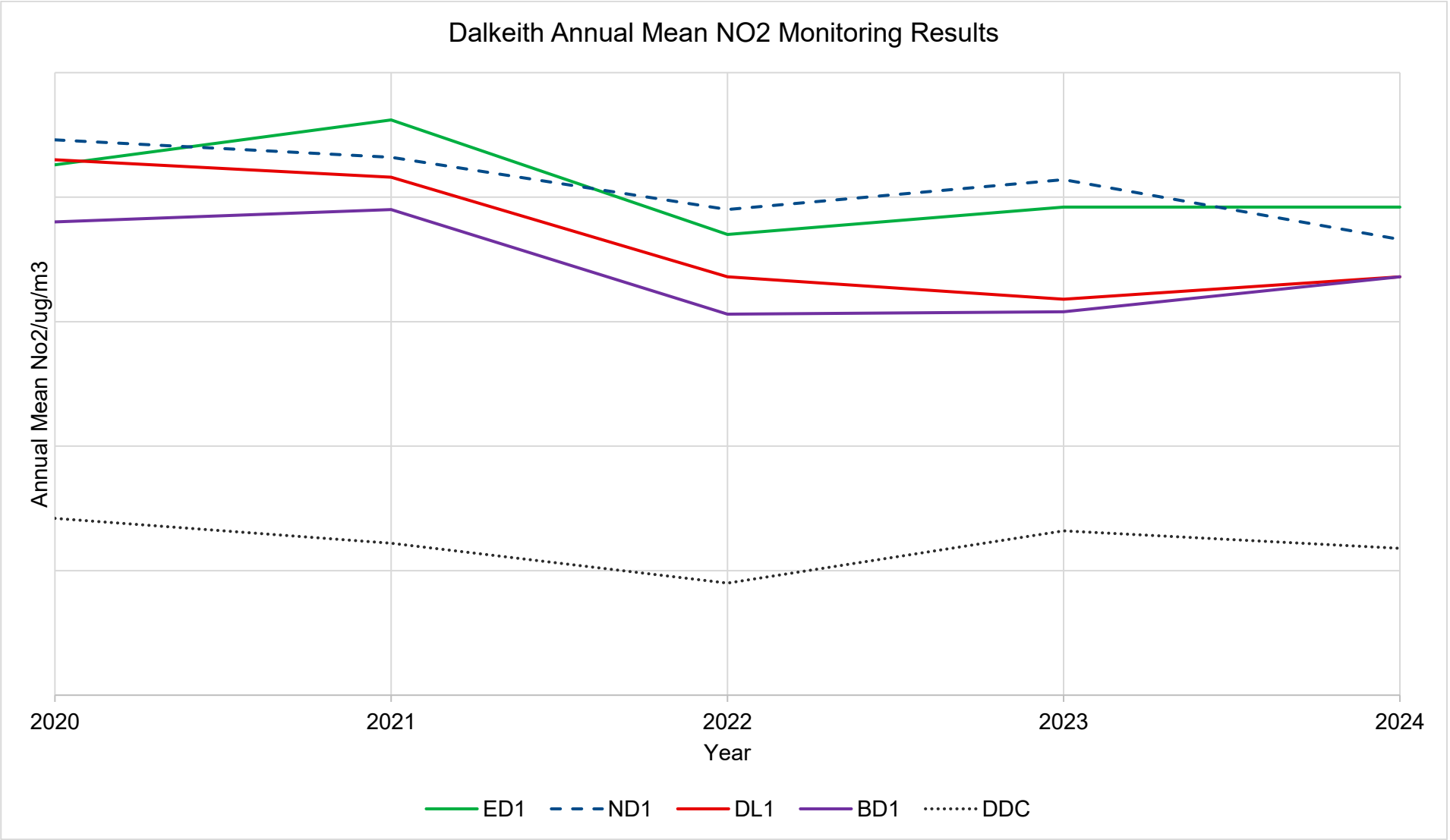


Chart A.2 – Lasswade Annual Mean NO2 Monitoring

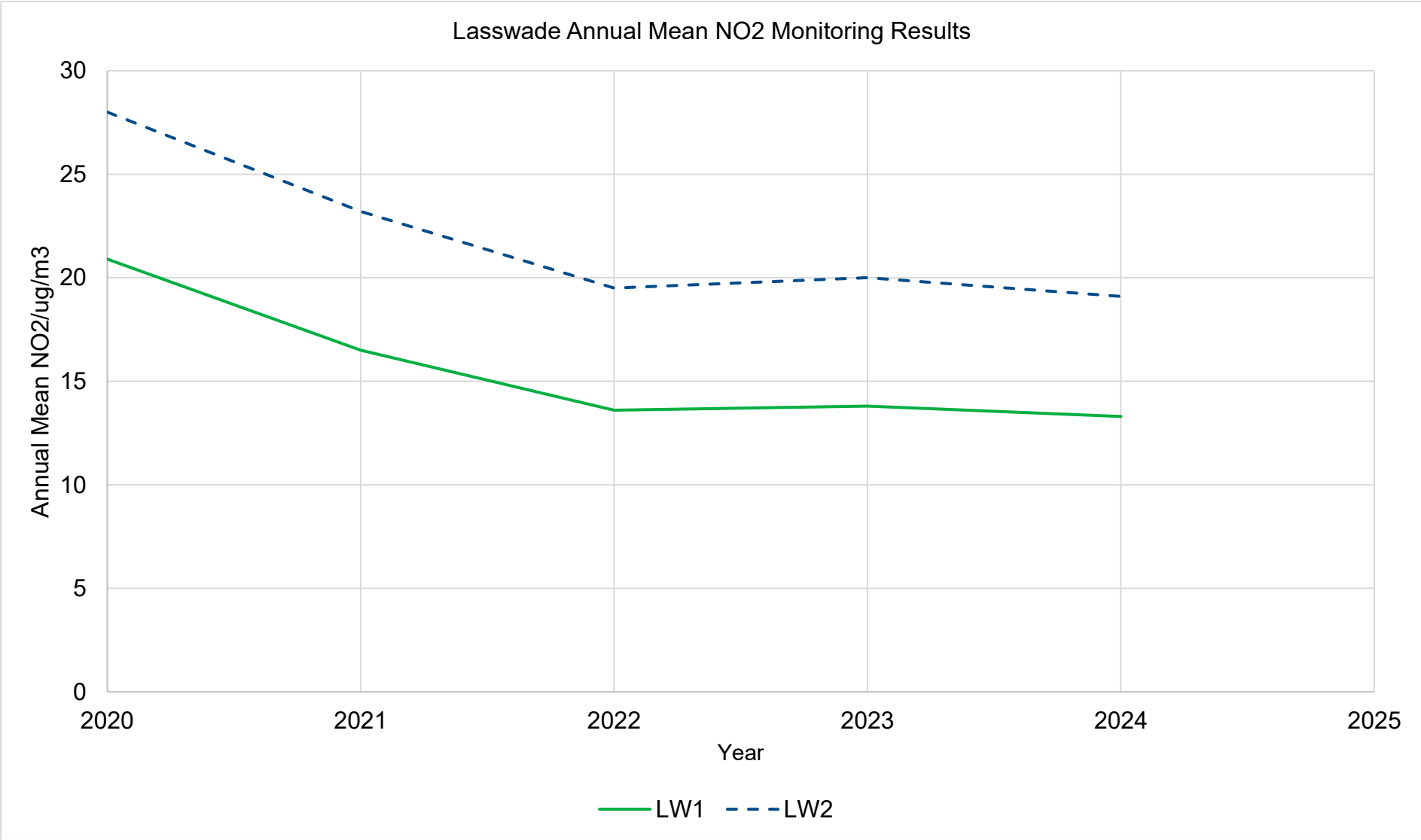


Chart A.3 – Loanhead Annual Mean NO2 Monitoring

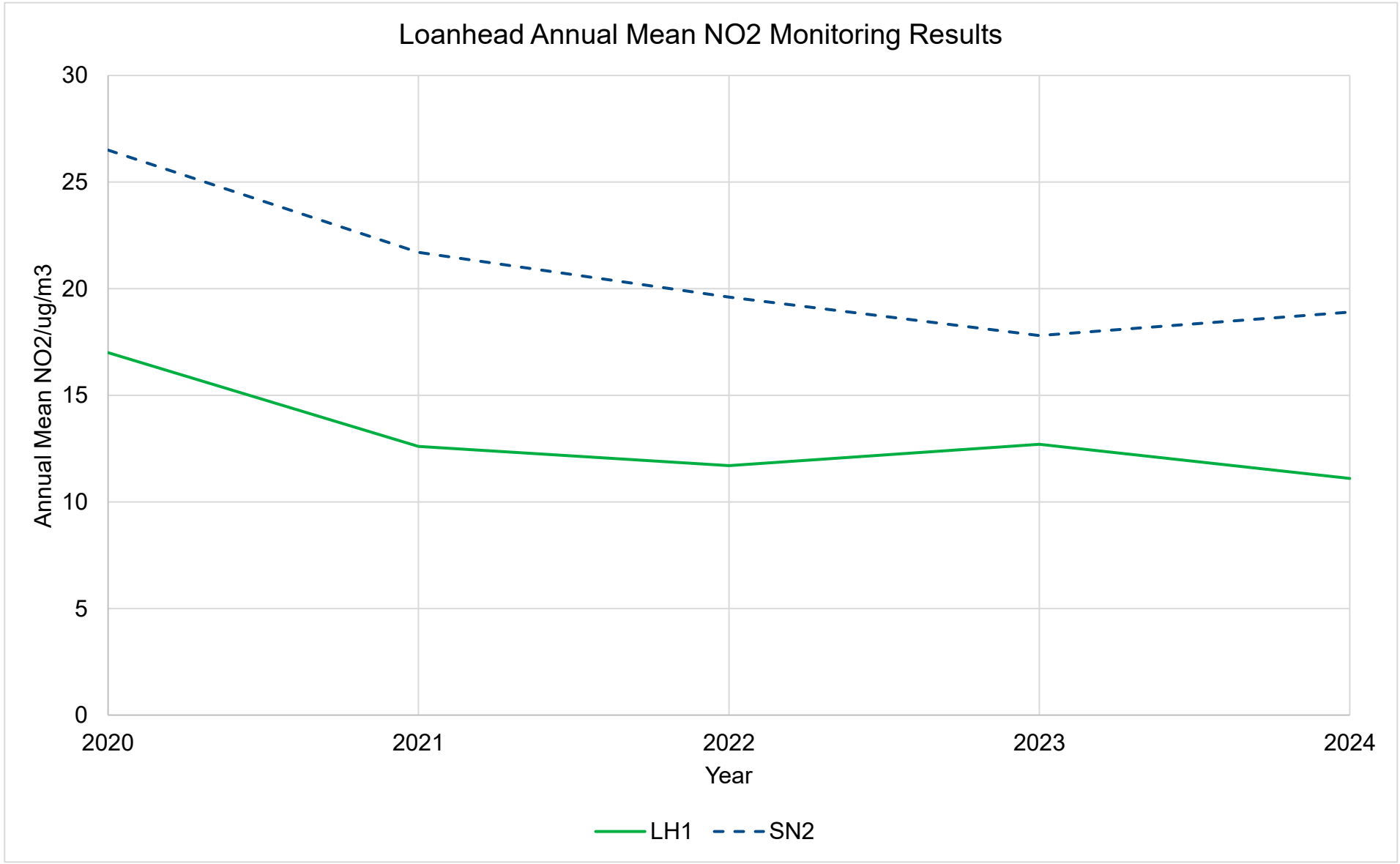


Chart A.4 – Penicuik and Pathhead Annual Mean NO2 Monitoring

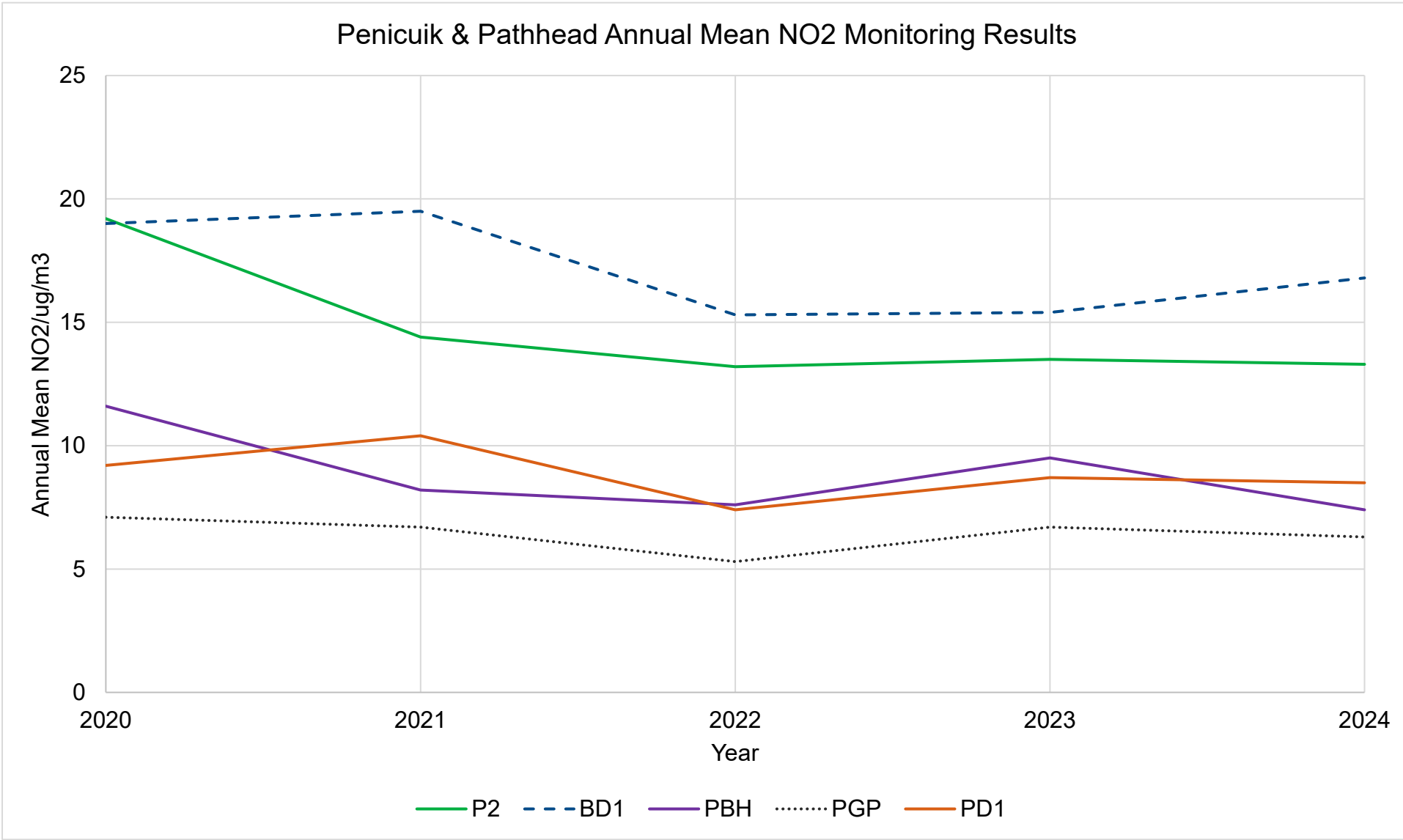


Chart A.5 – Shawfair Annual Mean NO2 Monitoring

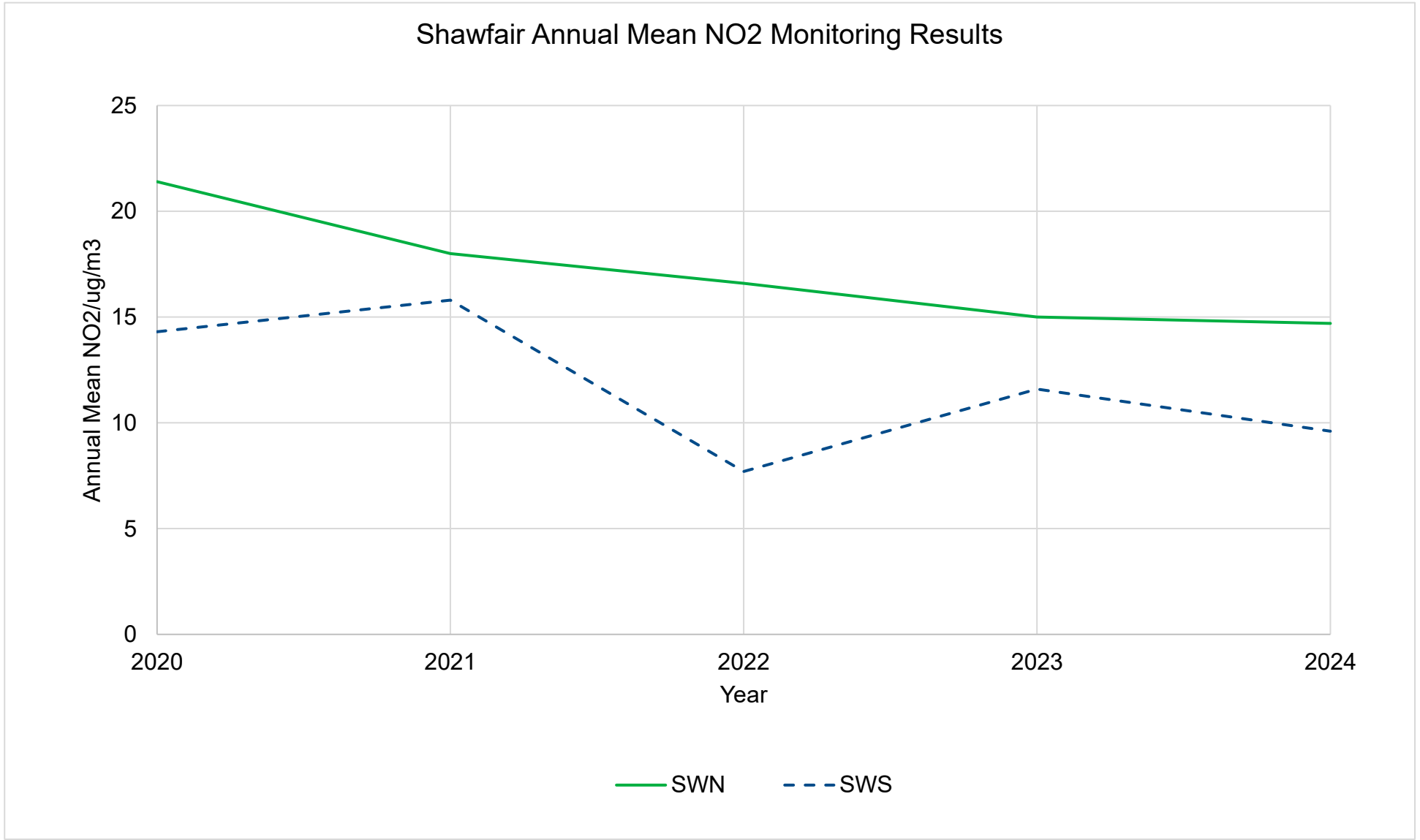
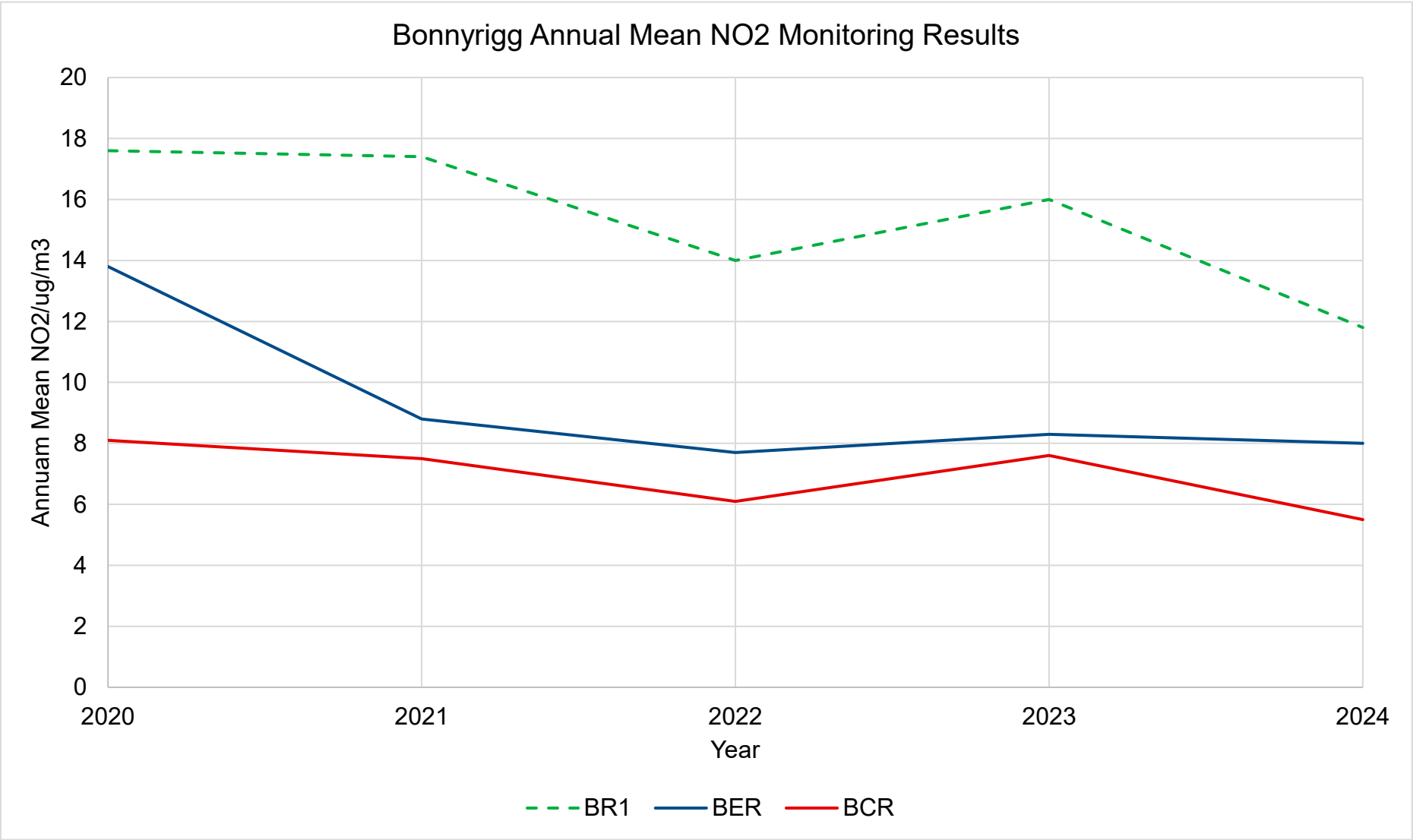


Chart A.6 – Bonnyrigg Annual Mean NO2 Monitoring



Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Monthly 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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
SWN	330662	670904	17.2	16.6	9.6	10.8	14.6	20.3	16.0	18.6	17.0	20.3	25.3	18.8	17.1	14.7		
SWS	330309	669685	15.9	12.3	12.8	8.5	10.0	6.7	9.3	8.1	9.7	11.6	17.3	11.2	11.1	9.6		
ED1	333206	667372	24.4	23.6	31.5	26.0	30.6	16.9	18.3	14.0	27.8	20.4	22.1	18.5	22.8	19.6		
ND1	333410	667059	7.4	28.1	26.9		25.9	18.3	20.1	24.4	24.8	23.0	13.3	22.5	21.3	18.3		
DL1	333247	667073	20.6	20.9	22.9	16.5	21.6	16.4	13.3	18.2	18.7	22.3	24.7	18.8	19.6	16.8		
BD1	333055	667183	14.5	23.2	25.4	20.1	23.6	15.1		14.4	21.9	19.0	20.8	17.4	19.6	16.8		
DDC	334887	667957	8.8	8.2	8.2	4.9	6.1	4.4	4.4	4.3	7.7		12.2	6.5	6.9	5.9		
PD1	339601	664172	8.7	9.4	13.6	9.4	12.0	7.9	7.5	5.9	12.9	10.6	12.8	8.5	9.9	8.5		
BER	331798	665894	9.9	11.9	12.2	7.0	4.8	6.4	7.0	6.1	10.6	11.7	12.9	10.9	9.3	8.0		
BCR	331424	664808	7.9	6.0	11.3	5.2	7.0	2.2	4.8	3.3	7.9	7.7	9.0	4.0	6.4	5.5		

