

2020 Air Quality Annual Status Report (ASR)

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

June 2020

Mid Sussex District Council

Local Authority Officer	Nick Bennett
Department	Environmental Health
Address	Oaklands Road Haywards Heath West Sussex RH19 1SS
Telephone	01444 477292
E-mail	pollution@midsussex.gov.uk
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Executive Summary: Air Quality in Our Area

This report details the results of air quality monitoring undertaken in 2019 across Mid Sussex District and is prepared in accordance with the guidance issued by the Department for Environment, Food and Rural Affairs (Defra).

Local Authorities across the United Kingdom are required to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives set by the Government are likely to be achieved. Where exceedances are 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.

Mid Sussex District Council (MSDC) declared an AQMA at Stonepound Crossroads in Hassocks in 2012. Since then pollution levels have started to decline. The Council's AQAP includes measures such as "intelligent" traffic lights to improve traffic flow, "cut engine, cut pollution" signs, travel plans, planning controls and promotion of more sustainable transport.

We hope that by working together with the public and our partners, we can reduce reliance on the car and improve the air that we all breathe.

Air Quality in Mid Sussex

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 billion³.

The area covered by Mid Sussex District Council is primarily countryside, with three major towns. One area of the district, the Sussex Downs, has been designated as

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

part of a National Park, with a significant number of villages, hamlets, ancient churches and woodlands and does not incorporate a significant heavy industrial base. Locally, the most significant contributions to poor air quality come from road transport, the air pollutant currently of most concern being nitrogen dioxide (NO₂).

Road transport is responsible for some 80% of NO₂ concentrations at the roadside, with diesel vehicles of greatest concern at a local level. Expected improvements to the diesel vehicle fleet have not delivered the predicted reductions in emissions and this has been demonstrated in real-world emissions testing.

The main source of air pollution in the district is road traffic emissions mostly from major roads. Exposure to these emissions is highest where buildings are located close to these roads notably the A273 north and south of Hassocks.

Air quality monitoring and modelling carried out by the Council indicated that despite good air quality within most of the District, the air quality objectives for nitrogen dioxide (NO₂) were not being met in the Stonepound Crossroads area of Hassocks where the A273 Brighton Road intersects with the B2116 Keymer Road. Therefore, in March 2012 an Air Quality Management Area (AQMA) was declared at Stonepound Crossroads Hassocks.

Monitoring results across the district in 2019 are broadly positive, with most sites showing a decrease in the nitrogen dioxide (NO₂) levels compared to those recorded in 2018, notably the monitoring points inside the Stonepound Crossroads AQMA which all show a slight decrease. This is encouraging given the housing development work close by with its associated traffic management measures and additional HGV movements. Other sites, including the 3 main urban centres, show a decrease in NO₂ levels. The long-term trend, despite the increase at some sites, appears to be continuing downwards.

Within the AQMA at Stonepound Crossroads in Hassocks the main pollutant (NO₂) is from road traffic emissions. Exceedances are attributed to the topography of the area and the volume of road traffic. Since the AQMA was declared there has been an overall reduction in measured NO₂. For the second time in the last three years, there are no exceedances within the AQMA. An AQMA will usually be considered for revocation after three consecutive years with no exceedance.

Following last year's annual review of monitoring locations, one of the new sites the Council decided to monitor, MSAQ29 in London Road, East Grinstead is showing an exceedance ($44.1\mu\text{g}/\text{m}^3$). This does raise potential concerns and we have already increased our monitoring sites in this area to get a clearer understanding of local exposure. Additionally, the Council is researching locations for the possible installation of a real time monitor close by. The situation is complicated by the nearest residential facades being at first floor level, higher than the monitoring site, so we have taken steps to address this for next year's report.

The Council have an Air Quality Action Plan (AQAP) for the existing AQMA in Hassocks, which focuses on a range of measures designed to limit the exceedance of the NO_2 air quality objective of $40\mu\text{g}/\text{m}^3$.

These include:

- Ensuring traffic light sequencing is operating at optimum efficiency
- Signage and advertising to encourage use of the A2300 as an alternative route
- Widening of the A2300 as part of major development to the North of Burgess Hill
- "Cut engine, cut pollution" signs erected approaching each arm of the crossroads
- Travel wise schemes to promote sustainable transport - to include more car share schemes and alternatives to the car. Promotion of school and work travel plans. Development and promotion of cycle routes
- Education and raising awareness - increasing the availability of air quality information and incentivising people to change their travel behaviour
- Working with Planners to ensure appropriate mitigation measures are implemented for new development affecting the AQMA

Although the work under Local Air Quality Management (LAQM) is the legal obligation of district councils, actions aimed at improving air quality often require the cooperation of various departments and organisations. MSDC works in conjunction with other stakeholders, such as our Planning department, Public Health England, West Sussex County Council (WSSCC) highways,

neighbouring districts, the Sussex Air Quality Partnership and the Environment Agency. The assessment and implementation of the identified traffic management schemes is done in cooperation with WSCC as they are the authority responsible for roads and transport management. An air quality action plan group has been set up, the work of which contributes largely to the development of Action Plans for the AQMA. The Council is consulted by the Environment Agency upon the granting of environmental permits for 'Part A1' processes and liaises with the Agency regarding any issues concerning those permits.

Additionally, Mid Sussex District Council are members of the Sussex Air Quality Partnership (Sussex Air) which benefits from the co-ordinated monitoring of air pollutants across the region, and provides airAlert* and coldAlert services:

***airAlert is a free service for the residents of Sussex which provides an early warning of poor air quality by text/SMS, voice-mail or e-mail for individuals with asthma or poor respiratory health. This service is also available as a smart-phone app.**

Actions to Improve Air Quality

MSDC has taken forward a number of measures during the current reporting year of 2019 in pursuit of improving local air quality. The key actions in 2019 focused on a range of measures designed to limit the exceedance of the NO₂ air quality objective. These include:

- Ensuring traffic light sequencing continues to operate at optimum efficiency – a new software upgrade to the traffic light control has recently been completed.
- Signage and advertising to encourage use of the A2300 as alternative route
- Commencement of preparatory works for the widening of the A2300 as part of a forthcoming development
- Continuing to work with local schools to amend travel plans
- Using the planning system to ensure maximum mitigation measures implemented for any new development affecting the AQMA, including using the latest Sussex wide planning guidance for developers with regard to air quality. This guidance is in the process of being adopted as informal planning guidance.
- District Plan includes policies DP21 Transport and DP29 Noise, Air and Light requiring transport mitigation and due consideration to be given to Air Quality issues

- MSDC are part of Sussex Air's successful bid to Defra for funding of a public awareness campaign, Clean Burn Sussex, regarding the use of cleaner fuels for domestic burning i.e. avoiding "wet" wood and bituminous coal. This campaign has also harvested data from a survey of over 1700 people regarding how, why and what they burn.

Conclusions and Priorities

The only exceedance found in 2019 is at a new monitoring site in East Grinstead. Further, more detailed study has commenced to enable better understanding of the significance of this. The underlying trend for NO₂ levels within the AQMA, and in the district generally, remains downward. New residential developments near to the AQMA have been granted planning permission. However, modelling undertaken by developers indicates that increases in pollution attributable to these developments are not "significant" and the longer-term downward trend in local pollution is likely to continue.

The Council's priorities for the coming year are:

- Continue to work in partnership with West Sussex Public Health and West Sussex County Council to raise awareness of the facts relating to poor air quality, how to reduce sources of air pollution, focusing on the co-benefits of active travel to health and wellbeing; and how to reduce exposure to air pollution during episodes of poor air quality (airAlert)
- The promotion of "green" travel at the Council with incentives for staff to take sustainable methods of travel into work to promote the cycle-to-work scheme and Easit membership benefits. Council staff also have access to electric bikes.
- The Sayers Common to Hassocks Cycle Route is one of the higher scoring priorities listed in the West Sussex Walking & Cycling Strategy 2016-2026. An Options Appraisal was completed last year and, following this, it was agreed that preliminary design work would be conducted on two sections during the current financial year (Western Road to College Lane via Brown Twins Road, and Stonepound Crossroads to Downlands School). The preliminary design is expected to be completed shortly. Detailed design and public consultation for

these sections is included in the 2020/21 programme, which is subject to WSCC Cabinet Member approval. Subject to funding and approvals then construction is hoped to follow in 2021/22.

