2020 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management

7th September 2020

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Executive Summary: Air Quality in Our Area

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

Air Quality in Craven

Craven District Council is principally a rural district and there are few areas within the district that are of concern regarding poor air quality. The main sources of air pollution in the district is from vehicles on the road network, the burning of fuel on domestic appliances and the operation of commercial activities such as Part B industries i.e. biomass incineration plants, quarries etc. Air pollutants of concern are oxides of nitrogen and particulate matter

Craven District Council reinstated its nitrogen dioxide monitoring program in 2017 following a 4-year suspension and are committed to meeting its responsibility to provide an air quality assessment of the district.

The Council undertake monitoring of nitrogen dioxide in areas most affected by high flows of traffic and traffic congestion where human receptors live in close proximity. Since the monitoring program was reinstated it has been identified that results across the district have consistently returned annual running mean values below the government's air quality objective of 40µg/m3. As a result, the Council has not at any time identified the need to progress to more in-depth analysis or needed to progress to declaring an AQMA anywhere in the district.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Actions to Improve Air Quality

Nitrogen dioxide monitoring has continued to be monitored at the same sites as in 2018. However, in 2019, Station Road, Crosshills, was included in the programme as this roadside location is impacted by road congestion, especially during the school term months; the largest school in the district is located at the top of this particular road. The congestion is a consequence of high volumes of motor vehicles using the road and the fact that there is a busy junction located at the top of the road which is also impacted by two sets of pelican crossings. Monitoring on this road will allow the Council to assess the impact of such traffic on long term residential receptors at the roadside.

In 2020 the Council has expanded its monitoring programme and installed a further 6 diffusion tubes in areas with high flows of traffic with nearby residential receptors, these diffusion tubes will allow the Council to obtain further data on the air quality in the district. If the results of any of the nitrogen dioxide monitoring indicate an upward trend with exceedance(s) of the air-quality objective, then Craven District Council will take the steps required by the Local Air Quality Management (LAQM) Policy Guidance.

The local authority has also been proactively liaising with local Councillors and residents on Skipton Road, Crosshills about the installation of a diffusion tube in this location. This particular road is frequently impacted by congestion due to a railway crossing and is a serious cause of concern due to idling vehicles including HDVs. There are a number of residential properties alongside this road but there is no road furniture to adequately be used for diffusion tube monitoring. The Council have therefore provisionally agreed with two residents whose properties are on the road to use their shared rainwater downpipe for monitoring, this tube will hopefully be installed in 2021 and should provide vital information on the quality of air at receptor points in this location.

Particulate matter is a growing cause nationally as described in the governments recently published Clean Air Strategy 2019; in order to tackle particulate matter, the Council has smoke control areas within the district which are inspected frequently, if any breaches are identified within these areas the Council act accordingly.

The Council also has an inspection schedule for all the permitted processes within the district; inspections in 2019 found all operators were meeting emission limit values for such pollutants as particulate matter, carbon monoxide etc as specified in their permits.

The Council is aware of new biomass installations being installed throughout the district as part of the commercial renewable heating incentive scheme (RHI). The Council have serious concerns that some operators could be misusing these installations which consequently may give rise to local pollution and it has been determined that some of these installations may also require an environmental permit. The Council have been liaising with Ofgem and have entered into a data sharing agreement which allows the Council to obtain information from Ofgem as to the locations incinerators with a burn rate over 50kg/hr are installed; the Council have actively been inspecting these new boilers and to date six appliances have been covered in new environmental permits. There still remains an outstanding number of new boilers to be inspected, it is the Councils intentions to undertake all such inspections by the end of 2022.

The adoption of Craven District Councils New Local Plan Policy is a positive step to both protecting and improving air quality in the district through the planning process; the plan contains numerous policies that takes into account clean air. This document can be found via the following link https://www.cravendc.gov.uk/media/8733/z-local-plans-ldf-314-local-plan-adoption-2019-lp-adoption-docs-final-adoption-local-plan-pdfs-craven-local-plan-appendices-and-policies-map.pdf

This year North Yorkshire County Council also published its draft 'Air Quality Strategy - Protecting North Yorkshire's Air Quality 2020-2045' which is a county wide strategy with the aim of ensuring that air quality in North Yorkshire is protected; the strategy lists a number of measures to improve air quality in the county which will consequently also positively impact Craven. This document can be accessed via the following link https://www.northyorks.gov.uk/draft-air-quality-strategy-protecting-north-yorkshires-air-quality-2020-2045

Craven has no Air Quality Management Areas (AQMA) within the district.

Conclusions and Priorities

Craven District Council is committed to meeting its responsibility to monitor air quality in the district through its ongoing nitrogen dioxide (NO_2) diffusion tube monitoring program. Monitoring results across the district have consistently returned both monthly and annual running mean values below the government's air quality objective of 40µg/m^3. As a result, the Council has not at any time identified the need to progress to more in-depth analysis, or needed to progress to declaring of an AQMA anywhere in the district.

The priorities for the Council are to maintain air quality in the district and undertake all the steps described under the heading 'Action to Improve Air Quality'.

Local Engagement and How to get Involved

Craven District Council currently has no schemes to help improve air quality, however North Yorkshire County Council works with schools to improve road safety, promote cycling and travel alternatives and travel awareness and offer cycle training to primary school pupils. Members of the public can help by reducing the number of car-driver trips, car sharing, increasing use of public transport and increasing active travel (cycling and walking).

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1 Local Air Quality Management

This report provides an overview of air quality in the Craven District during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

The statutory air quality objectives applicable to LAQM in England can be found in Table C.1 in Appendix E.

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 an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

Craven District currently does not have any AQMAs.

2.2 Progress and Impact of Measures to address Air Quality in the Craven District

Defra's appraisal of last year's ASR concluded that the report is well structured, detailed, and provides the information specified in the Guidance. The appraisal included commentary/provisos listed below:

Commentary

The report represents a significant improvement on last year's report, including addressing the comments from last year's appraisal which is welcomed. The council is encouraged to maintain this for future reports.

1. Trends are presented and discussed and a robust comparison with air quality objectives is provided.
2. The diffusion tube mapping demonstrates the monitoring network.
3. The Council is proposing to inspect all incinerators installed as part of the renewable heating incentive (RHI) scheme with a burn rate over 50kg/hr. The outcome of this should be included in the 2020 ASR.
4. The Council is proposing to introduce a minimum of five additional monitoring sites by 2020. This is welcomed and progress made with this measure should be reported on in next year's report.
5. QA/QC of the data was considered to be thorough, with a national bias adjustment factor used for the non-automatic network; annualisation and distance correction were not required in 2018.

6. The report included measures to address $PM_{2.5}$ and links to the Public Health Outcomes Frameworks. This is encouraged to be continued in future ASRs.
7. Priorities for 2019 were identified, which is welcomed. Progress made on these priorities should be reported on in next year's report.

Craven District Council and North Yorkshire County Council have taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.

On the 12th November 2019 Craven District Council adopted its new Local Plan Policy, a number of policies within this have been created to assist with the improvement of air quality in the district, the local plan can be observed by clicking on the following link https://www.cravendc.gov.uk/media/8733/z-local-plans-ldf-314-local-plan-adoption-2019-lp-adoption-docs-final-adoption-local-plan-pdfs-craven-local-plan-appendices-and-policies-map.pdf

The policies adopted that assist with air quality are summarised in Table 2.1.

North Yorkshire County Council, as local highway authority, has objectives which relate to transport as detailed in their Local Transport Plan four (LTP4). These are summarised in Table 2.1 too. This local plan can be observed by clicking on the following link https://www.northyorks.gov.uk/local-transport-plan

North Yorkshire County Council has also shared with the district authority its draft Air Quality Strategy 2020-2045. The Air Quality Strategy sets out the overall vision and approach to maintaining and improving North Yorkshire's air quality lists four key objectives:

- Raise the profile of improving air quality in the context of North Yorkshire
- Work in partnership with borough and district councils and other organisations to protect and, where appropriate, improve air quality

- Ensure that improving or maintaining good air quality is a key consideration when planning and delivering County Council services
- Support the use of Ultra Low Emission Vehicles (ULEVs) in North Yorkshire

It is hoped this strategy will be formally adopted by 2021, a link to the document will be included in the next ASR.

Yorkshire Dales National Park Authority also has a Local Plan with policies that consider air quality, this local plan can be observed by clicking on the following link https://www.yorkshiredales.org.uk/__data/assets/pdf_file/0011/857558/Yorkshire-Dales-National-Park-Local-Plan-2015-30.pdf

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	CDC Local Plan Policy ENV7 (d): Development will avoid severe residual cumulative impacts of traffic congestion and wherever possible, will help to ease existing traffic congestion.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	12.11.19			Traffic congestion reductions	PM, Nox, SO2	Ongoing implementation	_	_
2	CDC Local Plan Policy ENV7 (e): The location, layout and design of development will encourage walking, cycling and the use of public transport, and green travel plans will promote reductions in car use. .	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	12.11.19			Reduced use of private vehicles	PM, Nox, SO2	Ongoing implementation	_	_
3	CDC Local Plan Policy ENV7 (f): The location, layout and design of development will avoid or reduce harmful or unpleasant emissions from buildings, and mitigation measures will be introduced where necessary.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	12.11.19			_	PM, Nox, SO2	Ongoing implementation	_	_
4	CDC Local Plan Policy ENV9 (d): Renewable and low carbon energy development will help to reduce carbon emissions and support sustainable development. This will be achieved by Safeguarding the amenity of local residents and communities, and ensuring that satisfactory mitigation can be achieved to minimise impacts such as noise, smell or other pollutants;	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	12.11.19			_	PM, Nox, SO2	Ongoing implementation	_	_
5	CDC Local Plan Policy ENV9 - Small Scale Wind Turbines In the case of small scale turbines, which require planning permission (generally 30m or under in tower height but considered on a case by case basis), proposals will be supported	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	12.11.19			Installations of small scale wind turbines	PM, Nox, SO2	Ongoing implementation	_	_
6	Local Transport Plan 4 (LTP4)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2016			_	PM, Nox, SO2	NYCC preparing Active Travel strategies, ULEV and Air Quality	_	Two objectives of the plan are - 'Environment and Climate Change' - managing the adverse impact of transport on the environment, and 'Healthier Travel' - promoting healthier travel opportunities.
7	Transport related Air Quality Policy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2016			_	PM, Nox, NO2	Being updated as part of LTP4	–	Aim to reduce air quality issues.
8	Report on ULEV charging points	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing			_	PM, Nox, NO2	Being developed as part of LTP4	–	Officers continue with review of policy and approach to the provision of facilities in light of popularity of ULEVs
9	Road safety and travel awareness	Promoting Travel Alternatives	School Travel Plans	Ongoing			_	PM, Nox, NO2	Being developed as part of LTP4	–	Cycle training to primary school pupils. Promotion of non-car journeys to/from school via Junior Road Safety Officers (JRSO) and curriculum resources.
10	Countywide Civil Parking Enforcement	Traffic Management	Workplace Parking Levy, Parking	Ongoing			_	PM, Nox, NO2	Being developed as part of LTP5	–	To address parking related traffic congestion / disruption