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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
BR1	330895	665229	17.1	15.5	1.8	12.1	19.6	12.0	12.6	9.2	15.9	15.4	18.8	14.1	13.7	11.8		
LW1	330343	666138	16.4	17.6	18.6	10.2	16.0	11.6	12.2	10.2	21.0	15.2	19.0	16.9	15.4	13.3		
LW2	330470	666125	25.0	22.5	27.9	19.8		17.4	18.9	19.8	23.3	22.8	18.9	28.2	22.2	19.1		
LH1	328242	665585	14.6	13.0	17.3	12.6	17.7	9.6	12.0	9.3	16.7	12.9	4.4	14.2	12.9	11.1		
PGP	324824	662115	8.4	8.0	9.8	4.0	6.8	4.9	5.2	4.5	6.8	7.7	13.1	8.8	7.3	6.3		
PBH	324168	661503	10.0	11.2	7.6	6.3	9.0	6.2	6.1	6.7	8.4	10.6	12.3	8.6	8.6	7.4		
P2	323677	661000	16.3	14.9	18.1	13.1	16.1	11.8	12.5	11.6	18.1	18.5	21.4	13.0	15.5	13.3		
SN2	327262	666588	24.3	23.59.	30.3	19.0	21.6	13.6	16.3	14.3	17.0	23.4	35.5	26.2	22.0	18.9		

☒ **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.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**

☒ **Midlothian Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

NO_2 annual means exceeding 60 µg/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 Midlothian Council During 2024

Midlothian Council has not identified any new sources relating to air quality within the reporting year of 2024.

Additional Air Quality Works Undertaken by Midlothian Council During 2024

Midlothian Council has not completed any additional works within the reporting year of 2024.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are analysed by Edinburgh Scientific Services (ESS) using the 50% triethanolamine (TEA) in acetone method.

ESS has confirmed that the procedures set out in the Harmonisation Practical Guidance are followed during the analysis. The laboratory is UKAS accredited for the analysis and also participates in the Workplace Analysis Scheme for Proficiency (WASP) scheme. ESS has reported that the results from the WASP scheme confirm that the laboratory is performing satisfactorily. The laboratory uses the 50% v/v triethanolamine (TEA) in acetone method where the adsorbent pads are dipped into this solution, dried and then inserted into the acrylic diffusion tubes.

All exposure periods were aligned to the national diffusion tube monitoring calendar. Midlothian Council sends an unexposed (control) tube with each batch to verify that there has been no contamination during handling or analysis.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Midlothian Council recorded data capture of at least 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

Midlothian Council have applied a national bias adjustment factor of 0.86 to the 2024 monitoring data. A summary of bias adjustment factors used by Midlothian Council over the past five years is presented in Table C.1.

Bias adjustment factors are determined by DEFRA using comparable studies according to site type and analysis methodology used. DEFRA selected 7 comparable studies including:

- 1 kerbside site at Marylebone Road, London
- 1 roadside site from Stirling Council
- 4 roadside sites from Edinburgh Council
- 1 kerbside site from Edinburgh Council

As listed in the Spreadsheet of Bias Adjustment Factors June 2025 (Ref. 06/25).

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	06/25	0.86
2023	National	03/24	0.81
2022	National	03/23	0.81
2021	National	09/22	0.85
2020	National	09/22	0.85

NO_2 Fall-off with Distance from the Road

No diffusion tube NO_2 monitoring locations within Midlothian Council required distance correction during 2024.

Appendix D: Diffusion tube location maps

Figure 1: Midlothian boundary with key towns, villages and significant roads

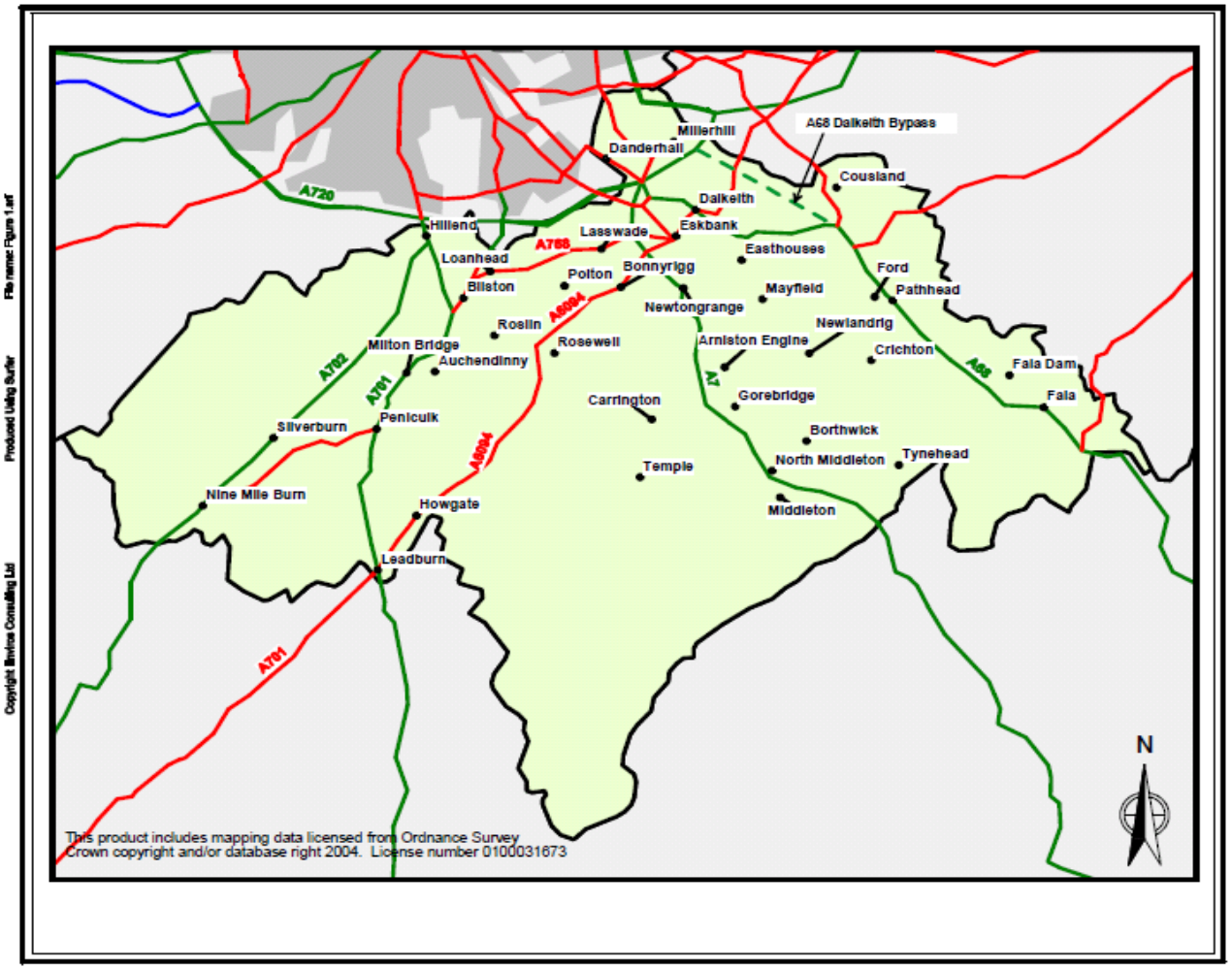


Figure 2: Diffusion tube and (decommissioned) automated monitoring station location, Dalkeith