- MSDC are part of West Sussex County Council's *Breathing Better: a partnership approach to improving air quality in West Sussex* and attend the Inter Authority Air Quality Group made up of the county, districts and boroughs. The group have produced a county wide Air Quality Plan (https://www.westsussex.gov.uk/media/12062/air_quality_plan.pdf) and released educational messages in their West Sussex Newsletter.
- Following the upgrade of slow electric vehicle chargers to fast chargers in MSDC car parks and installation of rapid chargers in the car park at Hassocks Train Station, MSDC will continue to consider other additional locations for EV chargers.
- Car sharing continues to be promoted through the Green Travel Pages on the MSDC intranet.
- Hassocks Parking Scheme - Stage 2 has now been approved and should lead to improved traffic flow in Hassocks and reduced parking in certain problem areas.
- Continuing to educate & encourage members of the public to reduce reliance on car use.
- Effective communication of the issues to the public, professional partners and colleagues
- Works have recently been completed making Stonepound crossroads more user friendly with pedestrian and cycling facility improvements such as puffin crossings, advanced stop-lines and early release signals for cyclists.

Local Engagement and How to get Involved

Following the local elections in May 2019, new Members have now completed interactive training on air quality, the Council's responsibilities regarding LAQM, and its impact on planning.

MSDC continue to be members of the Sussex Air Quality Partnership (Sussex Air) which benefits from the co-ordinated monitoring of air pollutants across the region, including the airAlert and coldAlert services:

airAlert

Sussex Air offers to residents of Sussex a free service which provides an early warning of poor air quality by text/SMS, voice-mail or e-mail for individuals with asthma or poor respiratory health.

This service is also available as a smart-phone app.

coldAlert

Sussex Air offers to residents in Sussex free cold weather alerts. The service is open over the winter months, normally from November to March, and sends alerts by text/SMS, voice-mail or e-mail to individuals who may be susceptible to the cold weather.

This service is also available as a smart-phone app.

To receive local air pollution alerts and /or cold weather alerts you register at

- airAlert online at www.airalert.info/
- coldAlert online at www.coldalert.info/
- both by telephone on 01273 484337
- alternatively download the airAlert app for Apple or Android phones

Additionally, members of the public are able to:

- Find out about bus and coach travel, community transport, and sustainable travel on the WSCC website.
- Find out from their child's school about available travel options for getting to school.
- See the Air Quality section of the council's website for information on Bonfires & Smoke, current & previous air quality reports, Stonepound Crossroads AQMA and AQAP.

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1 Local Air Quality Management

This report provides an overview of air quality in Mid Sussex during 2019. 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 Mid Sussex 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 E.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.

A summary of AQMA declared by Mid Sussex can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at

<https://www.midsussex.gov.uk/media/1811/stonepound-crossroads-air-quality-management-area-order.pdf>.

Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides a map of air quality monitoring locations in relation to the AQMA(s).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Mid Sussex District Council AQMA (No.1) 2012	13/03/2012	NO ₂ Annual Mean	Hassocks	An area encompassing 3 residential properties at the junction of Stonepound Crossroads	YES	47	µg/m ³	36.3	µg/m ³	Mid Sussex District Council Air Quality Action Plan	2018	https://www.midsussex.gov.uk/environment/air-quality/

Mid Sussex confirm the information on UK-Air regarding their AQMA(s) is up to date

2.2 Progress and Impact of Measures to address Air Quality in Mid Sussex

Defra's appraisal of last year's ASR concluded (response in *italics*):

The report is well structured, detailed, and provides the information specified in the Guidance.

Comments were given to help inform future reports:

1. An incorrect figure was stated in Table 2.1 of the 2019 ASR.

This was corrected as required.

2. There was one exceedance in 2018, an increase from 2017, but there was a general decrease in NO₂ concentrations.

This is agreed.

3. Distance correction calculations are missing for MSAQ11.

This is a façade measurement – no correction required.

4. The Local Authority should continue to implement their remaining AQAP measures to secure stable compliance within the AQMA.

Agreed

5. New monitoring locations introduced – this is good practice.

Agreed.

6. The council misunderstood comments regarding the Public Health Outcomes Framework. In future reports it would be useful to compare the PM indicator value for Mid Sussex to nearby LA's and indicator values.

This has now been included in section 2.3 of this year's report.

7. A single map showing all monitoring locations should be included.

This has been included in the report.

The Council has updated its action plan and has determined that no additional measures are presently required given the underlying trend. Pollution levels are predicted to fall consistently below 40 µg/m³ within the near future and all available cost effective measures are already being utilised. Mid Sussex District

Council has taken forward a number of direct measures during the current reporting year of 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures are:

- “Cut Engine, Cut Pollution” signs erected
- Air/Alert service available
- District Plan now adopted, including policies on Transport and Pollution
- Signage to encourage use of the A2300 as alternative route
- Continued working with Planning to ensure maximum mitigation measures implemented for all new developments in the vicinity of the AQMA
- Car sharing is promoted through the Green Travel Pages on the MSDC intranet.
- Working through the Mid Sussex Wellbeing Hub on initiatives aimed at respiratory illnesses.
- Links to air/Alert and cold/Alert published on the Council’s website.
- Mid Sussex District Plan includes reference to supporting additional cycle ways and bridleways, including routes to Clayton and Hurstpierpoint.
- Section 106 funds were allocated from the Sustainable Transport Fund to successfully upgrade slow electric vehicle chargers to fast chargers in MSDC car parks.
- Advanced cycle stop lines on all four arms of the crossroads to assist cyclists at the junction: this is in preparation for the County Council cycle route scheme between Sayers Common and Downlands School.
- Widening work on Hurst Road and improved street lighting.

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

- The County Council continues to work with Sustrans to consider a prioritisation approach to the delivery of cycle route infrastructure across the county.
- Completion of upgrade to traffic signals equipment at the four-way junction in the AQMA: this will improve the lights' efficiency and the junction's capacity (now completed).
- Introduction of user-activated puffin crossings in Hurst Road and London Road (now completed).
- Completion of Sussex Air "Clean Burn" research, funded by Defra, aimed at better understanding the drivers for domestic burning and publicising the how and why of using cleaner fuels and the use of cleaner appliances.
- Widening work on A2300 to continue.

Mid Sussex District Council's priorities for the coming year are:

- To more effectively use the planning regime and the updated Sussex Air Planning Guidance to ensure appropriate mitigation measures, in particular EV charging infrastructure, are used for all new development, especially close to the AQMA.
- To incentivise staff to use more sustainable methods of travel whenever possible and to continue to promote the cycle to work scheme and Easit membership benefits.
- To continue working with partners in Sussex Air on a number of initiatives including engaging more with Public Health and using the Covid-19 lockdown period to better understand the relationship between traffic volume and measured pollution levels, which in turn could help inform future policy.
- To investigate exposure of NO₂ at relevant receptors in London Road East Grinstead who are located at first floor level above commercial premises.

The principal challenges and barriers to implementation that Mid Sussex District Council anticipates facing are:

- The existing restraints preventing improvements at the AQMA – traffic light sequencing is operating at optimum performance; road widening or other measures to improve flow limited by topography; alternative routes viewed by users as unreliable or taking longer.
- New development – the challenge of finding a balance between the need for new housing and the impact that the related traffic increase will have on existing pollution levels, particularly for forthcoming developments in the vicinity of the AQMA.
- Using available evidence to better understand air pollution in the context of public health and to disseminate this information.
- Increased numbers of HGV's during construction along with roadworks/traffic management could be affecting local NO₂ levels in the AQMA – controls are limited.
- Finding an appropriate site for an air quality monitoring station in East Grinstead.