			Enforcement on highway								
11	Promotion of cycling	Promoting Travel Alternatives	Promotion of cycling	Ongoing			_	PM, Nox, NO2	Being developed as part of LTP5	_	Social media posts. Safety information packs. Engagement with clubs and event organisers. Face-to-face engagement with cyclists. Stands at major events. Road-side information posters. Bikeability programme.
12	Management and optimisation of traffic signals - whole district	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	29.03.18			_	PM, Nox, SO2	Ongoing implementation	_	Aim to reduce congestion
13	IPPC Controls - Permitted Process Inspections	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT	N/A			Compliant industrial activitys, emssion limts not been exceeded - KPI met.	PM, Nox,	Ongoing implementation	_	_
14	IPPC Controls - Inspecting all commercial biomass incinerators installed through the RHI scheme that have a max burn rate of 50kg/hr to identify as to whether they need permitting.	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT	01.09.19			_	PM, Nox, SO2	6 appliances permiited	Dec-21	_
15	Continuing investigations (enforcement where required) of domestic dweliings breaching smoke control order	Other	Other	N/A			_	PM, Nox, SO2	_	_	_
16	Installation of 2 two rapid electric vehicle charging points in the High Street Car Park, Skipton	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	Craven DC		_	PM, Nox, SO2	Installed and operational	2020	
17	Installation of EV charging points at YDNP car parks within the district	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2019			N/A	PM, Nox, SO2	N/A	_	Subject to satisfactory resolution of issues around procurement, installation & ongoing management & administration.
18	Installation of EV charging points at certain CDC car parks	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	N/A	Craven DC	Internal	N/A	PM, Nox, SO2	N/A	_	Subject to satisfactory management approval and adoption by Members (as appropriate).
19	Reduction of emissions from Licenced Taxis by the authority	Vehicle Fleet Efficiency	Testing Vehicle Emissions	2018			Reduced vehicle fleet emissions - KPI met.	PM, Nox, SO2	Ongoing implementation	_	Age restrictions on vehicles to ensure more modern/cleaner vehicles are used.
20	Reduction of emssions from Council vehicle fleet	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	Ongoing			N/A	PM, Nox, SO2	Ongoing implementation	_	1 electric vehicle operational, exploring new electrical technology for bin wagons. Vehicle route optimisation software use.
21	Extension of the diffusion tube monitoring programme	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	N/A			N/A	PM, Nox, SO2	N/A	2021	Diffusion tube on Skipton Road, Crosshills

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

There are two smoke control areas within the Craven District that covers the most densely populated areas; officer's proactively monitor smoke emissions from domestic chimneys within these areas and take appropriate action where required if a breach is identified. This approach has been adopted in an attempt to reduce particulate emissions in the district.

To address PM2.5, the Council are also taking proactive steps to inspect all incinerators installed as part of the RHI scheme with a burn rate over 50kg/hr to identify as to whether they are being operated in accordance with manufacturers instructions and to establish as to whether they need to be permitted by the Council.

Public Health England (PHE) produce figures, as part of the Public Health Outcomes Framework (PHOF), in relation to certain health indicators found at https://fingertips.phe.org.uk/search/air%20pollution#page/0/gid/1/pat/6/par/E12000003/ati/301/are/E07000163/iid/30101/age/230/sex/4/cid/4/tbm/1/page-options/ovw-do-0

The indicator of relevance (within the context of this Annual Status Report report) is 'Fraction of mortality attributable to particulate air pollution'. The values currently available from PHE for this indicator are for 2018. The value for this indicator for Craven District Council is 3.4%. The value for the same indicator for the whole of the Yorkshire and Humber region is 4.5%, with the value for England given as 5.2%.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Craven District Council does not undertake automatic (continuous) monitoring.

National monitoring results are available at https://uk-air.defra.gov.uk/

3.1.2 Non-Automatic Monitoring Sites

Craven District Council undertook non-automatic (passive) monitoring of nitrogen dioxide (NO2) at 6 sites during 2019, details of these sites are shown in table A.1 of Appendix A: Monitoring results.

Maps showing the location of the monitoring sites are provided in Appendix D, figures D.1-D.6.

Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias[4], “annualisation” (where the data capture falls below 75%), and distance correction[5]. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO2 annual mean concentrations for the past 3 years with the air quality objective of 40µg/m3.

Note that the concentration data presented in Table A.2 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).

Upon reviewing the diffusion tube monitoring results from 2017, it was identified that the mean had been miscalculated and that a bias adjustment had

[4] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[5] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

not been undertaken, as a consequence the 2017 figures previously reported were inaccurate. However, for the benefit of this report, the 2017 monitoring results have been correctly calculated and bias adjusted using the relevant 2017 bias adjustment factor of 0.87.

For diffusion tubes, the full 2019 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.

Monitoring Results Summary

The air-quality objective of 40µg/m3 was not exceeded at any of the sites in 2019. As there were no annual mean values greater than 60µg/m3, it is extremely unliknely the 1-hour mean objective of 200µg/m3 was exceeded more than 18 times per year at these sites either.

Trend

Looking at the data obtained over the last three years, its evident to see NO2 levels at the majority of sites are below the levels of 2018. Howeevr, at site 1 the level over the last three years appears to be slowly increasing, however, the levels remain low.

Historical Monitoring data (Nitrogen Dioxide)

Figure A.2 shows the Annual Mean NO2 Concentrations from the historic monitoring locations (2001 – 2012) prior to suspension of the monitoring program in 2012. Over the monitoring period the annual air quality objective of 40µg/m3 was never exceeded.

The data from these locations was assessed prior to the reinstatement of the monitoring program and diffusion tubes were placed in areas which gave the highest readings from previous monitoring, for example Newmarket Street, Skipton etc.

Appendix A: Monitoring Results

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

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
1	Station Road, Bentham	Roadside	366749	469197	NO_2	NO	0.85	1.37	NO	2.08
2	Duke Street, Settle	Roadside	381959	463625	NO_2	NO	0.56	1.21	NO	3
3	New Market Street, Skipton	Roadside	399138	451611	NO_2	NO	0.47	1.4	NO	2.78
4	Craven Street. Skipton	Roadside	398797	451178	NO_2	NO	15.35	1.5	NO	2.46
5	Main Street, Crosshills	Roadside	400629	444999	NO_2	NO	1.42	1.66	NO	2.55
6	Station Road, Crosshills	Roadside	400811	445217	NO_2	NO	4.79	1.3	NO	2.5

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 – Annual Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m³) (3) (4)				
							2015	2016	2017	2018	2019
1	366749	469197	Roadside	Diffusion Tube	55%	100%	No data	No data	18.2	19.82	19.3
2	381959	463625	Roadside	Diffusion Tube	57%	100%	No data	No data	24.06	24.42	21.4
3	399138	451611	Roadside	Diffusion Tube	55%	100%	No data	No data	27.85	28.91	26.5
4	398797	451178	Roadside	Diffusion Tube	57%	100%	No data	No data	21.71	23.96	22.4
5	400629	444999	Roadside	Diffusion Tube	57%	100%	No data	No data	27.78	31.47	27.4
6	400811	445217	Roadside	Diffusion Tube	20%	100%	No data	No data	No data	No data	23.7

☒ **Diffusion tube data has been bias corrected**

☐ **Annualisation has been conducted where data capture is <75%**

☒ **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 adjustment**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m³ are shown in **bold**.

NO_2 annual means exceeding 60µg/m³, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(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%).