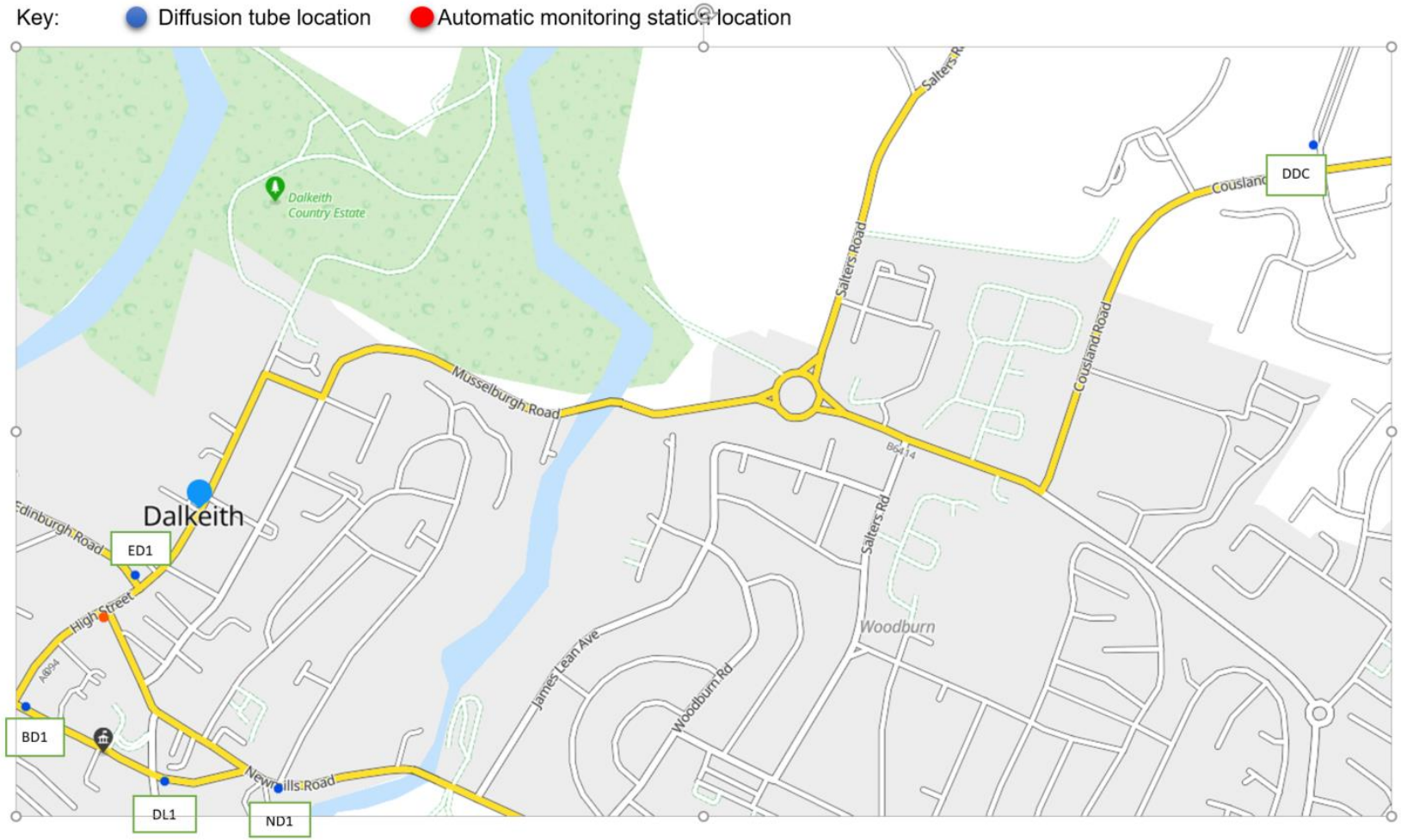


Figure 3: Diffusion tube location, Pathhead (note: automated monitoring station now removed)