Progress on minimising HGV movements & encouragement of alternate transport modes has been slower than expected due to the fact that whilst funding has been received, the timing of improvements to the A2300 road is linked to progress with the Northern Arc development. Preliminary investigative works and site clearance have now been completed and full works commenced in February 2020. The Neighbourhood Plan for Hassocks has now been approved and includes the promotion of new cycle routes which will involve commitment from West Sussex County Council (WSSCC) for implementation.

The measures stated above and in [Table 2.2](#) will help to contribute towards compliance, and Mid Sussex District Council anticipates that these measures in combination with the gradual modernisation of the vehicle fleet should result in a continuation of the existing downward trend in pollution levels, leading to future achievement of compliance and enabling the revocation of Stonepound Crossroads AQMA.

Table 2.2 – 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	Traffic Light sequencing	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2019	WSCC	S106	N/A	Reduced vehicle emissions from more efficient flow	Now completed	2020	Re-design of junction confirmed as part of developer led junction proposals - due 2021/22
2	Reducing HGV Through	Freight and Delivery	Route Management Plans/	2015	WSCC	WSCC	N/A	Reduced vehicle emissions	Signage in place, advisory routes on	2019	Alternative route not preferred option for

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	hflow by use of Advisory Lorry Routes	Managem ent	Strategic routing strategy for HGV's					from fewer HGV's	WSCC website		drivers, no current work on advisory routes
3	Cut Engine , cut pollution signs	Public Informatio n	Via other mechanisms	2014	WSCC	WSCC	N/A	Reduced vehicle emissions	Complete, possible re-design in 2020	2020	First phase successful, second phase on-going, funding applied for
4	MSDC Travel Plan	Promoting Travel Alternatives	Workplac e Travel Planning	2015	MSDC	MSDC	N/A	Less private vehicle use	Council has joined Easit, Green travel day held, Cycle 2 Works scheme. Further events planned	Ongoing	E-bikes now available for council staff
5	School & Work Travel Plans	Promoting Travel Alternatives	School Travel Plans	2014	MSDC, WSCC	MSDC , WSCC	N/A	Less private vehicle use	2 Schools with Travel plans, funding for Walk To scheme, also Bike It, car share and Travelwise schemes	2020	Applications for cycleway schemes made. Not adopted so far.
6	Improv e & Promote	Promoting Travel Alternatives	Promotio n of cycling	2014	WSCC	WSCC , s106	N/A	Less private vehicle use	Design stage almost complete,	2022	£3m cycle route between Sayers

	cycle Routes								detailed design and public consultation construction in 202/21. If approved, construction in 2021/22		common and Community School in Hassocks (via AQMA). Subject to funding and approval
7	Encourage Alternative Transport	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2014	WSCC, MSDC, Private Sector	WSCC, MSDC, Private Sector	N/A	Less private vehicle use	W Sx travel website available, Bikeability training, MSDC car park EV charge points upgraded, Hassocks Station chargers upgraded, new sites being considered, Sustainable Travel event for business well attended, car share promotion,	2015-17	n/a
8	Air Alert Service & Sussex Air	Public Information	Via other mechanisms	2013	Sussex Air	All Sussex LA's	Number of users	Advanced warning of poor air quality, dissemination	Website has monitoring data for whole of Sussex, Air	Ongoing	Website upgraded

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	Website							on of data and info	Alert service available		
9	MSDC District Plan	Policy Guidance and Development Control	Other policy	2019	MSDC	MSDC	N/A	Specific policies covering pollution, air quality and transport	District plan now published, additional guidance documents linked	2019	Updated Sussex Air AQ document released
10	Restricted parking in Hassocks	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2013	Hassocks Parish Council	HPC	N/A	Parking restrictions to reduce car use around AQMA	Scheme approved by WSCC Nov 2019	2020	Limited resources for MSDC to enforce has led to some restrictions being dropped
11	Consider Lower Speed Limit	Traffic Management	Reduction of speed limits, 20mph zones	2017	WSCC	N/A	N/A	Less traffic	Considered non-viable and unlikely to have positive impact.	2017	Non-viable
12	Raise Awareness	Public Information	Via other mechanisms	2013	MSDC, Sussex Air, PHE, WSCC	All	N/A	Greater awareness	Work with partners to disseminate benefits of active travel etc and techniques for reducing exposure	Ongoing	Public health now engaged, information programmes and activities have commenced

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.

The Public Health Outcomes Framework indicator *Fraction of mortality attributable to particulate air pollution* shows that the percentage in Mid Sussex is 5.3%. This compares to a national average of 5.2% and an average of 5.6% in the South East region.

By way of more local comparison, levels in neighbouring authorities are 5.2% in Horsham District, 5.8% in Crawley, 5.1% in Lewes District and 5.0% in Wealden District.

MSDC undertakes air quality emissions reduction measures (set out in table 2.2) which are aimed at reducing NO₂ but will also contribute to reducing PM_{2.5} emissions as these air pollutants share a similar source, e.g. road traffic emissions and combustion sources.

Mid Sussex works in partnership with Public Health to communicate the impacts of air pollution including PM_{2.5}. Additionally, Mid Sussex will utilise the “Air quality and emissions mitigation guidance for Sussex authorities (2019)” to encourage lower emission developments with planning and transport authorities to assist in reducing PM_{2.5} emissions.

Additionally, the Council is part of Sussex Air, which received Defra funding for the *Clean Burn Sussex* project aimed at encouraging cleaner domestic burning. This project has 2 distinct phases:

- 1) Education – publicizing the message domestic burning should be reduced where possible and that only clean fuels should be burned in domestic stoves and fireplaces; MSDC contributed to a social media campaign to promote cleaner burning and the development of the Clean Burn Sussex pages on the Sussex Air website;
- 2) Data collection and analysis – over 1700 responses were captured to an online survey of burning habits. This data is being analysed and will help to inform further initiatives and policy with regard to domestic burning.

Whilst we currently have no automatic monitors in the district, the Worthing AURN site measured PM_{2.5} at 10 µg/m³ as an annual mean in 2019. The national air quality objective level target value is 25 µg/m³. On this basis, it is considered very unlikely that levels in Mid Sussex are exceeding the target value.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Non-Automatic Monitoring Sites

Mid Sussex undertook non - automatic (passive) monitoring of NO₂ at 30 sites during 2019. 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) 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 bias⁴, “annualisation” (where the data capture falls below 75%), and distance correction⁵. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.1 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³. Note that the concentration data presented in Table A.1 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).

NOTE - Data from tube MSAQ30 in Pease Pottage has been excluded from the results as, due to circumstances beyond our control relating to a large construction site adjacent to the monitoring site, the tube had to be relocated numerous times during 2019 and no single location captured more than 3 months’ worth of data. Data from this site will commence in next year’s ASR.

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)

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.

Site locations are reviewed annually to allow site rotation to ensure that new locations can be added as appropriate. This allows for new development, new roads and local knowledge to be accounted for so that monitoring can be flexible and adapt to local circumstances. Following a review of monitoring sites in 2018, 2 sites (MSAQ6, and MSAQ7) were removed. MSAQ6 (Smuggler's End, Handcross), and MSAQ7 (Crabbet Park, Worth) were selected for removal as locations where levels were both relatively consistent and well below National Objective levels.

Site MSAQ20 (New Way Lane, Hurstpierpoint) was consistently vandalised.

A new site location in New Way Lane, MSAQ35, was established in April 2019.