(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

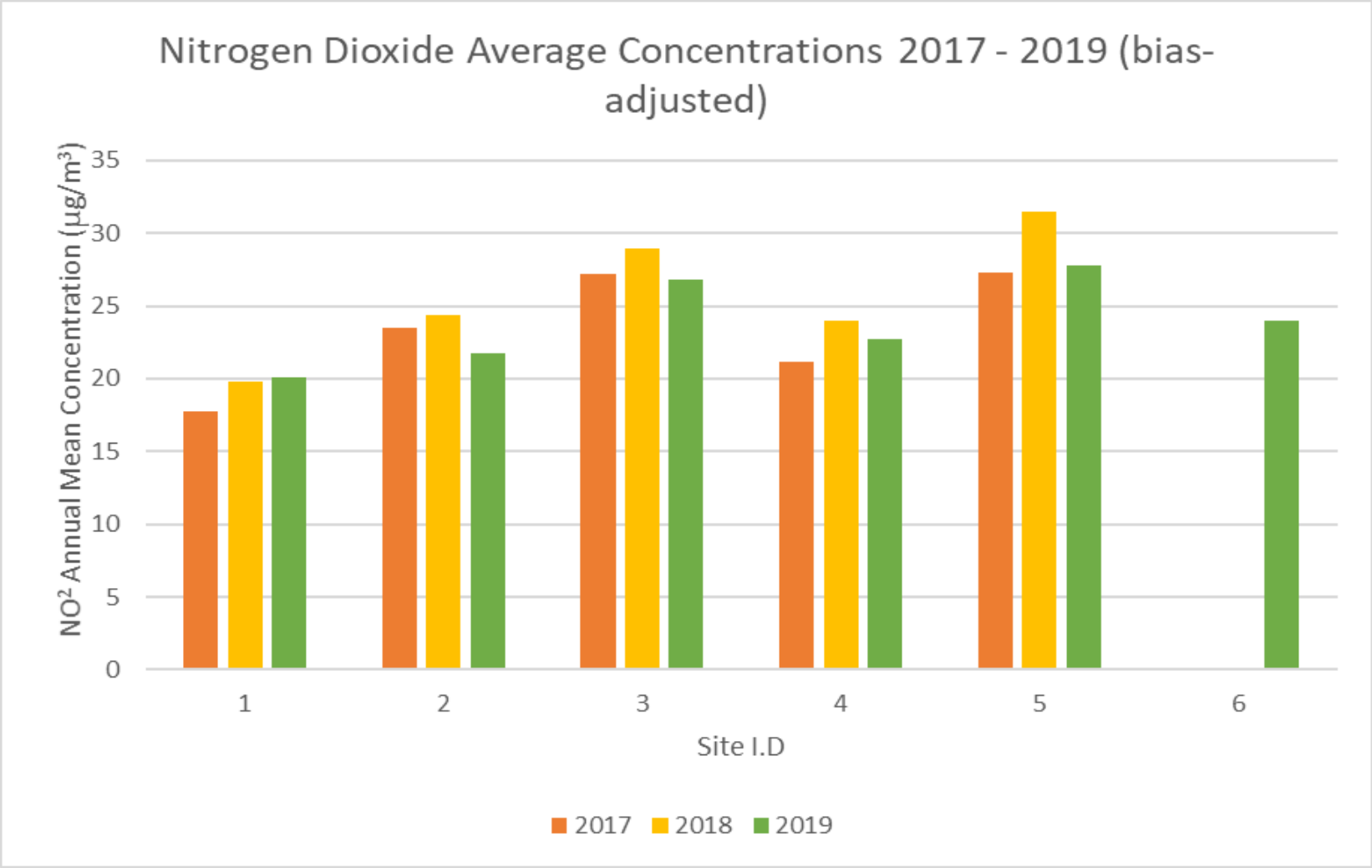
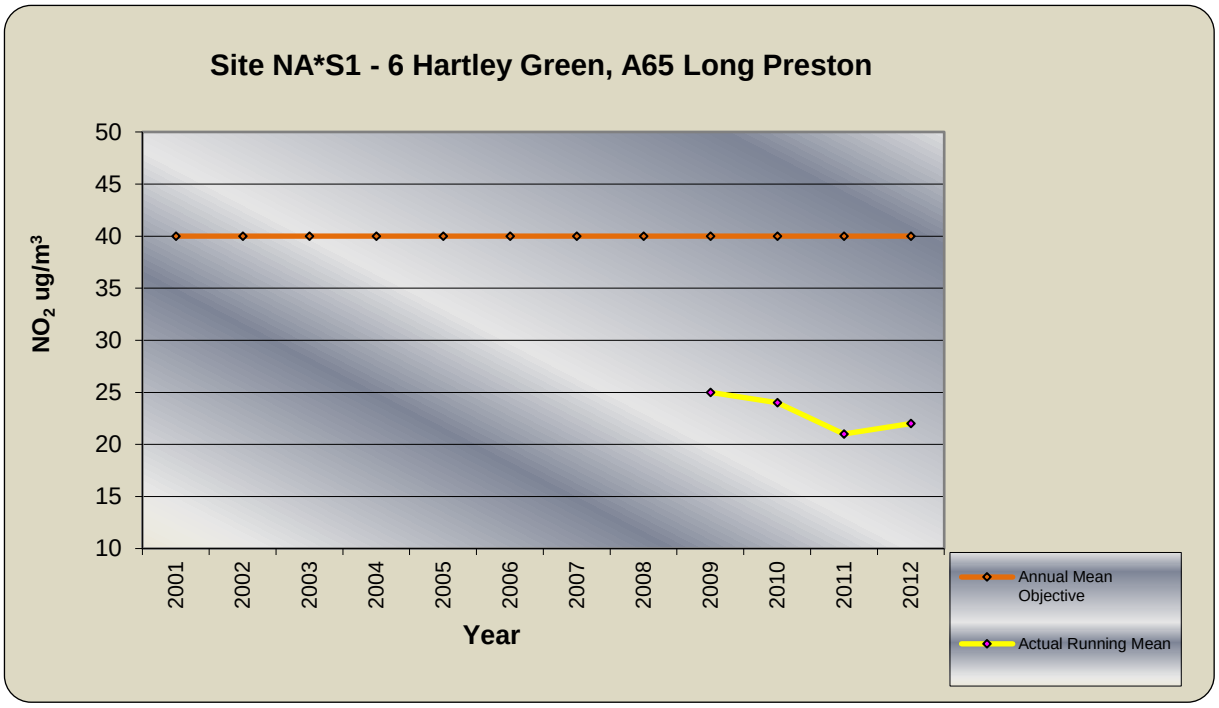
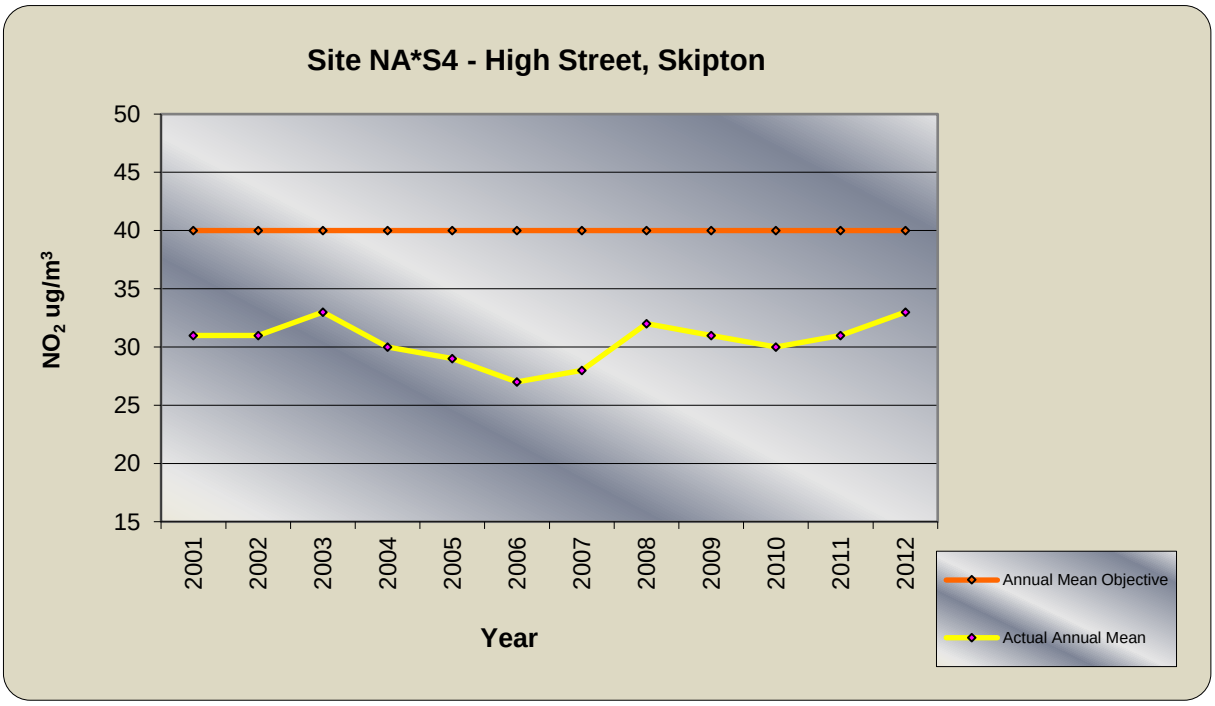
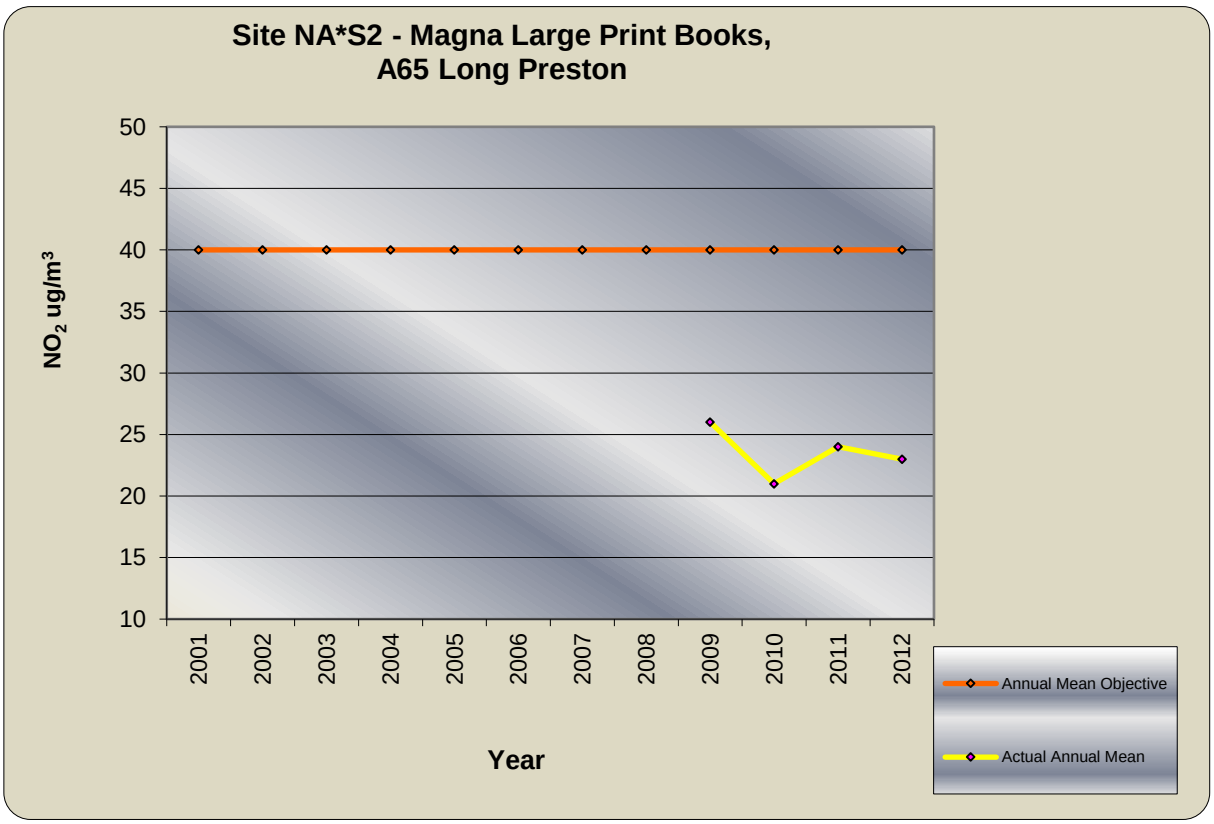


Figure A.2 – Trends in Annual Mean NO_2 Concentrations of the historic monitoring locations dated 2001 -2012 (bias adjusted)