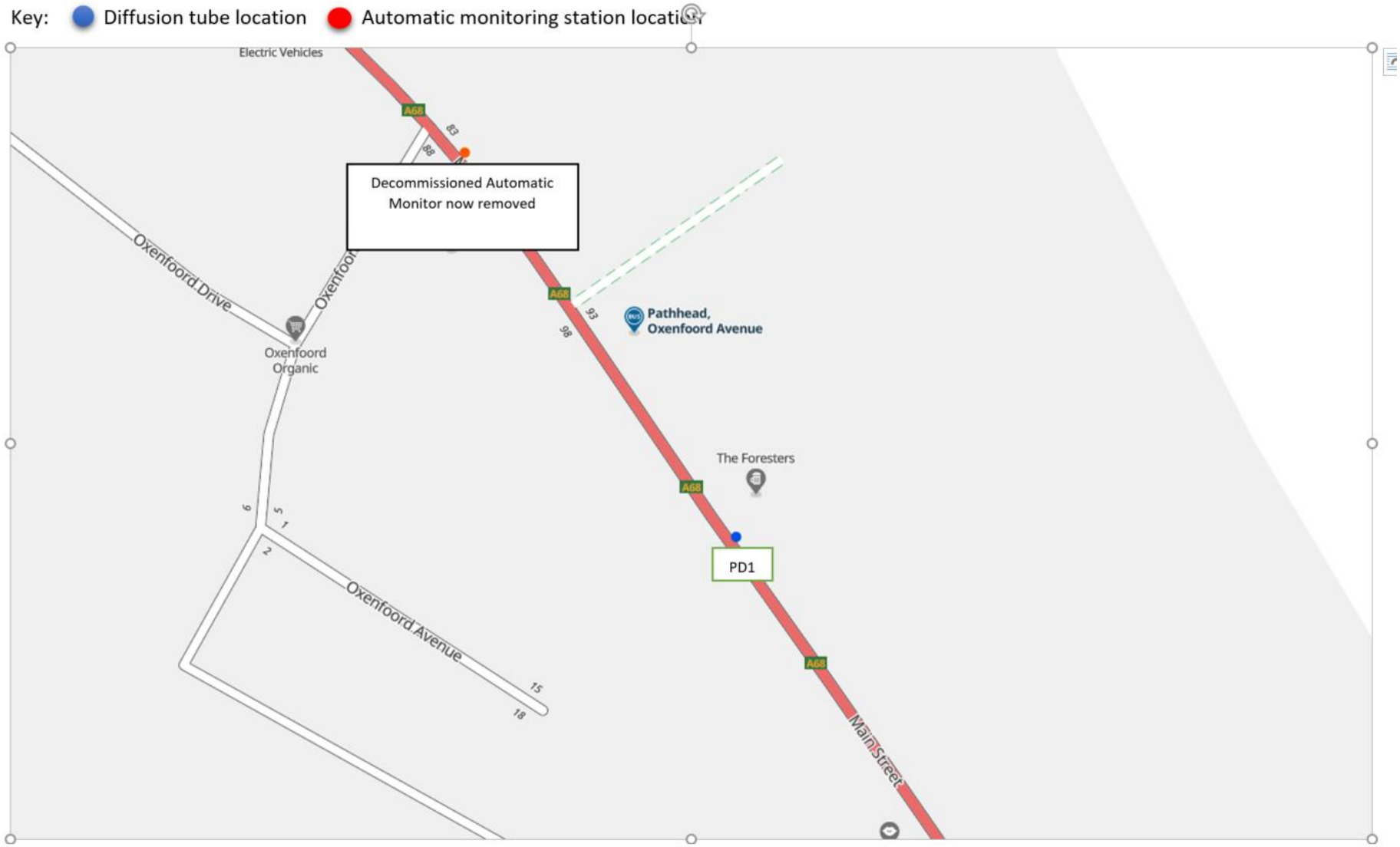


Figure 4: Diffusion tube location, Penicuik

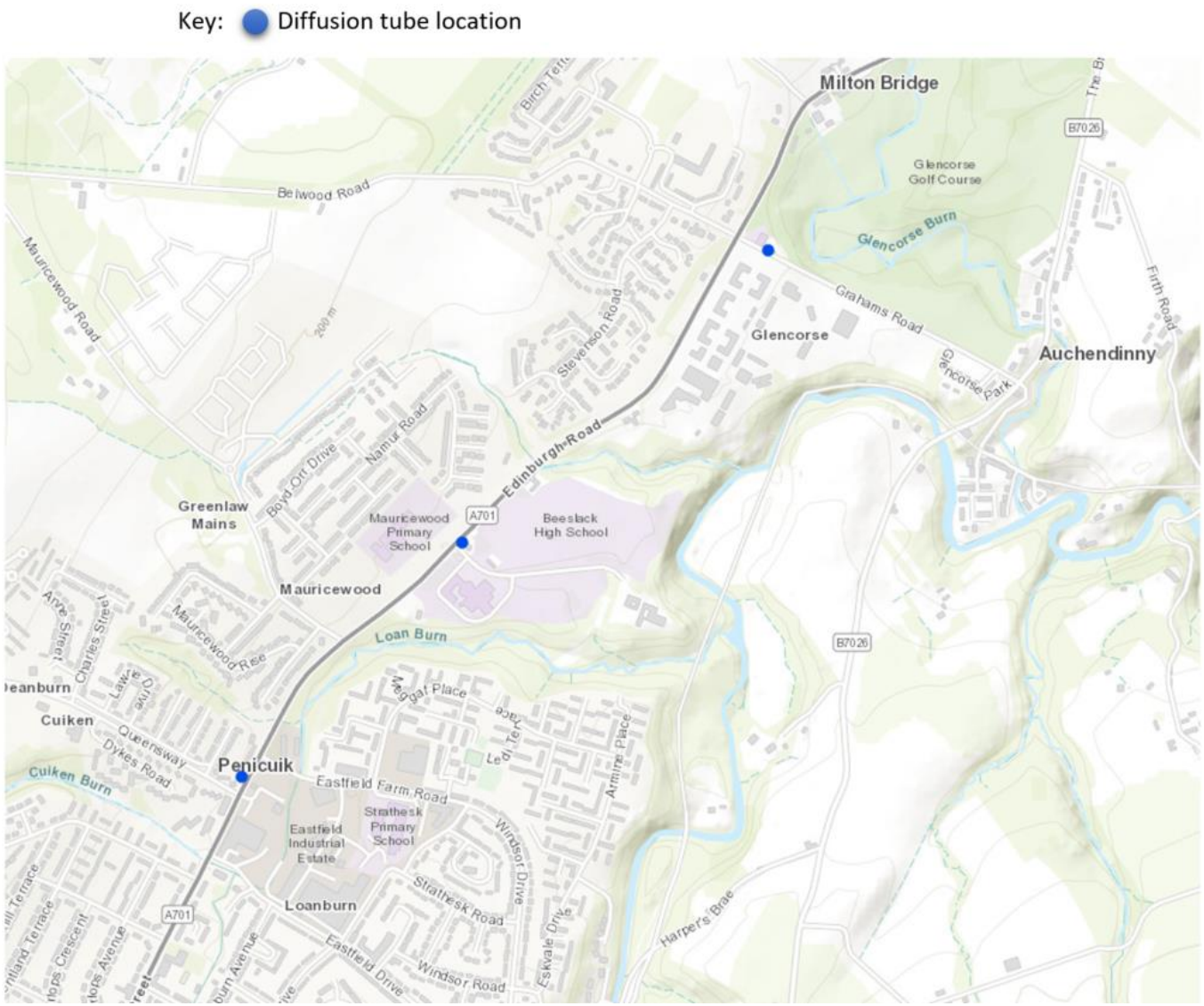


Figure 5: Diffusion tube location, Bonnyrigg

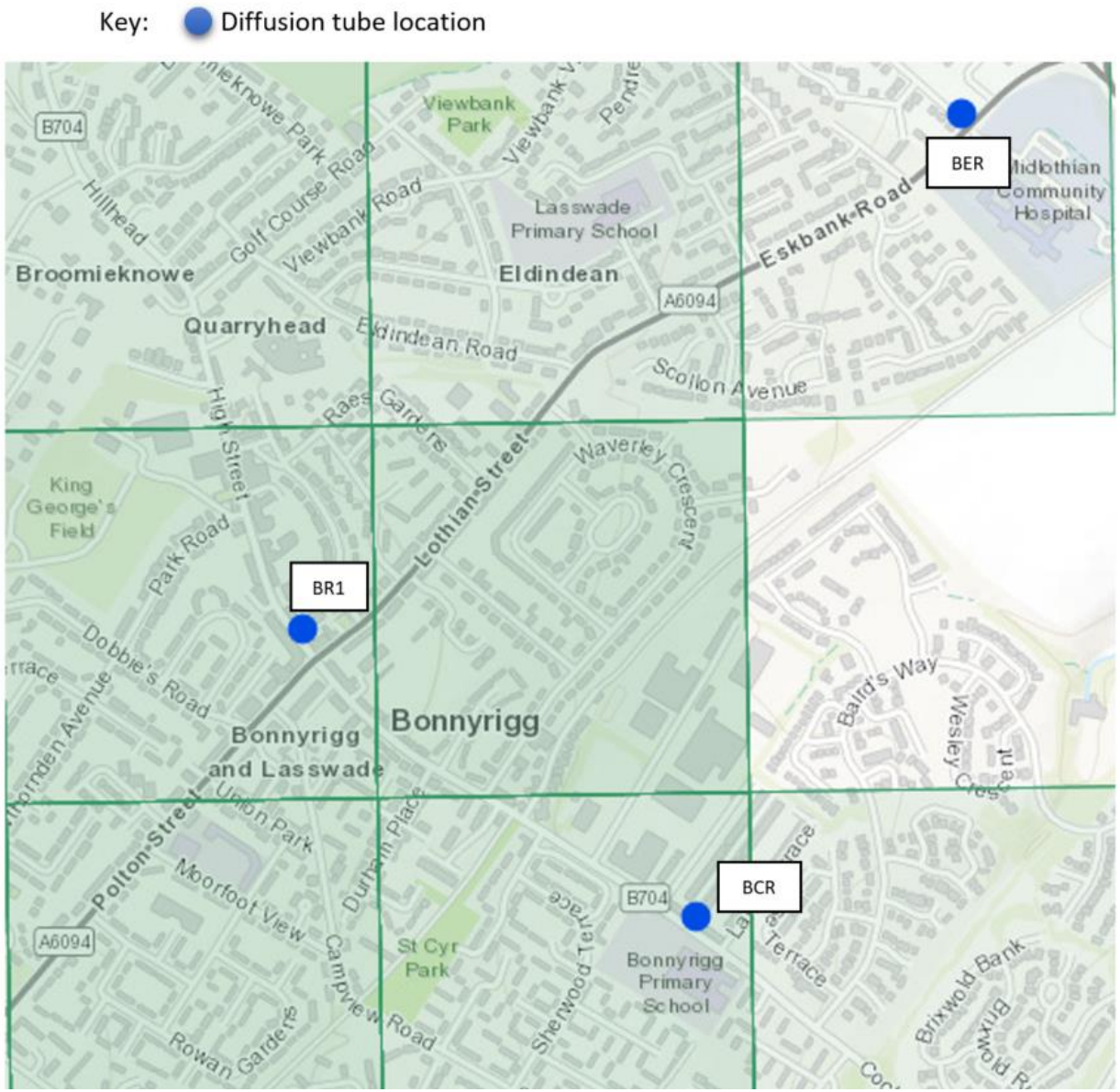


Figure 6: Diffusion tube location, Loanhead

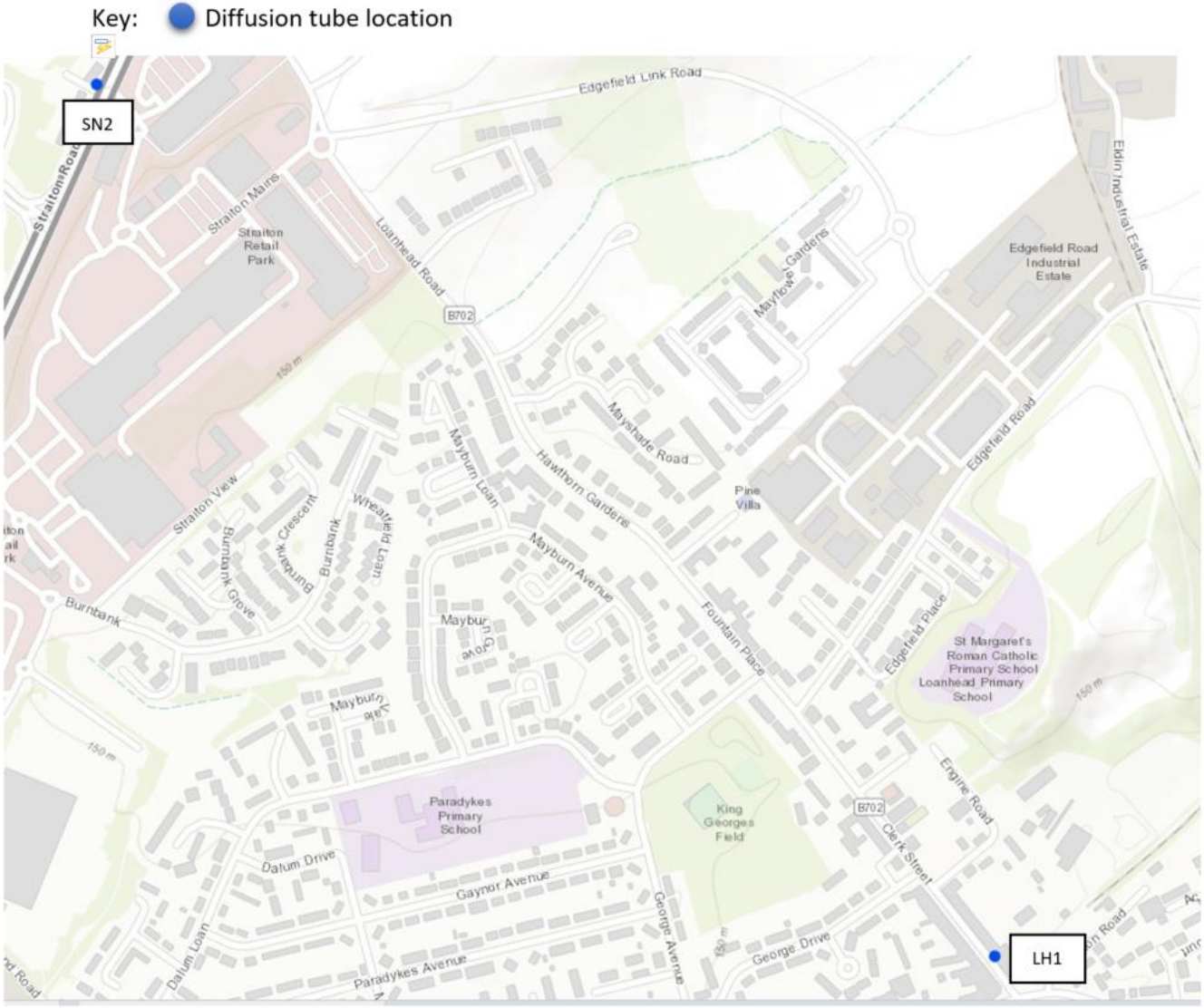


Figure 7: Diffusion tube location, Lasswade

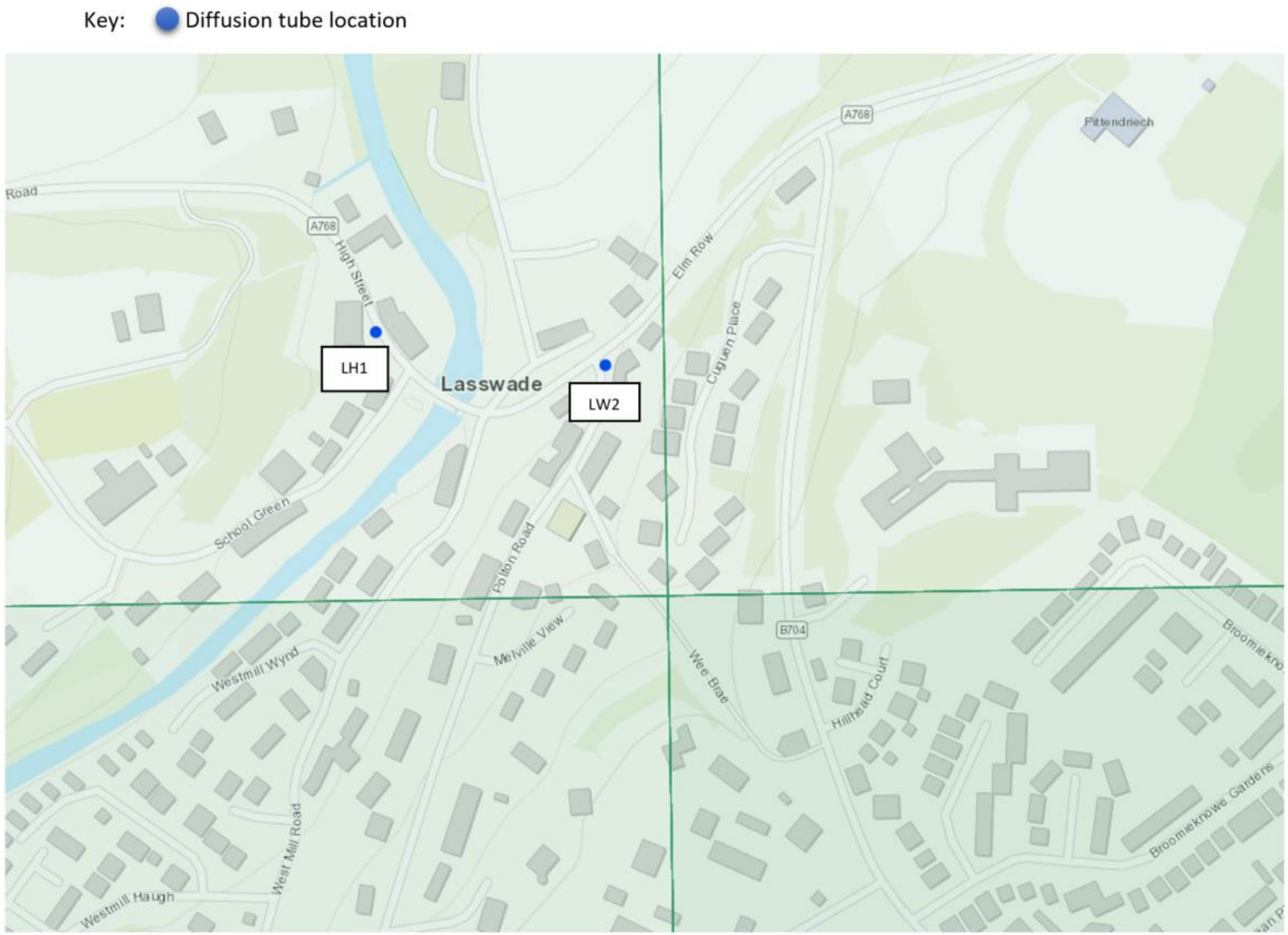


Figure 8: Diffusion tube location, Shawfair

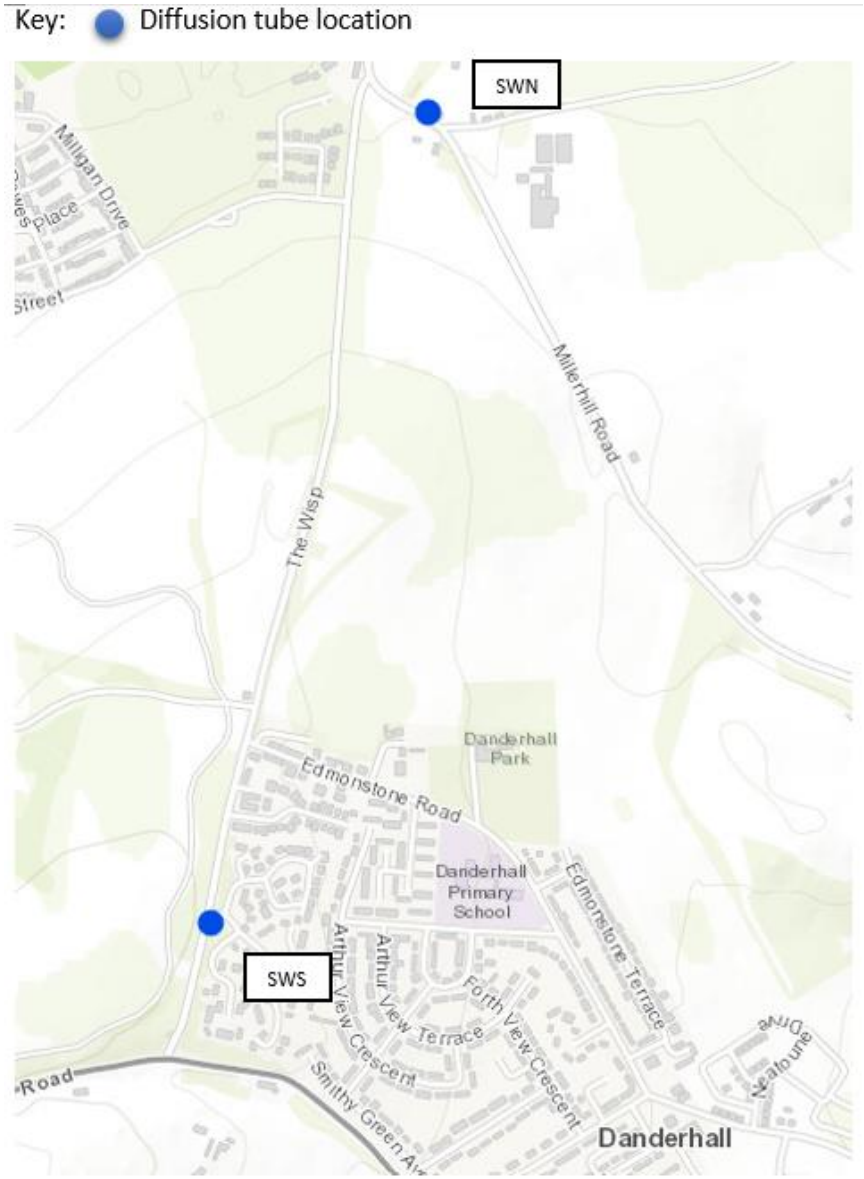
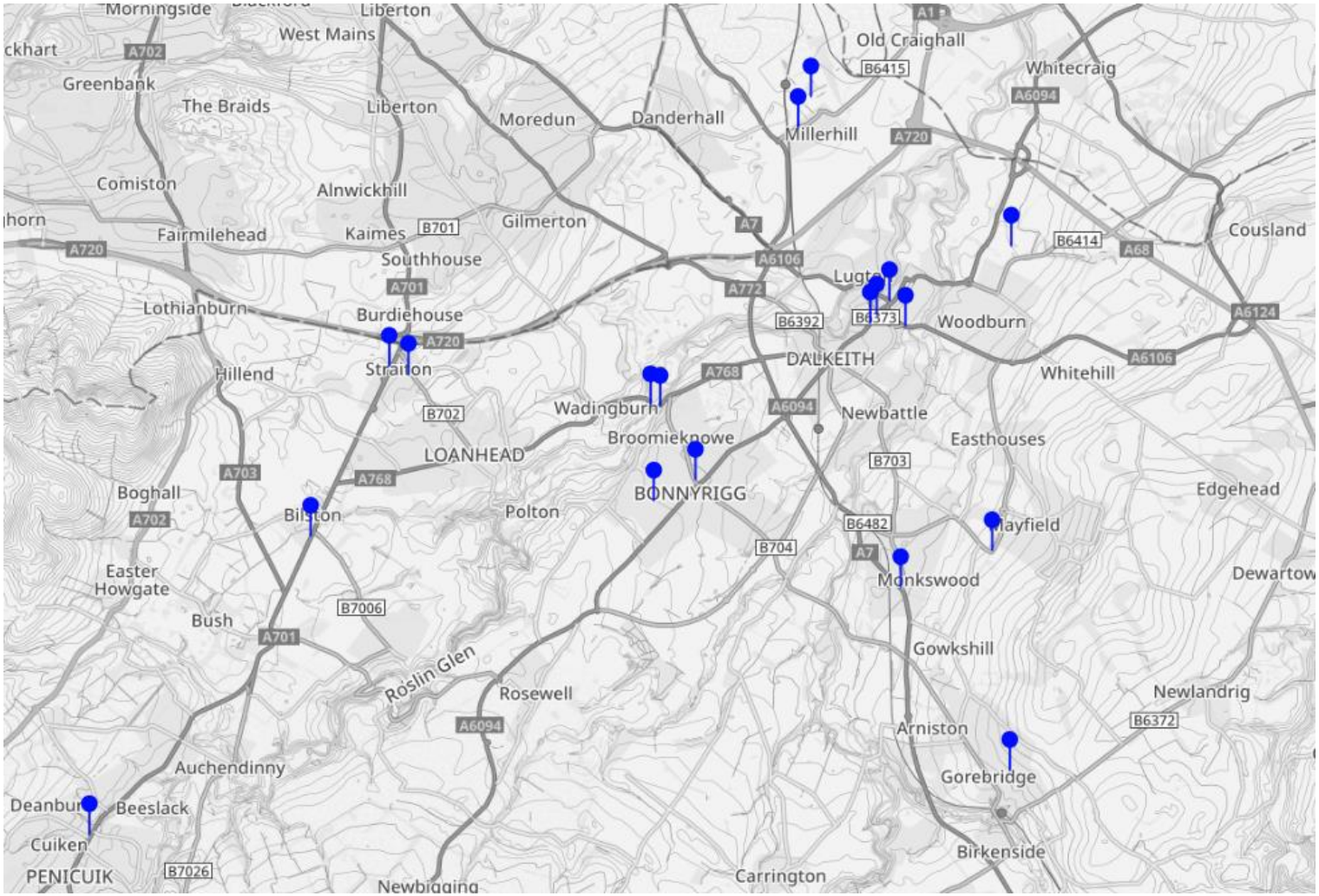


Figure 9: Geographical spread of revised NO2 monitoring locations from 2025



Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA 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
APR	Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