Appendix A: Monitoring Results

Table A.2 – 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)
MSAQ1	South Road Haywards Heath	Roadside	533342	123587	NO2	NO	0	2.5	NO	1.6
MSAQ2	Traunstein Way Bolnore Village Haywards Heath	Roadside	532155	122441	NO2	NO	45	2.1	NO	2.0
MSAQ3	London Road East Grinstead	Kerbside	538690	138759	NO2	NO	18	0.5	NO	2.2
MSAQ5	Lewes Road East Grinstead	Suburban	541245	136996	NO2	NO	16	1.5	NO	2.3
MSAQ9	Water Tower Colwood Lane Warninglid	Rural	525664	125035	NO2	NO	40	35	NO	2.1
MSAQ10	Stonepound Crossroads Hassocks	Roadside	529911	115489	NO2	YES AQMA (No 1) 2012	6.7	1.5	NO	1.7
MSAQ11	Over Court Northern Façade 1 Keymer Road Hassocks	Roadside	529930	115481	NO2	YES AQMA (No 1) 2012	0	5.5	NO	2.5
MSAQ12	Telegraph Pole Keymer Road Hassocks	Kerbside	529999	115488	NO2	NO	26	1.1	NO	2.4
MSAQ13	Lamp Post Keymer Road Hassocks	Kerbside	529995	115476	NO2	NO	19	0.85	NO	2.3

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MSAQ14	Bus Stop London Road Hassocks	Kerbside	529911	115598	NO2	NO	23	1.6	NO	2.6
MSAQ15	Traffic Lights sign London Road Hassocks	Kerbside	529930	115600	NO2	NO	6.5	1.6	NO	2.4
MSAQ16	South Bank Lodge Keymer Road Hassocks	Roadside	529918	115441	NO2	YES MS AQMA (No 1) 2012	0	11.5	NO	2.4
MSAQ17	Lamp post No.4B Brighton Road Hassocks	Kerbside	529894	115340	NO2	NO	10	1.25	NO	2.2
MSAQ18	Bus Stop Brighton Road Hassocks	Kerbside	529907	115428	NO2	NO	9	2	NO	2.5
MSAQ19	Lamp post 04 Hurst Road Hassocks	Roadside	529779	115557	NO2	NO	13.2	1.3	NO	2.5
MSAQ21	London Road Burgess Hill	Roadside	530792	119821	NO2	NO	2.5	1.9	NO	2.0
MSAQ22	Leylands Road Burgess Hill	Roadside	532160	120069	NO2	NO	3	1.5	NO	2.0
MSAQ23	Over Court Eastern Façade 1 Keymer Road Hassocks	Roadside	529935	115478	NO2	YES MS AQMA (No 1) 2012	0	5.8	NO	2.0
MSAQ24	Over Court Western Façade 1 Keymer Road Hassocks	Roadside	529918	115476	NO2	YES MS AQMA (No 1) 2012	0	7.5	NO	1.8
MSAQ25	Erica Way Copthorne	Kerbside	531176	138829	NO2	NO	0	4	NO	2.0
MSAQ26	High Street Lamp post No.14 Hurstpierpoint	Suburban	528289	116395	NO2	NO	0	2.1	NO	2.5
MSAQ27	London Road (A23 Slip road) Hickstead	Suburban	526870	120238	NO2	NO	10	3.8	NO	2.2

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MSAQ28	Rocky Lane Haywards Heath	Suburban	533342	122625	NO2	NO	11	1.3	NO	2.3
MSAQ29	184 London Road East Grinstead	Roadside	539040	138451	NO2	NO	0.65	2.7	NO	2.4
MSAQ31	Traffic sign outside Imberhorne School Imberhorne Lane East Grinstead	Roadside	537680	139009	NO2	NO	47	3.8	NO	2.2
MSAQ32	Lamp Post Woodcroft Burgess Hill	Roadside	530791	120295	NO2	NO	5.5	1.5	NO	2.2
MSAQ33	Telegraph pole adj development site Folders Lane Burgess Hill	Roadside	523891	118061	NO2	NO	22.5	1.6	NO	2.1
MSAQ34	Lamp Post No 12 Queen Elizabeth Avenue Burgess Hill	Roadside	531144	118862	NO2	NO	5	4.4	NO	2.4
MSAQ35	New Way Lane Hurstpierpoint	Rural	528904	114415	NO2	NO	20	1000	NO	1.5

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.3 – Annual Mean NO₂ 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/m ³) ^{(3) (4)}				
							2015	2016	2017	2018	2019
MSAQ1	533342	123587	Roadside	Diffusion Tube		100	19.5	21.7	20.8	20.1	19.3
MSAQ2	532155	122441	Roadside	Diffusion Tube		92	23.2	23.7	22.3	23.3	22.3
MSAQ3	538690	138759	Kerbside	Diffusion Tube		100	36.9	36.7	35.8	34.4	31.7
MSAQ5	541245	136996	Suburban	Diffusion Tube		100	32.8	34.5	31.0	30.0	28.6
MSAQ6	526138	129827	Roadside	Diffusion Tube			28.0	28.7	29.1	26.2	
MSAQ7	530440	137280	Suburban	Diffusion Tube			25.3	26.5	23.6	22.5	
MSAQ9	525664	125035	Rural	Diffusion Tube		100	8.0	10.0	9.0	9.0	8.5
MSAQ10	529911	115489	Roadside	Diffusion Tube		75	40.4	43.4	38.8	41.2	39.4
MSAQ11	529930	115481	Roadside	Diffusion Tube		100	40.5	43.2	38.5	40.1	36.3
MSAQ12	529999	115488	Kerbside	Diffusion Tube		92	35.5	38.2	33.7	33.5	33.9
MSAQ13	529995	115476	Kerbside	Diffusion Tube		92	42.1	44.7	43.8	38.9	36.6
MSAQ14	529911	115598	Kerbside	Diffusion Tube		100	35.0	36.0	32.5	34.0	33.5
MSAQ15	529930	115600	Kerbside	Diffusion Tube		100	36.9	37.9	35.1	35.1	34.0
MSAQ16	529918	115441	Roadside	Diffusion Tube		100	19.2	20.7	19.8	19.9	18.0
MSAQ17	529894	115340	Kerbside	Diffusion Tube		100	23.4	28.0	25.7	28.7	24.3

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MSAQ18	529907	115428	Kerbside	Diffusion Tube		100	32.2	33.4	29.5	28.1	29.3
MSAQ19	529779	115557	Roadside	Diffusion Tube		100	16.5	18.7	18.6	17.4	15.7
MSAQ20	528854	114517	Rural	Diffusion Tube			8.2	9.1	9.0	9.3	
MSAQ21	530792	119821	Roadside	Diffusion Tube		100	27.4	32.1	29.5	29.0	27.6
MSAQ22	532160	120069	Roadside	Diffusion Tube		100	27.3	28.4	27.9	27.0	26.0
MSAQ23	529935	115478	Roadside	Diffusion Tube		100	31.8	35.3	33.9	34.5	33.4
MSAQ24	529918	115476	Roadside	Diffusion Tube		100	22.5	28.3	23.1	24.0	22.9
MSAQ25	531176	138829	Kerbside	Diffusion Tube		100	29.1	30.0	28.8	26.9	26.8
MSAQ26	528289	116395	Suburban	Diffusion Tube		100	24.3	25.7	23.9	23.6	21.5
MSAQ27	526870	120238	Suburban	Diffusion Tube		100	21.4	23.3	20.5	22.8	19.3
MSAQ28	533342	122625	Suburban	Diffusion Tube		83				24.7	25.3
MSAQ29	539040	138451	Roadside	Diffusion Tube		100					44.1
MSAQ31	537680	139009	Roadside	Diffusion Tube		92					13.2
MSAQ32	530791	120295	Roadside	Diffusion Tube		92					13.7
MSAQ33	523891	118061	Roadside	Diffusion Tube		83					17.7
MSAQ34	531144	118862	Roadside	Diffusion Tube		92					24.4
MSAQ35	528904	114415	Rural	Diffusion Tube		75					7.2

Diffusion tube data has been bias corrected

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 NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 NO₂ Concentrations

Annual mean concentrations (bias corrected) 2011 to 2019 of nitrogen dioxide diffusion tube measurements at five urban centre sites.