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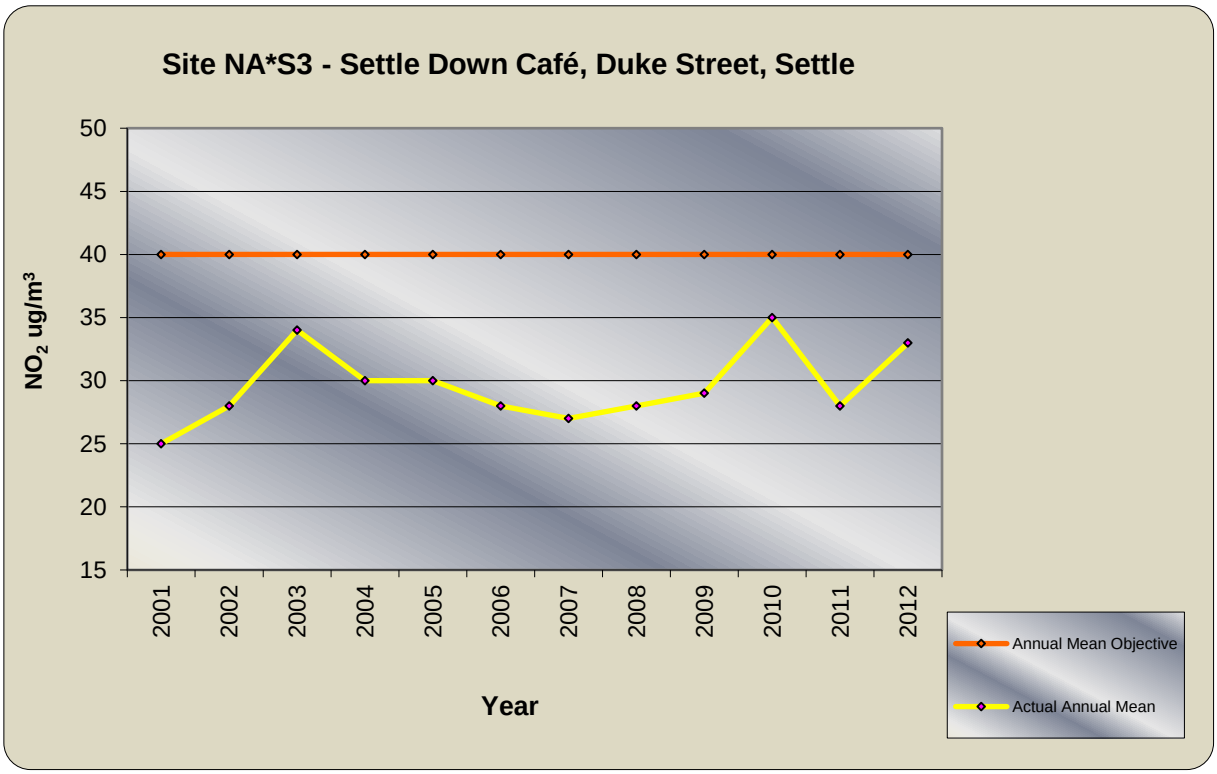
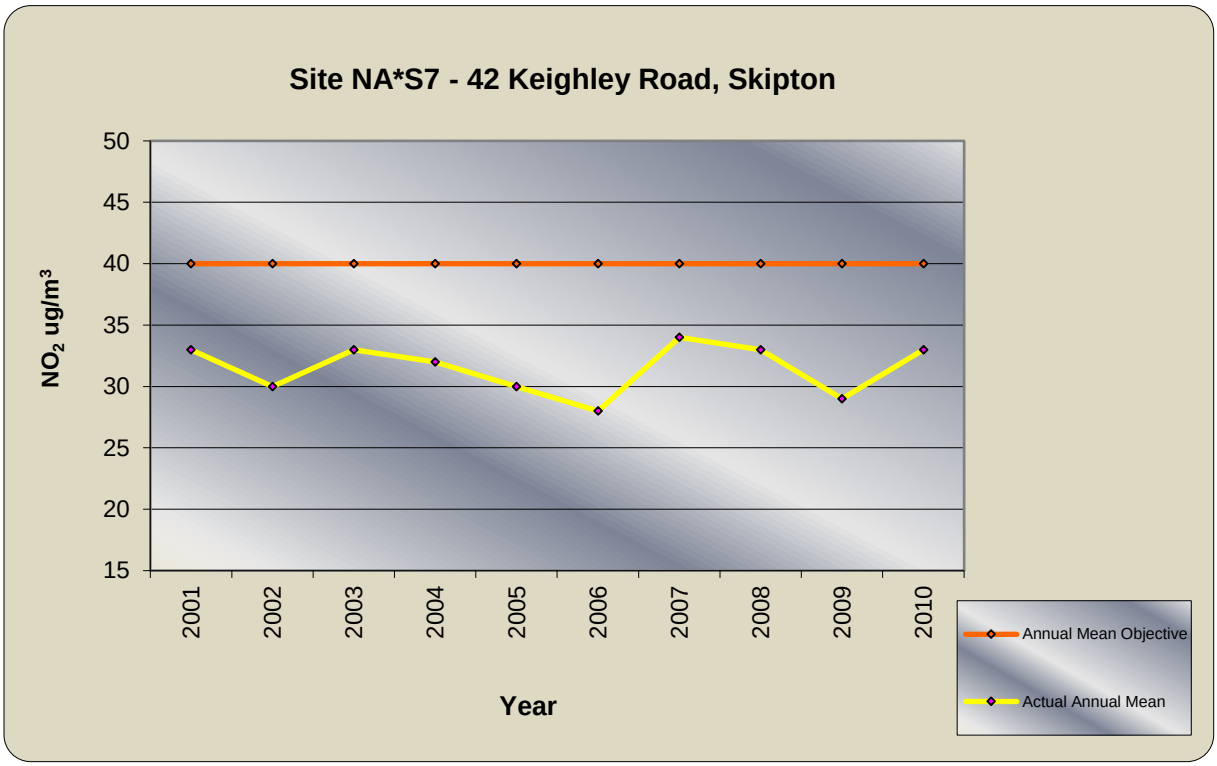
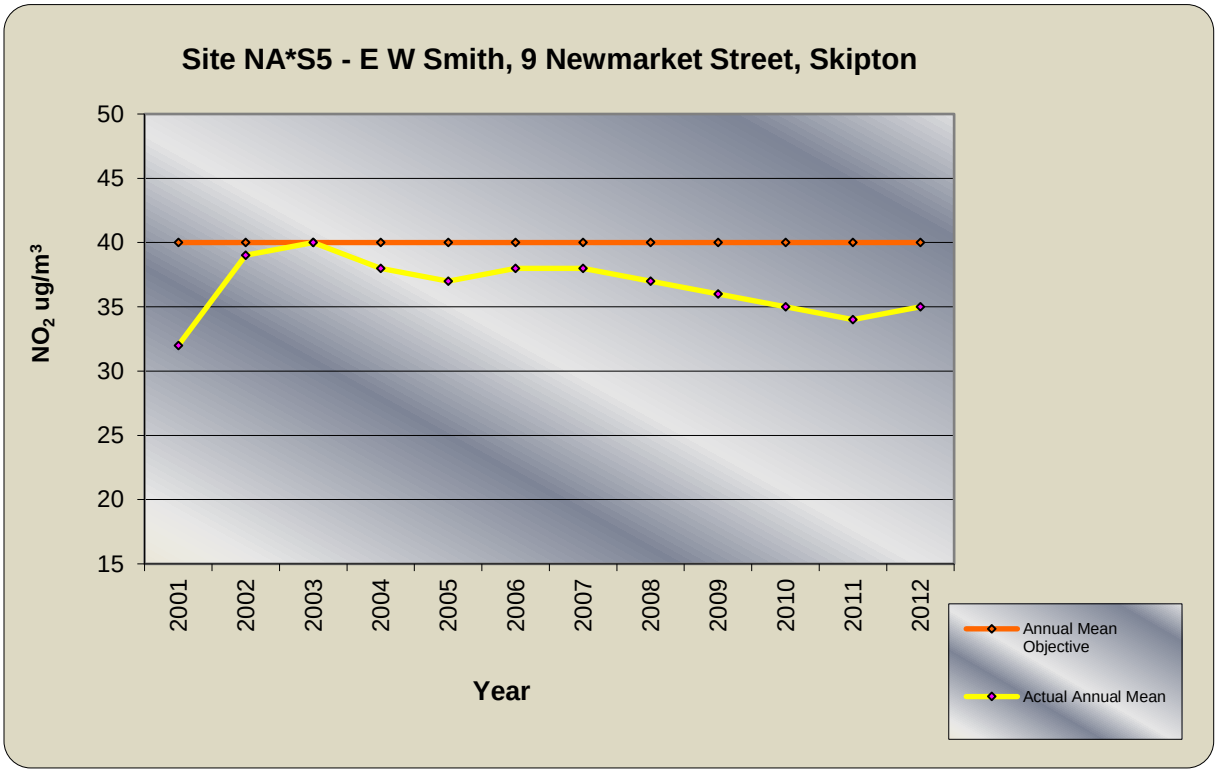
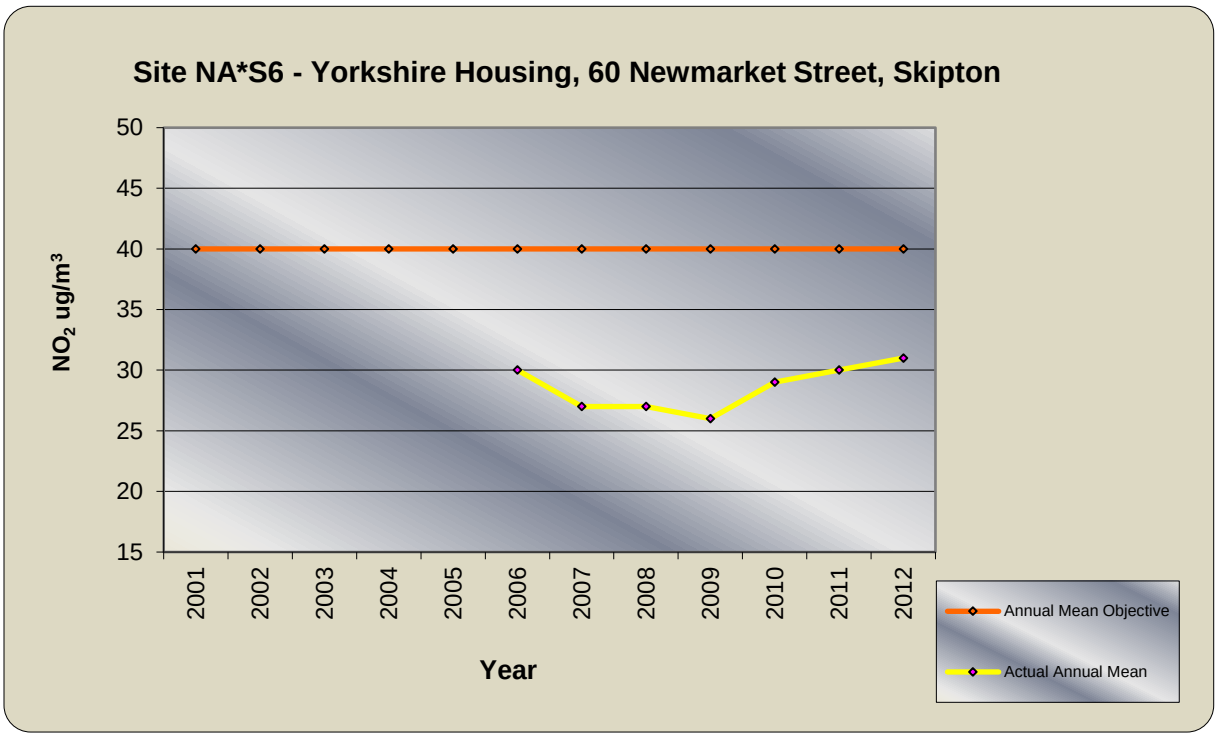
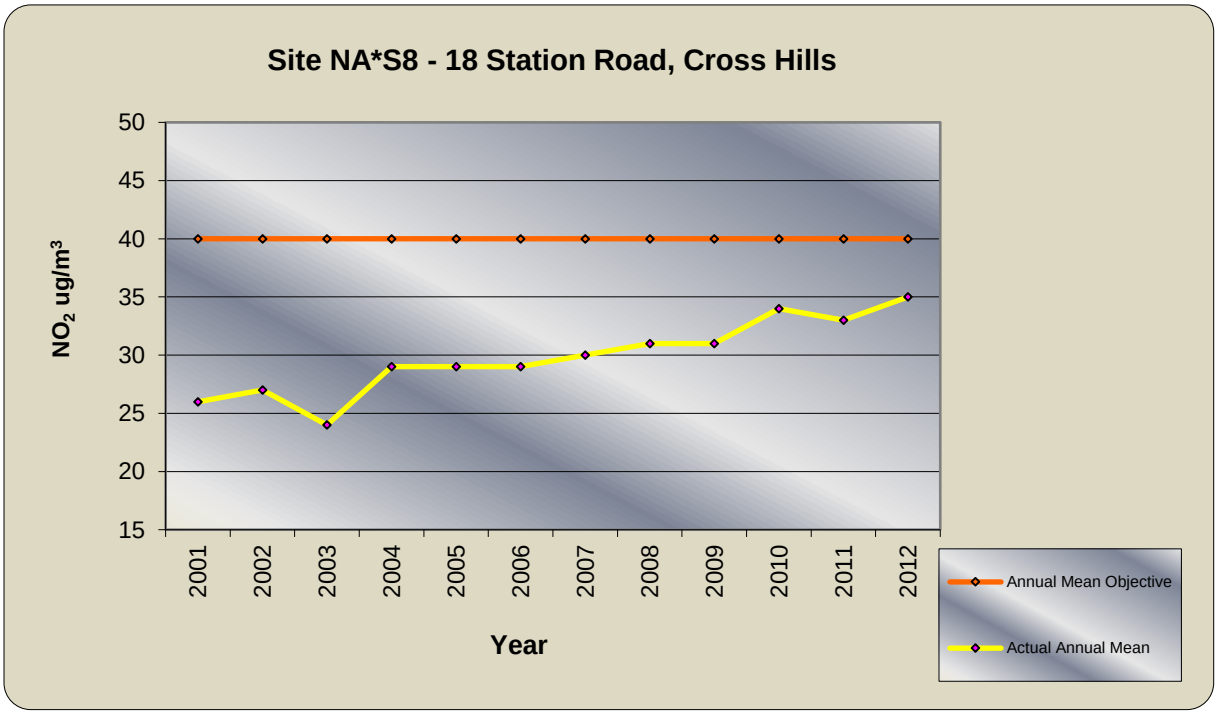
Year
Annual Mean Objective
Actual Annual Mean