DEFRA	Department for Environment, Food and Rural Affairs
DT	Diffusion Tube
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

1. Defra and the Devolved Administrations, Local Air Quality Management, Technical Guidance (TG22), August 2022.
2. Defra and the Devolved Administrations, National Bias Adjustment Factor Spreadsheet (Ref 06/25), accessed at National Bias Adjustment Factors | LAQM (defra.gov.uk)
3. Switch Off and Breathe: Vehicle Emissions Partnership https://switchoffandbreathe.org/
4. Midlothian On the Move: Active travel strategy for everyone 2024-2034 https://midlothiancouncil.citizenspace.com/communications/active-travel-and-transport-surveys/
5. Midlothian Council Travel Plan 2017 to 2021 Midlothian Council Travel Plan | Midlothian Council Travel Plan 2017-21
6. Midlothian Local Development Plan 2017 The current development plan for Midlothian | Development plans and policies | Midlothian Council
7. Midlothian Council Local Development Plan 2 Midlothian Local Development Plan 2 | Development plans and policies | Midlothian Council
8. The 2025-2027 delivery programme for adoption of the Midlothian Local Development Plan (2017) - The current development plan for Midlothian Development plans and policies | Midlothian Council)
9. Midlothian Local Development Plan interactive map: https://www.midlothian.gov.uk/info/205/planning_policy/458/housing_land_audit
10. The 2024 Housing Land Audit for the location, scale and programming of new housing development https://www.midlothian.gov.uk/info/205/planning_policy/458/housing_land_audit