Year	South Road Haywards Heath MSAQ1	London Road East Grinstead MSAQ3	Lewes Road East Grinstead MSAQ5	London Road Burgess Hill MSAQ21	Leylands Road Burgess Hill MSAQ22
2011	24.2	39.1	35.6		
2012	24.4	41.8	37.6	31.2	27.7
2013	24.6	37.5	34.3	34.0	30.6
2014	22.7	39.3	37.2	29.8	28.3
2015	19.5	36.9	32.8	27.4	27.3
2016	21.7	36.7	34.5	32.1	28.4
2017	20.8	35.8	31.0	29.5	27.9
2018	20.1	34.4	30.0	29.0	27.0
2019	19.3	31.7	28.6	27.6	26.0

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

In 2013 concentrations reduced at the two sites in East Grinstead and increased at the two Burgess Hill sites.

In 2014 concentrations reduced at three of the sites and increased at the two sites in East Grinstead.

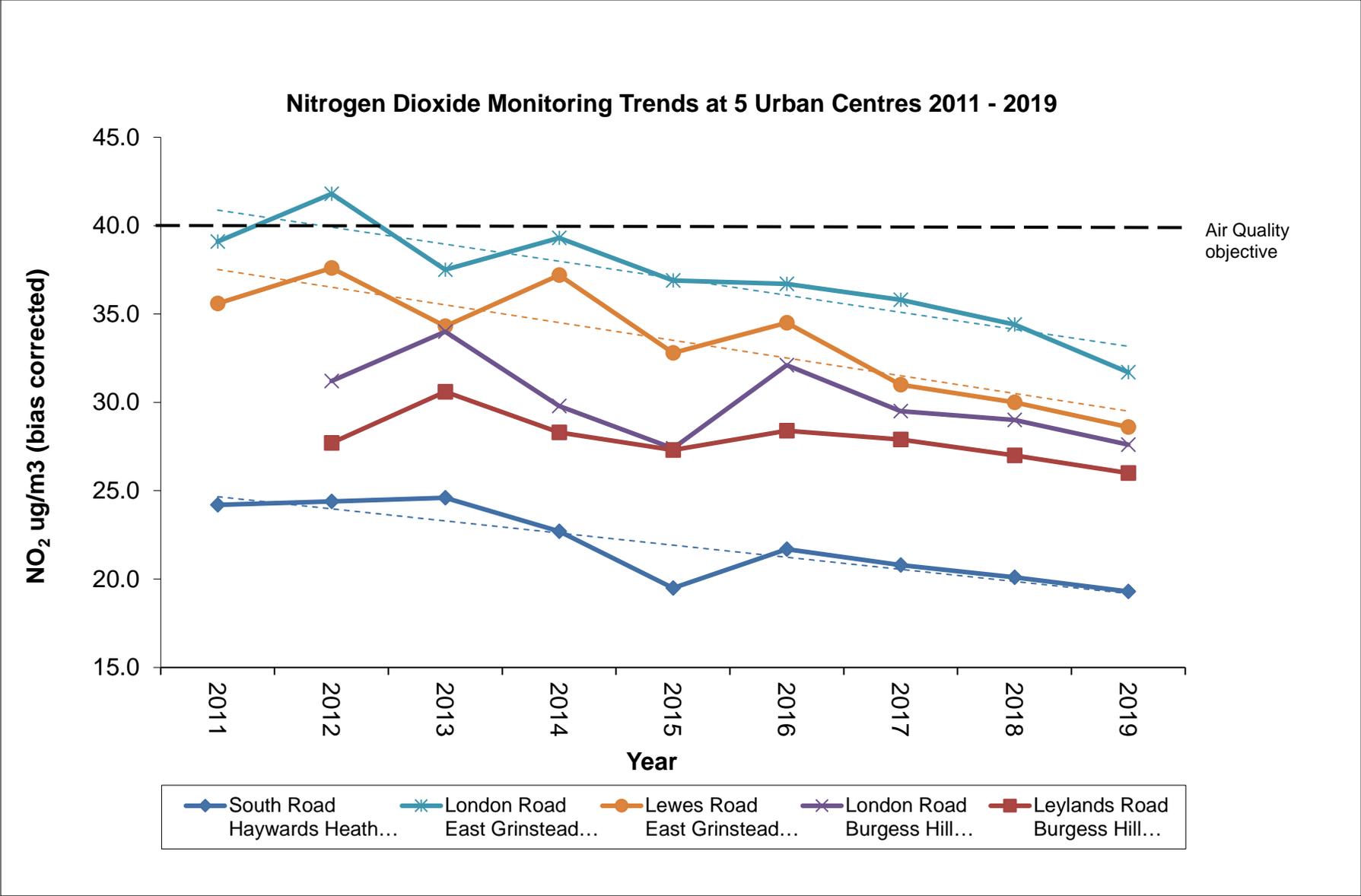
All sites showed a reduction in levels in 2015.

4 sites showed an increase in 2016.

All sites showed a reduction in levels from 2017 to 2019.

Overall the levels have reduced since 2011.

For those sites with data from 2011 to 2019 inclusive there is a (dashed) trendline shown.



Annual mean concentrations (bias corrected) 2011 to 2019 of nitrogen dioxide diffusion tube measurements at four villages, one hamlet and two rural background sites

Year	Smugglers End Handcross MSAQ6	Crabbett Park (Hamlet) MSAQ7	Warninglid (rural background) MSAQ9	Hurstpierpoint (rural background) MSAQ20	Copthorne MSAQ25	High Street Hurstpierpoint MSAQ26	London Road Hickstead MSAQ27
2011	28.2	29.1	10.2	13.5			
2012	31.6	30.1	9.2	9.4			
2013	23.9	26.7	11.0	10.9			
2014	23.3	27.1	8.0	8.8			
2015	28.0	25.3	8.0	8.2	29.1	24.3	21.4
2016	28.7	26.5	10.0	9.1	30.0	25.7	23.3
2017	29.1	23.6	9.0	9.0	28.8	23.9	20.5
2018	26.2	22.5	9.0	9.3	26.9	23.6	22.8
2019			8.5		26.8	21.5	19.3

Two of the sites showed an increase in levels in 2012, whilst the other two reduced.

Three of the sites showed a reduction in 2014.

Six of the sites showed a minor reduction in 2017 from 2016.

4 of the sites have shown a reduction in 2018 from those recorded in 2015

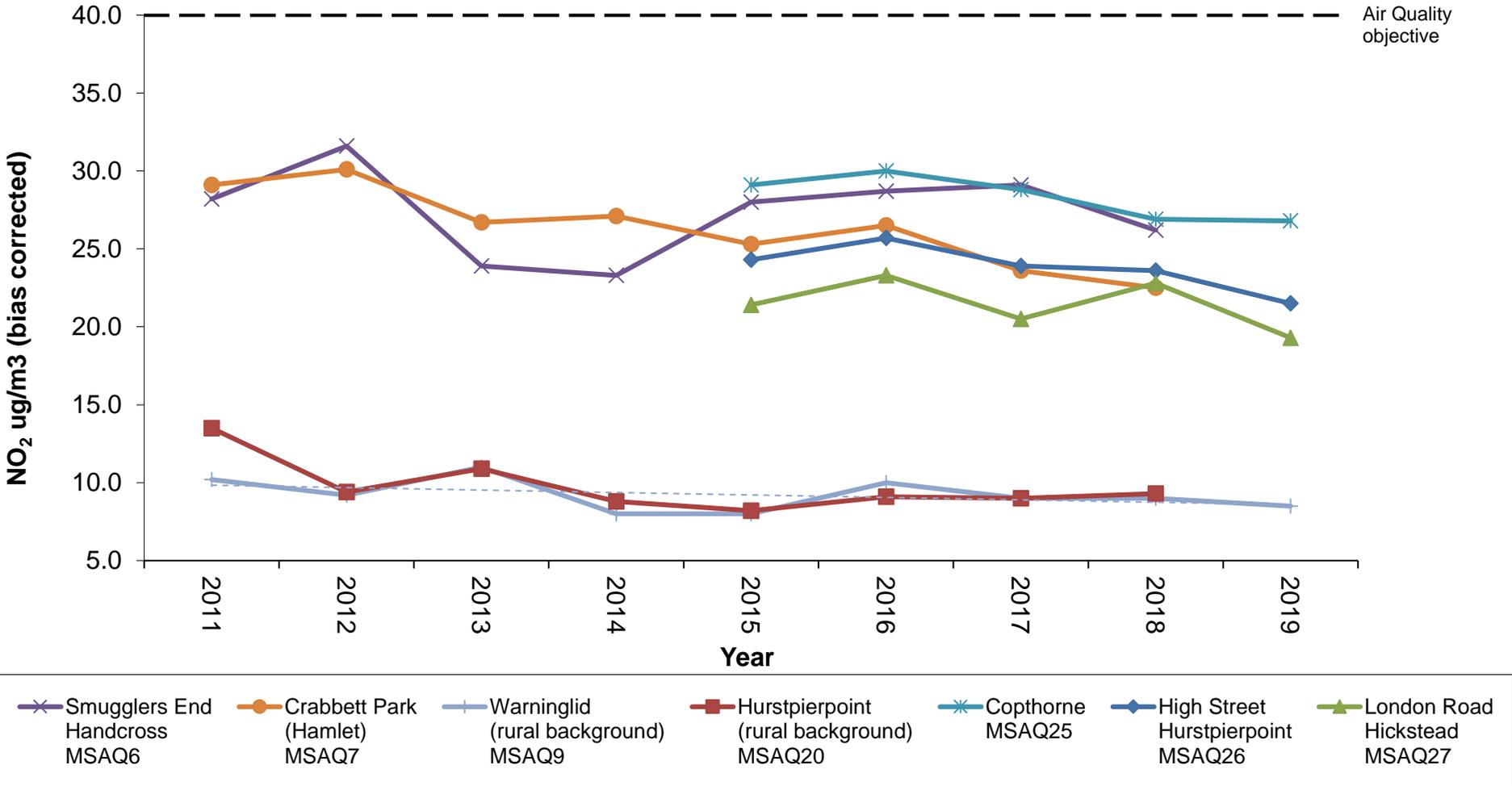
Overall the levels have reduced at 4 of the sites since 2011.