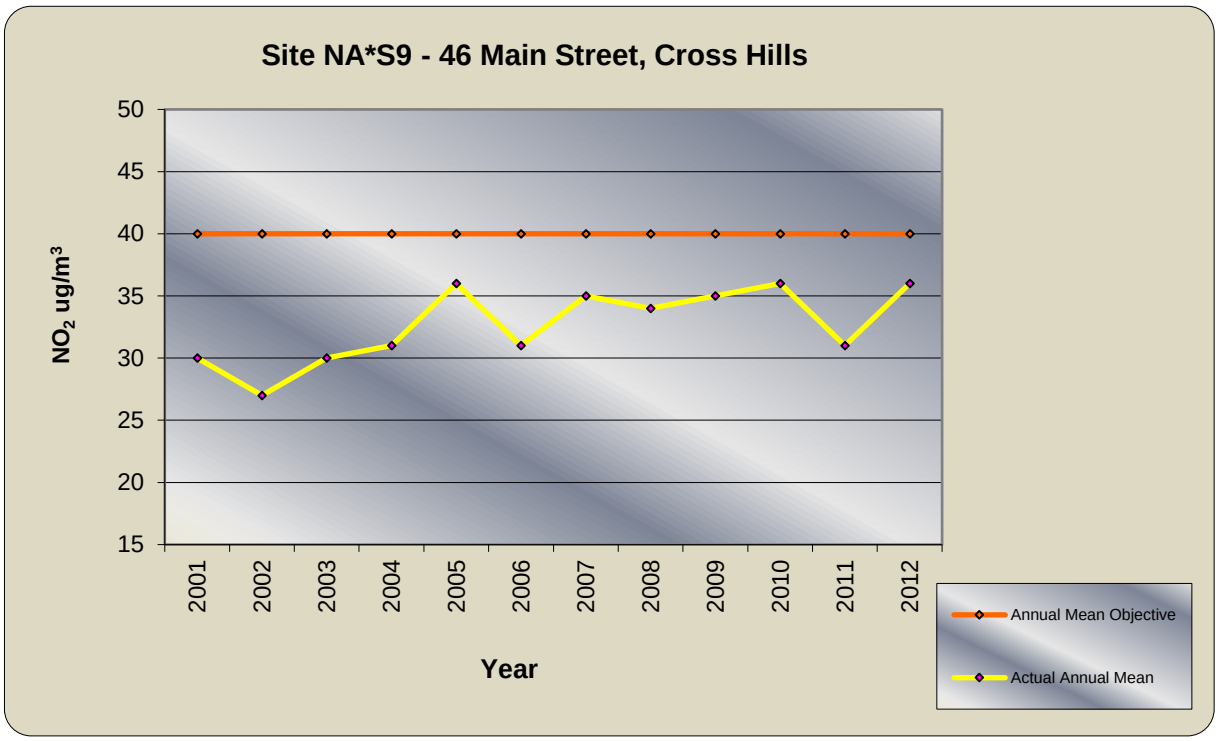

Site NA*S3 - Settle Down Café, Duke Street, Settle
NO2 ug/m3
50
45
40
35
30
25
20
15
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
Annual Mean Objective
Actual Annual Mean

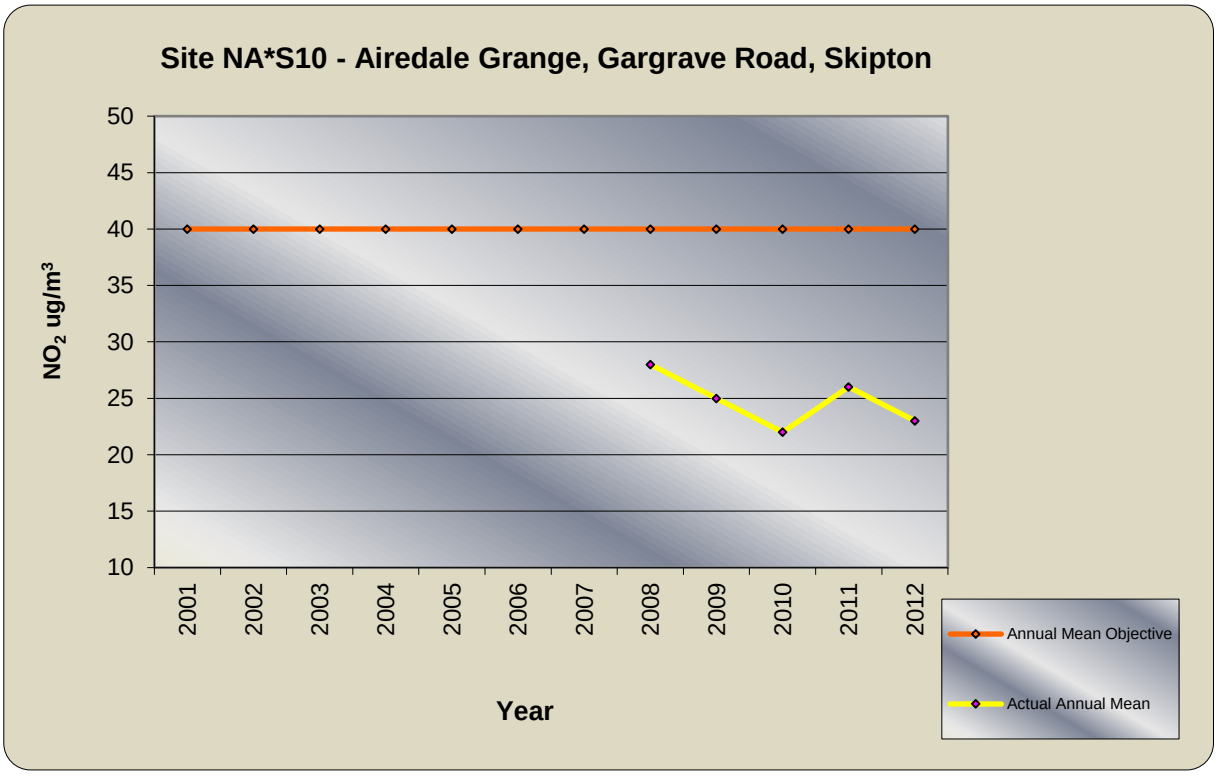

Site NA*S7 - 42 Keighley Road, Skipton
NO2 ug/m3
50
45
40
35
30
25
20
15
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
Annual Mean Objective
Actual Annual Mean