3 sites were 'retired' at the end of 2018

The remaining 4 showed a drop in recorded levels from 2018

For those sites with data from 2011 to 2019 inclusive there is a (dashed) trendline shown.

Nitrogen Dioxide Monitoring Trends at 4 Villages 1 Hamlet and 2 Rural Background Sites 2011 - 2019



Annual mean concentrations (bias corrected) 2011 to 2019 of nitrogen dioxide diffusion tube measurements at Hassocks.

Year	Telegraph Pole Keymer Road Hassocks MSAQ12	Lamp Post Keymer Road Hassocks MSAQ13	Traffic lights Keymer Road Hassocks MSAQ10	Northern Façade (residential premises) Keymer Road Hassocks MSAQ11	Eastern Façade (residential premises) Keymer Road Hassocks MSAQ23	Western Façade (residential premises) Keymer Road Hassocks MSAQ24	Bus Stop London Road Hassocks MSAQ14	Traffic sign London Road Hassocks MSAQ15	Façade (residential premises) Brighton Road Hassocks MSAQ16	Lamp Post Brighton Road Hassocks MSAQ17	Bus Stop Brighton Road Hassocks MSAQ18	Lamp Post Hurst Road Hassocks MSAQ19
2011		45.9	49.0	47.0			39.7	38.5	23.7	24.8		20.9
2012	40.0	43.4	47.4	47.0			41.9	38.4	22.8	25.4		20.7
2013	40.9	45.0	48.2	43.4	35.4	28.7	35.7	38.2	24.4	26.8	36.6	21.3
2014	36.5	41.0	41.1	42.7	33.3	22.5	40.5	35.8	20.4	27.5	33.3	18.4
2015	35.5	42.1	40.4	40.5	31.8	22.5	35.0	36.9	19.2	23.4	32.2	16.5
2016	38.2	44.7	43.4	43.2	35.3	28.3	36.0	37.9	20.7	28.0	33.4	18.7
2017	33.7	43.8	38.8	38.5	33.9	23.1	32.5	35.1	19.8	25.7	29.5	18.6
2018	33.5	38.9	41.2	40.1	34.5	24.0	34.0	35.1	19.9	28.7	28.1	17.4
2019	33.9	36.6	39.4	36.3	33.4	22.9	33.5	34.0	18.0	24.3	29.3	15.7

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

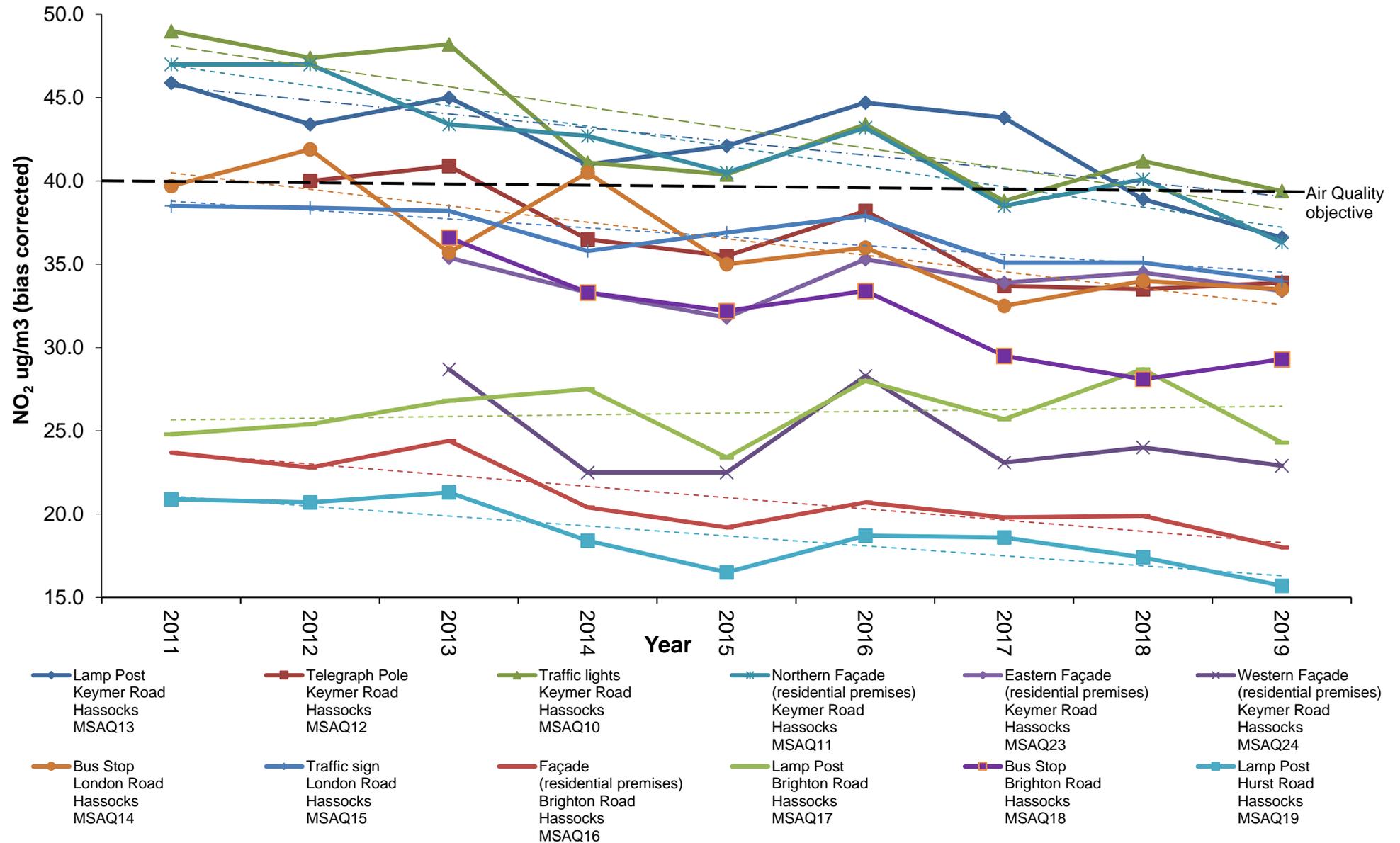
Two of the sites are above the national air quality objective in 2018 compared to 3 in 2016.

The 2016 level recorded at the location of relevant exposure (MSAQ11 - Over Court, Northern façade, Keymer Road, Hassocks) remained above the objective level at 43.2µg/m³ this has reduced in 2018 to 40.1µg/m³.

Overall the levels recorded from 2013 to 2019 show a downward trend.

For those sites with data from 2011 to 2019 inclusive there is a (dashed) trendline shown.

Nitrogen Dioxide Monitoring Trends at Hassocks 2011 - 2019



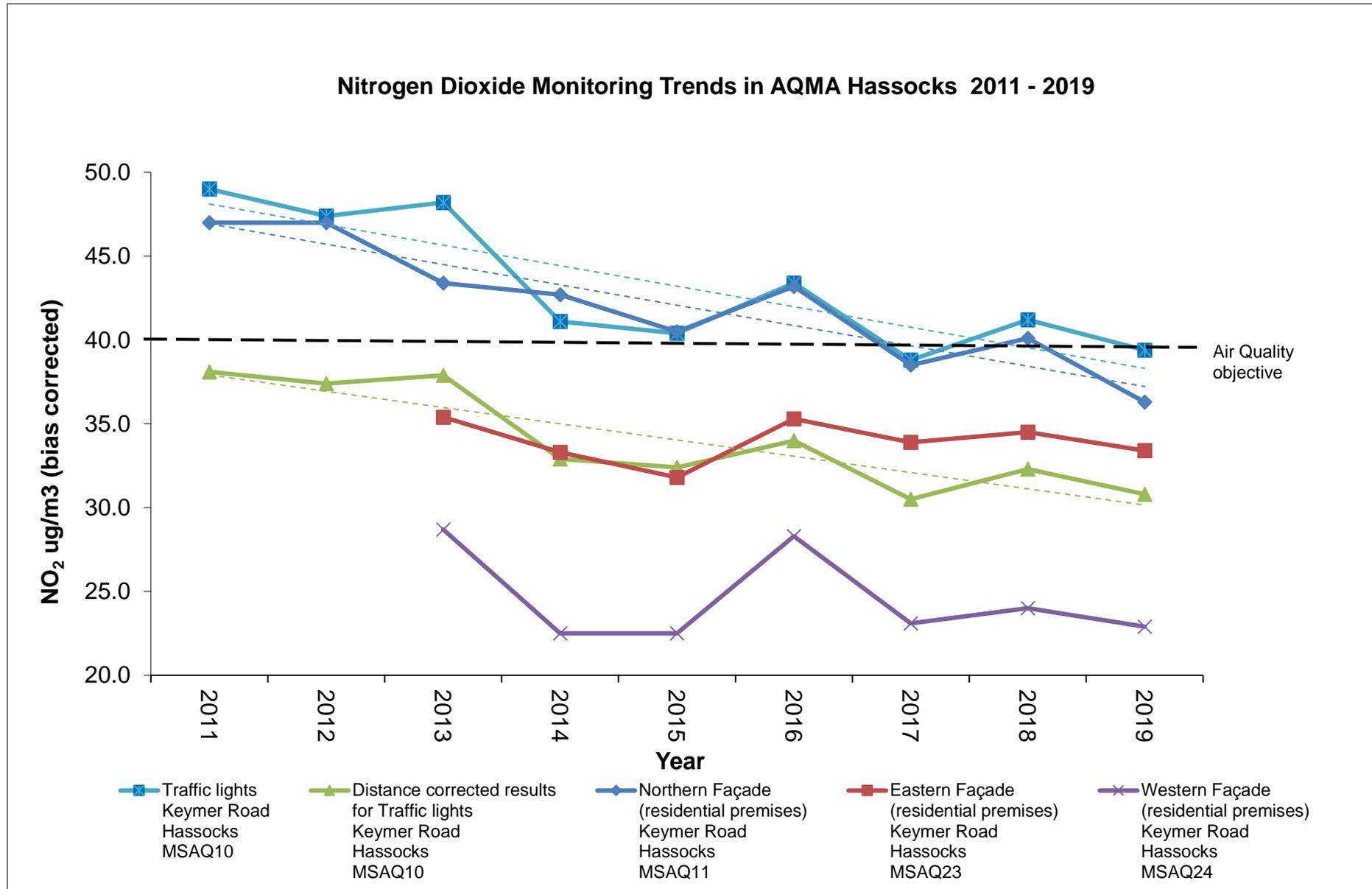
Annual mean concentrations (bias corrected) 2011 to 2019 of nitrogen dioxide diffusion tube measurements within the AQMA at Stonepound Hassocks

Year	Traffic lights Keymer Road Hassocks MSAQ10	Distance corrected results for Traffic lights Keymer Road Hassocks (see Appendix C MSAQ10)	Northern Façade (residential premises) Keymer Road Hassocks MSAQ11	Eastern Façade (residential premises) Keymer Road Hassocks MSAQ23	Western Façade (residential premises) Keymer Road Hassocks MSAQ24
2011	49.0	38.1	47.0		
2012	47.4	37.4	47.0		
2013	48.2	37.9	43.4	35.4	28.7
2014	41.1	32.9	42.7	33.3	22.5
2015	40.4	32.4	40.5	31.8	22.5
2016	43.4	34.0	43.2	35.3	28.3
2017	38.8	30.5	38.5	33.9	23.1
2018	41.2	32.3	40.1	34.5	24.0
2019	39.4	30.8	36.3	33.4	22.9

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

There has been an overall reduction in the levels recorded at the sites within the AQMA area since it was declared in 2012.

For those sites with data from 2011 to 2019 inclusive there is a (dashed) trendline shown.



Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO₂ Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO ₂ Mean Concentrations (µg/m ³)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
MSAQ1	533342	123587	21.0	29.2	22.4	19.5	18.6	16.6	18.3	17.5	17.4	20.1	26.1	22.4	20.8	19.3	
MSAQ2	532155	122441	30.1	31.6	26.6	22.8	21.9	22.6	19.8		20.7	22.1	23.6	21.9	24.0	22.3	
MSAQ3	538690	138759	49.5	44	37.9	25.7	33.3	29.8	29.8	30.3	29.1	32.3	35.9	31.8	34.1	31.7	19.8
MSAQ5	541245	136996	41.7	36.9	32.3	23.4	31.8	27.2	28.7	29.9	27.6	23.5	33.7	32.3	30.8	28.6	19.4
MSAQ9	525664	125035	11.5	14.5	7.2	10.6	7.8	7.1	6.7	5.7	6.6	7.9	15	8.6	9.1	8.5	
MSAQ10	529911	115489	47.4	41.6	44.6	42.6	43.7	43.0	37.9				48.2	32.6	42.4	39.4	30.8
MSAQ11	529930	115481	31.3	50.5	42	38.8	41.8	41.3	41.3	35.1	35	34.6	36.7	39.8	39.0	36.3	
MSAQ12	529999	115488	45.5	39.9	45.2	39.8	37.3	36.6	33	27.7	29.2		36.7	30.6	36.5	33.9	
MSAQ13	529995	115476	44.5	51.9	48.5	39.9	39.3	37.5		28.8	37.4	35.1	38	32.6	39.4	36.6	19.9
MSAQ14	529911	115598	38.3	46.2	33.8	35.5	35.2	32.7	38.2	31	32.5	34.8	36.6	37.4	36.0	33.5	
MSAQ15	529930	115600	42.4	44.9	39.3	29.6	40.7	35.4	41.6	25.5	40.6	28.4	31.9	38.5	36.6	34.0	25.1
MSAQ16	529918	115441	25.7	22.6	20.4	19.7	18.4	17.4	15.9	17.4	18.4	17.2	20.9	18.2	19.4	18.0	
MSAQ17	529894	115340	37.2	33	27.5	30.1	20.7	22.7	23.2	17.7	27.4	25.1	26.7	22	26.1	24.3	17.4
MSAQ18	529907	115428	30.7	34.8	33.7	27.4	33.7	30.5	33.8	35.4	32.3	29.7	30.6	25.3	31.5	29.3	21.4
MSAQ19	529779	115557	23.9	23.6	20	18.6	15.6	13.8	11.1	8.5	13.7	15.7	21.3	17.5	16.9	15.7	12.5
MSAQ21	530792	119821	36.4	31.8	28	32	28.5	28.6	24	25.5	26.8	31	35.1	28.2	29.7	27.6	24.5