Site NA*S5 - E W Smith, 9 Newmarket Street, Skipton
NO2 ug/m3
50
45
40
35
30
25
20
15
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
Annual Mean Objective
Actual Annual Mean


Site NA*S6 - Yorkshire Housing, 60 Newmarket Street, Skipton
NO2 ug/m3
50
45
40
35
30
25
20
15
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
Annual Mean Objective
Actual Annual Mean


Site NA*S8 - 18 Station Road, Cross Hills
NO2 ug/m3
50
45
40
35
30
25
20
15
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
Annual Mean Objective
Actual Annual Mean


Site NA*S9 - 46 Main Street, Cross Hills
NO2 ug/m3
50
45
40
35
30
25
20
15
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
Annual Mean Objective
Actual Annual Mean


Site NA*S10 - Airedale Grange, Gargrave Road, Skipton
NO2 ug/m3
50
45
40
35
30
25
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10
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year
Annual Mean Objective
Actual Annual Mean

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m³)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.92) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
1	366749	469197	28.8	24.9	21.8	14.7	16.2	16.3	17.7	19.0	17.7	15.7	38.4	28.2	21.0	19.3	
2	381959	463625	29.6	34.2	21.5	25.1	17.9	19.5	18.1	16.0	19.6	25.2	26.8	26.6	23.3	21.4	
3	399138	451611	39.0	35.7	29.1	26.2	20.2	22.8	27.1	27.3	26.3	21.9	36.3	33.9	28.8	26.5	
4	398797	451178	36.4	31.2	22.1	25.9	17.7	20.2	20.7	19.2	21.9	20.2	35.7	22.0	24.4	22.4	
5	400629	444999	39.3	37.0	26.5	34.0	21.3	26.9	24.6	22.6	29.7	28.3	41.3	26.5	29.8	27.4	
6	400811	445217	32.3	33.1	20.9	26.7	18.6	21.3	20.3	19.4	25.9	24.4	38.4	28.2	25.8	23.7	

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☐ **Annualisation has been conducted where data capture is <75%**

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

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m³ are shown in **bold**.

NO_2 annual means exceeding 60µg/m³, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(1) See Appendix C for details on bias adjustment and annualisation. (2) Distance corrected to nearest relevant public exposure.

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

Diffusion Tube Bias Adjustment Factor

Craven District Council has made use of the National bias adjustment factor. The factor used takes into account the following aspects:

(i) Supplier

The diffusion tubes used in Craven are supplied and analysed by Gradko Environmental, St Martins House, 77 Wales Street, Winchester, Hampshire, S02 0RH.

(ii) Tube Type

20% TEA (triethanolamine) /WATER

(iii) Results from other local authorities using the same supplier and tube type i.e. Lancaster City Council

There are systematic differences in the performance of different laboratories and preparation methods of diffusion tubes. A spreadsheet provided by the LAQM Helpdesk (viewed at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html) shows those figures for different local authorities using the same supplier and tube type and where diffusion tubes are co-located with automatic (continuous) monitors.

A copy of the relevant section of the table used to obtain the bias adjustment figure for this report provided by the LAQM Helpdesk is shown in Table C.1 on the following page.-

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/20

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of September 2020

LAQM Helpdesk Website

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

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

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method	Year[2]	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2019	R	Gateshead Council	12	30	25	18.1%	G	**0.85**
Gradko	20% TEA in water	2019	R	Thurrock Borough Council	12	29	24	21.6%	G	**0.82**
Gradko	20% TEA in water	2019	R	Brighton & Hove City Council	11	45	46	-1.3%	G	**1.01**
Gradko	20% TEA in water	2019	R	Belfast City Council	12	40	33	21.0%	G	**0.83**
Gradko	20% TEA in water	2019	R	Belfast City Council	12	44	45	-2.2%	G	**1.02**
Gradko	20% TEA in water	2019	R	Belfast City Council	12	28	26	5.4%	G	**0.95**
Gradko	20% TEA in water	2019	UB	Southampton City Council	12	30	28	8.6%	G	**0.92**
Gradko	20% TEA in water	2019	UB	Liverpool City Council	12	20	19	1.7%	G	**0.98**
Gradko	20% TEA in water	2019	R	Ards and North Down Borough Council	12	33	25	31.1%	G	**0.76**
Gradko	20% TEA in water	2019	R	Eastleigh Borough Council	12	25	26	-3.3%	G	**1.03**
Gradko	20% TEA in water	2019	R	Lisburn & Castlereagh City Council	12	28	22	28.3%	G	**0.78**
Gradko	20% TEA in water	2019		**Overall Factor[3] (30 studies)**				**Use**		**0.92**

Annualisation

Data capture for all monitoring sites in this report was greater than 75%, therefore annualisation of the data was not necessary.

Distance Correction

The LAQM TG16[6] guidance was updated in April 2018, this guidance advises that all monitoring locations should be representative of exposure and a distance correction should be applied where sites are not representative and record an annual mean concentration above the annual objective of 40ug/m^3.Consideration must also be given to sites that are within 10% of this objective (i.e. above 36ug/m^3).

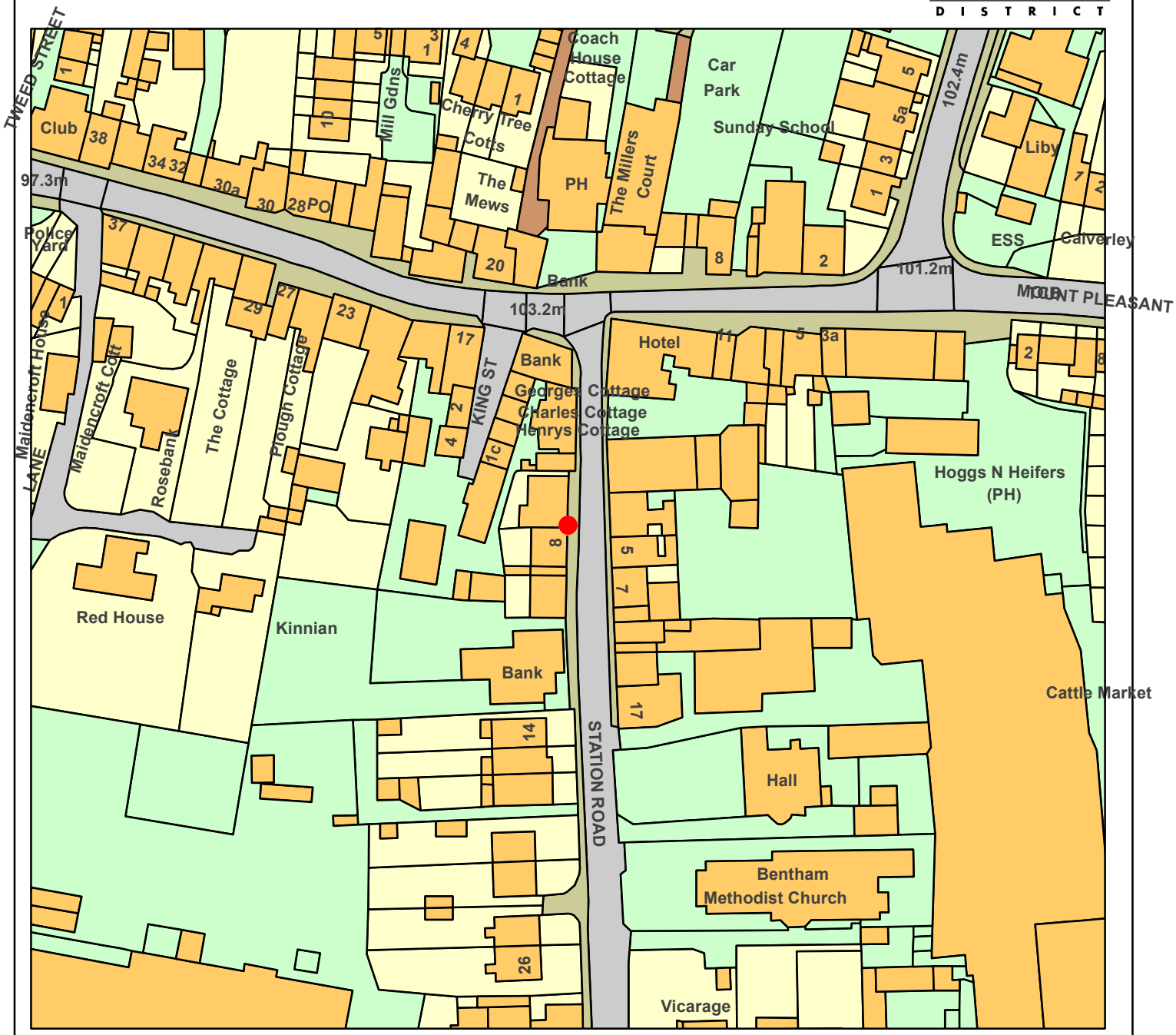
Craven Districts monitoring sites are all representative and therefore a distance correction adjustment was not necessary.

[6] Defra Local Air Quality Management Technical Guidance (PG16), February 2018

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

Figure D.1 Location of Diffusion Tubes in Craven

NOx DIFFUSION TUBE LOCATION: 1



● Location of diffusion tube 1

Scale: 1:1,250

N

Organisation	Craven District Council
Department	ENVIRONMENTAL HEALTH
Comments	ROADSIDE 366749, 469197
Date	12/09/2019
PSMA Number	100024694

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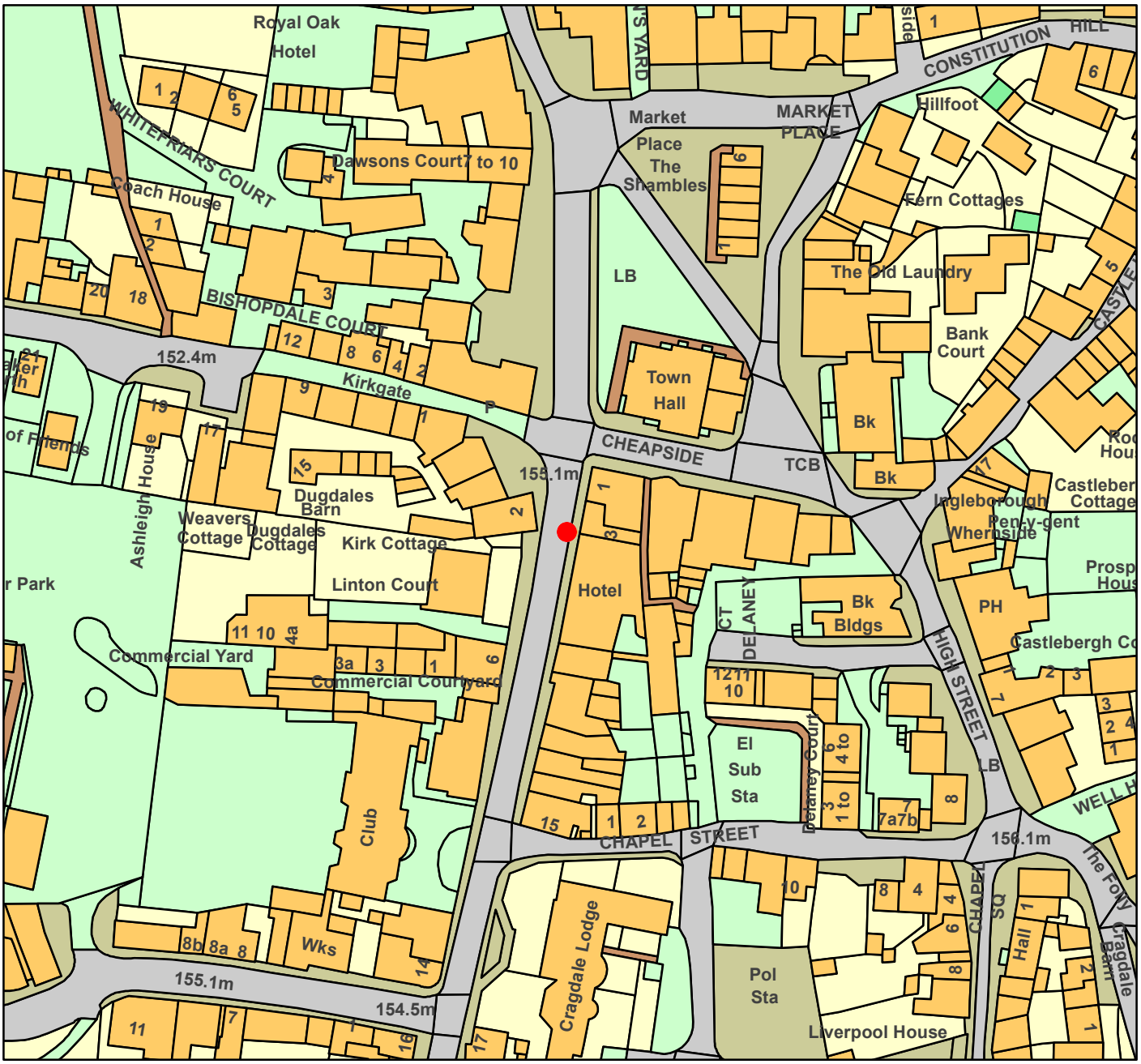
NOx DIFFUSION TUBE LOCATION

LOCATION: 2



● **Location of diffusion tube 2**

Scale: 1:1,250

N

Organisation	Craven District Council
Department	ENVIRONMENTAL HEALTH
Comments	ROADSIDE 381959, 463625
Date	12/09/2019
PSMA Number	100024694

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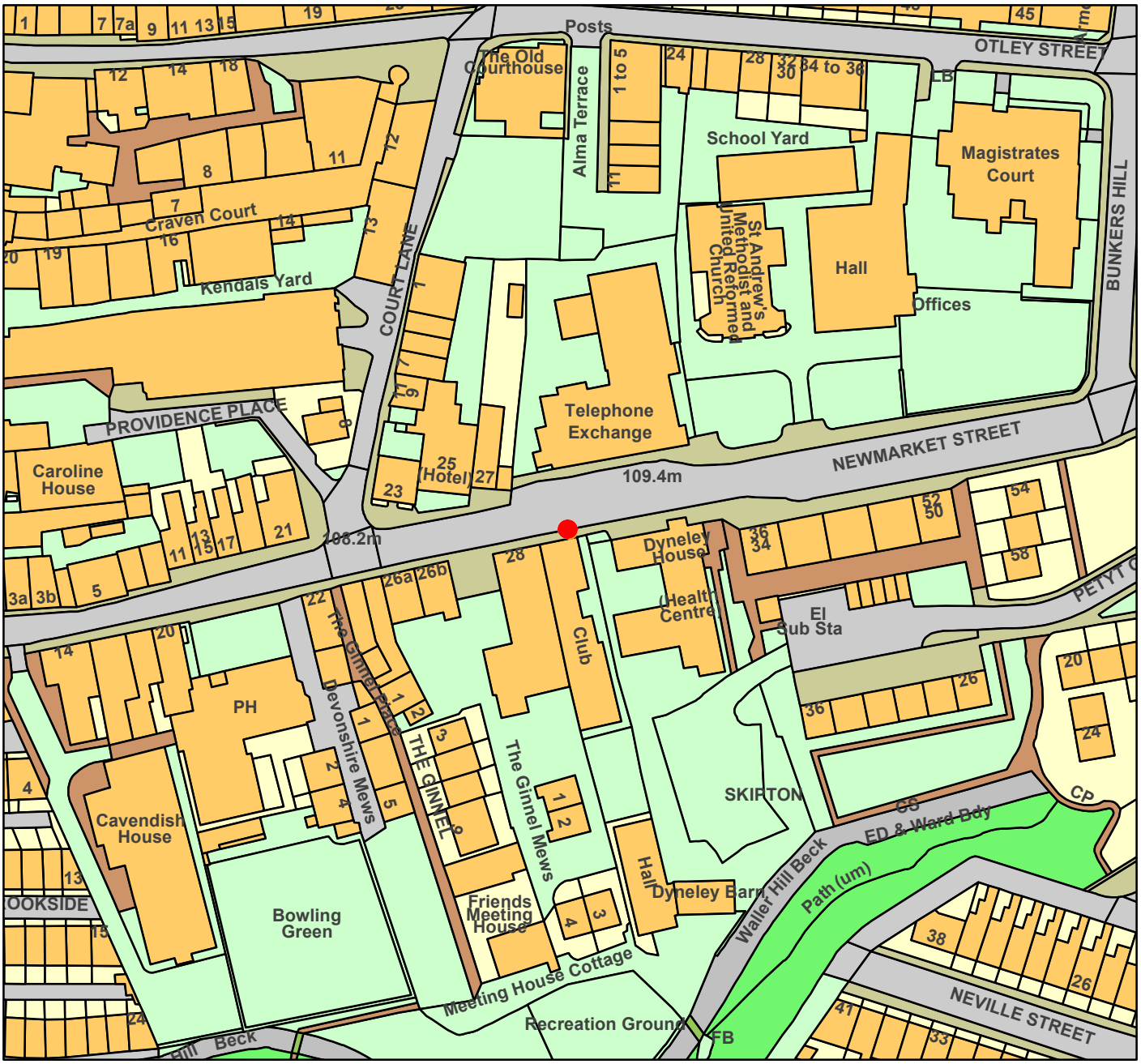
NOx DIFFUSION TUBE LOCATION

LOCATION: 3



● Location of diffusion tube 3

Scale: 1:1,250

N

Organisation	Craven District Council
Department	ENVIRONMENTAL HEALTH
Comments	ROADSIDE 399138, 451611
Date	12/09/2019
PSMA Number	100024694

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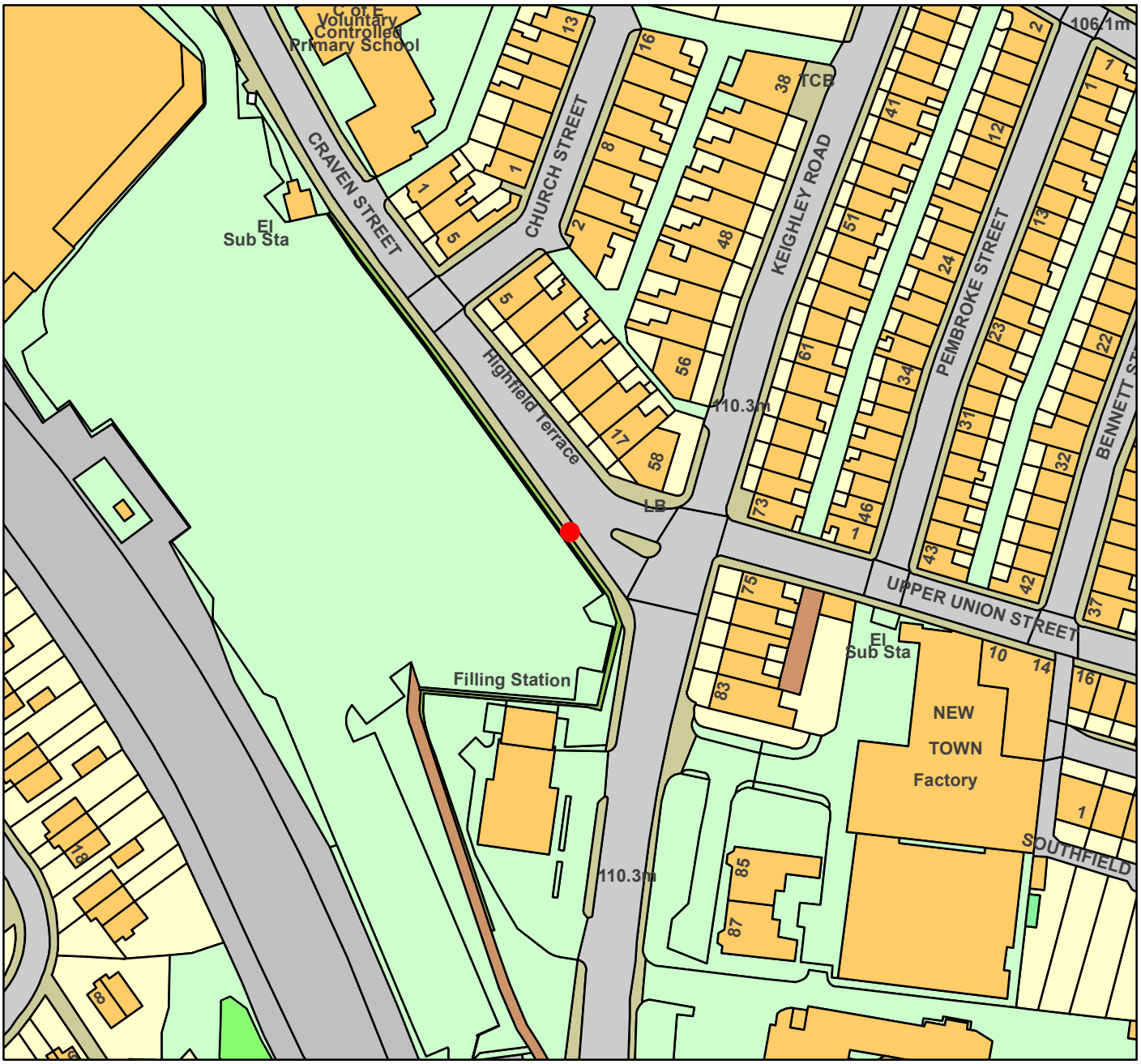
NOx DIFFUSION TUBE LOCATION

LOCATION: 4



Location of diffusion tube 4

Scale: 1:1,250

N

Organisation	Craven District Council
Department	ENVIRONMENTAL HEALTH
Comments	ROADSIDE 398797,451178
Date	12/09/2019
PSMA Number	100024694

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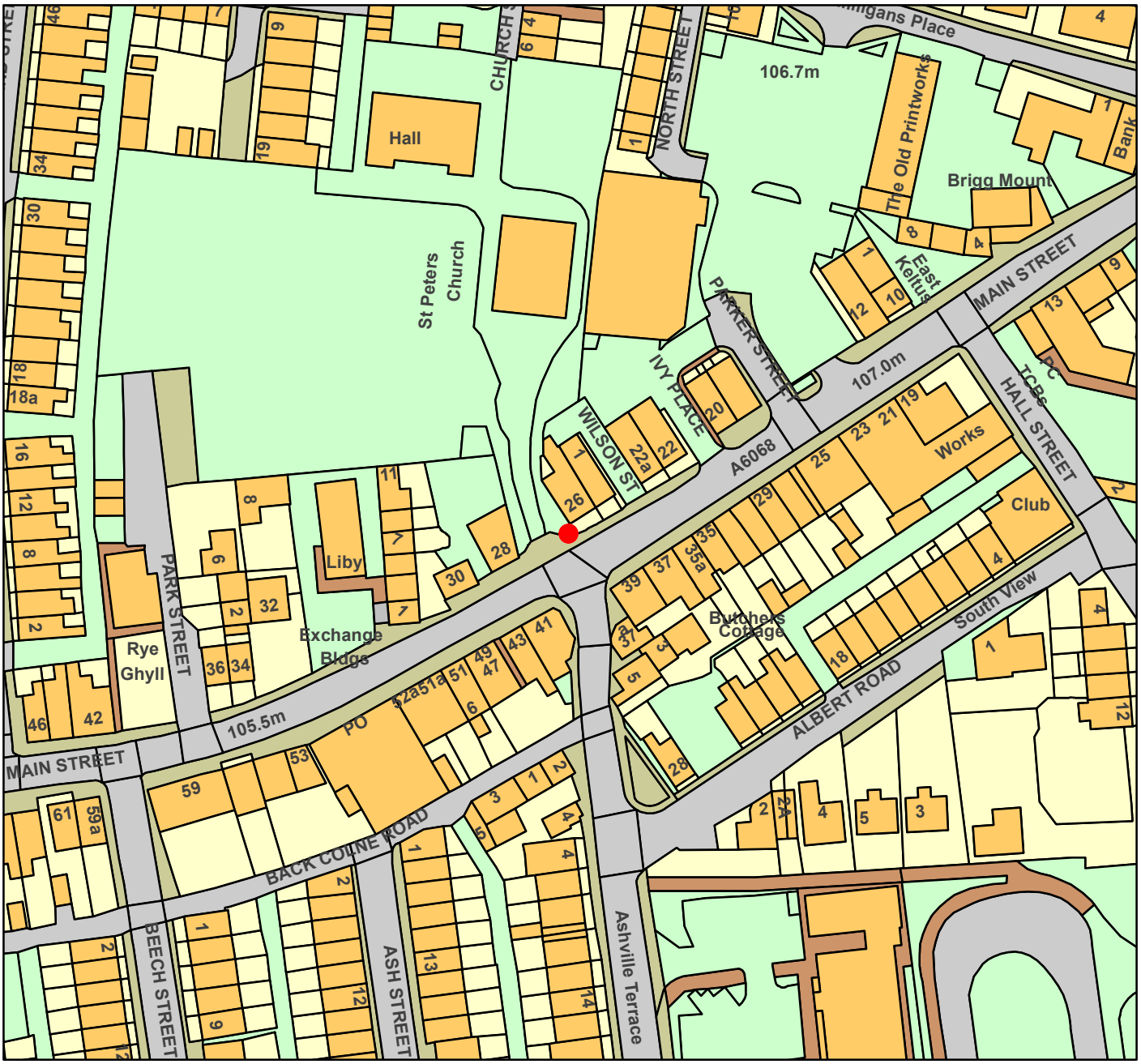
NOx DIFFUSION TUBE LOCATION

LOCATION: 5



● **Location of diffusion tube 5**

Scale: 1:1,250

N

Organisation	Craven District Council
Department	ENVIRONMENTAL HEALTH
Comments	ROADSIDE 400628, 444998
Date	12/09/2019
PSMA Number	100024694

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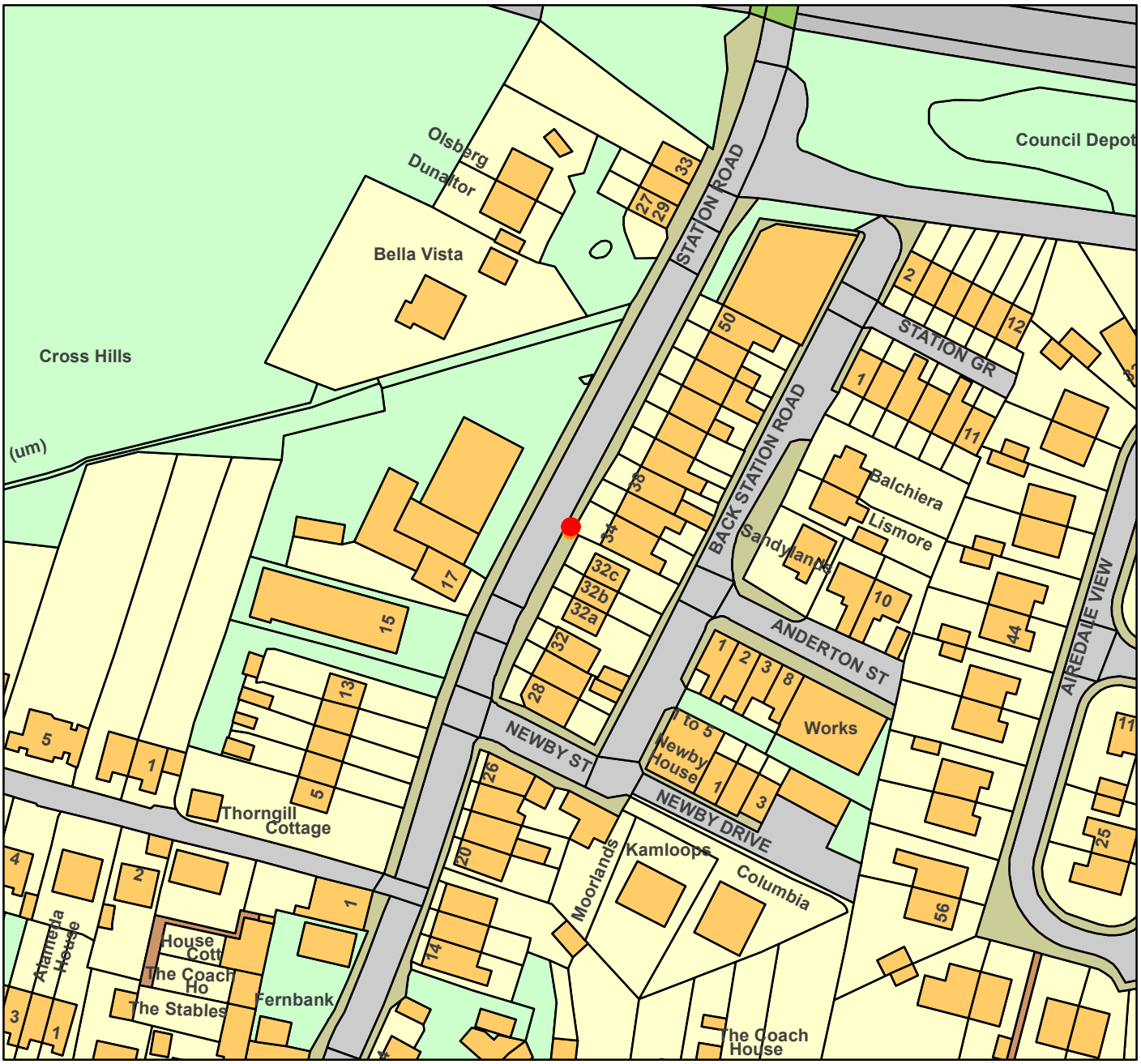
NOx DIFFUSION TUBE LOCATION

LOCATION: 6



Location of diffusion tube 6

Scale: 1:1,250

N

Organisation	Craven District Council
Department	ENVIRONMENTAL HEALTH
Comments	ROADSIDE 400811, 445215
Date	12/09/2019
PSMA Number	100024694

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Appendix E: Summary of Air Quality Objectives in England

Table C.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[7]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (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

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- Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
- Defra. Abatement cost guidance for valuing changes in air quality, May 2013
- Defra Local Air Quality Management Policy Guidance (PG16), April 2016
- Defra Local Air Quality Management Technical Guidance (TG16), February 2018
- Environmental equity, air quality, socioeconomic status and respiratory health, 2010
- North Yorkshire County Council, Local Transport Plan four (LTP4), 2016-2045
- Craven District Council, New Local Plan 29/03/19
- Yorkshire Dales National Park, Local Plan 2015-2030