Mid Sussex District Council

MSAQ22	532160	120069	37.8	34.4	35.8	27.9	27.6	23.6	22.4	21.3	24.4	25.8	29.4	25.3	28.0	26.0	22.1
MSAQ23	529935	115478	41.9	42.6	38.8	34.4	33	35.3	33	24.4	31.4	39.3	38.2	38.2	35.9	33.4	
MSAQ24	529918	115476	26.1	27.8	28	26.4	24.2	23.3	18.5	19.3	22.3	24.7	28.7	25.4	24.6	22.9	
MSAQ25	531176	138829	36.7	37.4	26	24.9	24.1	26.4	28.9	25.2	27.5	27.4	30.9	29.8	28.8	26.8	
MSAQ26	528289	116395	31.3	28.6	25.5	21.6	21.3	20.7	19	17.7	20	19.9	27.6	23.8	23.1	21.5	20.5
MSAQ27	526870	120238	18.7	26.8	20.1	26.3	19.4	19.8	18.8	18	18.7	15.9	25.9	21.3	20.8	19.3	16.5
MSAQ28	533342	122625	29.1	35.7	24.2	25.3	24.7	23.4	24.8	21		33.4		30.5	27.2	25.3	18.0
MSAQ29	539040	138451	55.2	52.9	50.1	45.7	44.8	45.7	49.3	44.4	43.7	41.6	48.4	46.6	47.4	44.1	42.4
MSAQ31	537680	139009		18.1	14.3	16.1	12.7	11.6	10	8.2	13.7	16.2	22.6	13	14.2	13.2	
MSAQ32	530791	120295		18.8	15	13.7	13.9	13.4	13.1	12.4	13	14.3	18	15.9	14.7	13.7	12.6
MSAQ33	523891	118061		24.4	20.1	22.5	18.8	19.8	16.6	14.8	14.4		22.9	15.7	19.0	17.7	
MSAQ34	531144	118862		38.1	30.5	26.4	22.9	20.6		22.3	20	24.8	30.7	25.9	26.2	24.4	21.5
MSAQ35	528904	114415				8.7	6.7	6.1	6.8	6.1	6.7	8.7	11.7	7.5	7.7	7.2	

National bias adjustment factor used

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

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 Factors

The tubes are supplied by Gradko laboratories and are prepared using 20% TEA in water.

The bias adjustment factor used to correct the diffusion tube monitoring results is 0.93 taken from the database of diffusion tube bias factors spreadsheet (v03_20) available at <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>.

National Diffusion Tube Bias Adjustment Factor Spreadsheet				Spreadsheet Version Number: 03/20						
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 spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.								This spreadsheet will be updated at the end of June 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:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data ²	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953							
Analysed By ¹	Method <small>To undo your selection, choose (All) from the pop-up list</small>	Year ² <small>To undo your selection, choose (All)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁵	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2019	UC	Belfast City Council	10	29	24	21.8%	G	0.82
Gradko	20% TEA in water	2019	R	Dudley MBC	12	33	32	4.5%	G	0.96
Gradko	20% TEA in water	2019	R	Dudley MBC	12	44	42	3.9%	G	0.96
Gradko	20% TEA in water	2019	UB	Dudley MBC	12	23	19	19.8%	G	0.83
Gradko	20% TEA in water	2019	UB	Eastleigh Borough Council	12	24	26	-7.1%	G	1.08
Gradko	20% TEA in water	2019	R	Gateshead Council	12	34	27	23.7%	P	0.81
Gradko	20% TEA in water	2019	R	Gateshead Council	11	40	44	-10.5%	G	1.12
Gradko	20% TEA in water	2019	R	Gateshead Council	10	32	34	-7.2%	G	1.08
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	50	-9.3%	G	1.10
Gradko	20% TEA in water	2019		Overall Factor³ (27 studies)					Use	0.93

This bias factor was used as Mid Sussex do not have any automatic monitoring sites meaning a local bias adjustment factor was not available.

Annualisation Calculation

This calculation is required when nitrogen dioxide diffusion tube data capture at a site is below 75%.

For 2019 none of the sites in Mid Sussex had data capture less than 75%.

QA/QC of Diffusion Tube Monitoring

Results for the nitrogen dioxide diffusion collocation studies available at <http://laqm.defra.gov.uk/diffusion-tubes/precision.html> show Gradko laboratory had good precision for 2019.

Distance Correction for monitoring sites

Distance correction is an important point to consider. If monitoring sites are not representative of public exposure (e.g. if located at roadside or kerbside sites where the façades of nearest properties are set back further from the road).

The monitored result at that site can be distance corrected to estimate the level at the façade of a nearby building.

The distance corrected results for such sites monitored are shown in Appendix B.

Below are the spreadsheets used to make the calculations.

The NO₂ fall off with distance from the roads calculator v4.1 is available at:-

<https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>

MSAQ3 London Road East Grinstead 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	0.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	18.5	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	11.7	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	34.1	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	19.8	µg/m ³

MSAQ5 Lewes Road East Grinstead 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	17.5	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.7	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	30.8	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	19.4	µg/m ³

MSAQ10 Stonepound Traffic Lights Hassocks 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	5.5	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.4	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	39.4	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	30.8	µg/m ³

MSAQ13 Lamp Post Keymer Road Hassocks 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	0.85	metres
Step 2	How far from the KERB is your receptor (in metres)?	19.85	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.4	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	36.6	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	19.9	µg/m ³

MSAQ15 Traffic Light sign London Road Hassocks 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.6	metres
Step 2	How far from the KERB is your receptor (in metres)?	8.1	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.4	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	34	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	25.1	µg/m ³

MSAQ17 Lamp Post Brighton Road Hassocks 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.25	metres
Step 2	How far from the KERB is your receptor (in metres)?	11.25	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.4	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	24.3	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	17.4	µg/m ³

MSAQ18 Bus Stop Brighton Road Hassocks 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	2	metres
Step 2	How far from the KERB is your receptor (in metres)?	11	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.4	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	29.3	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	21.4	µg/m ³

MSAQ19 Lamp Post Hurst Road Hassocks 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.3	metres
Step 2	How far from the KERB is your receptor (in metres)?	14.5	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.4	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	15.7	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	12.5	µg/m ³

MSAQ21 London Road Burgess Hill 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.9	metres
Step 2	How far from the KERB is your receptor (in metres)?	4.4	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	11.7	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	27.6	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	24.5	µg/m ³

MSAQ22 Leylands Road Burgess Hill 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	4.5	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.7	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	26	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	22.1	µg/m ³

MSAQ26 High Street Hurstpierpoint 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.1	metres
Step 2	How far from the KERB is your receptor (in metres)?	3	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	9.9	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	21.5	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	20.5	µg/m ³

MSAQ27 London Road Hickstead 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	3.8	metres
Step 2	How far from the KERB is your receptor (in metres)?	15	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	12	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	19.3	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	16.5	µg/m ³

MSAQ28 Rocky Lane Haywards Heath 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.3	metres
Step 2	How far from the KERB is your receptor (in metres)?	12.3	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	10	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	25.3	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	18.0	µg/m ³

MSAQ29 London Road East Grinstead 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	3.35	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	12.9	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	44.1	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	42.4	µg/m ³

MSAQ32 Woodcroft Burgess Hill 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	7	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	10.5	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	13.7	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	12.6	µg/m ³

MSAQ34 Queen Elizabeth Avenue Burgess Hill 2019



Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	4.4	metres
Step 2	How far from the KERB is your receptor (in metres)?	9.4	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	11.2	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	24.4	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	21.5	µg/m ³

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

Figure 1 Air Quality Monitoring Sites 2019

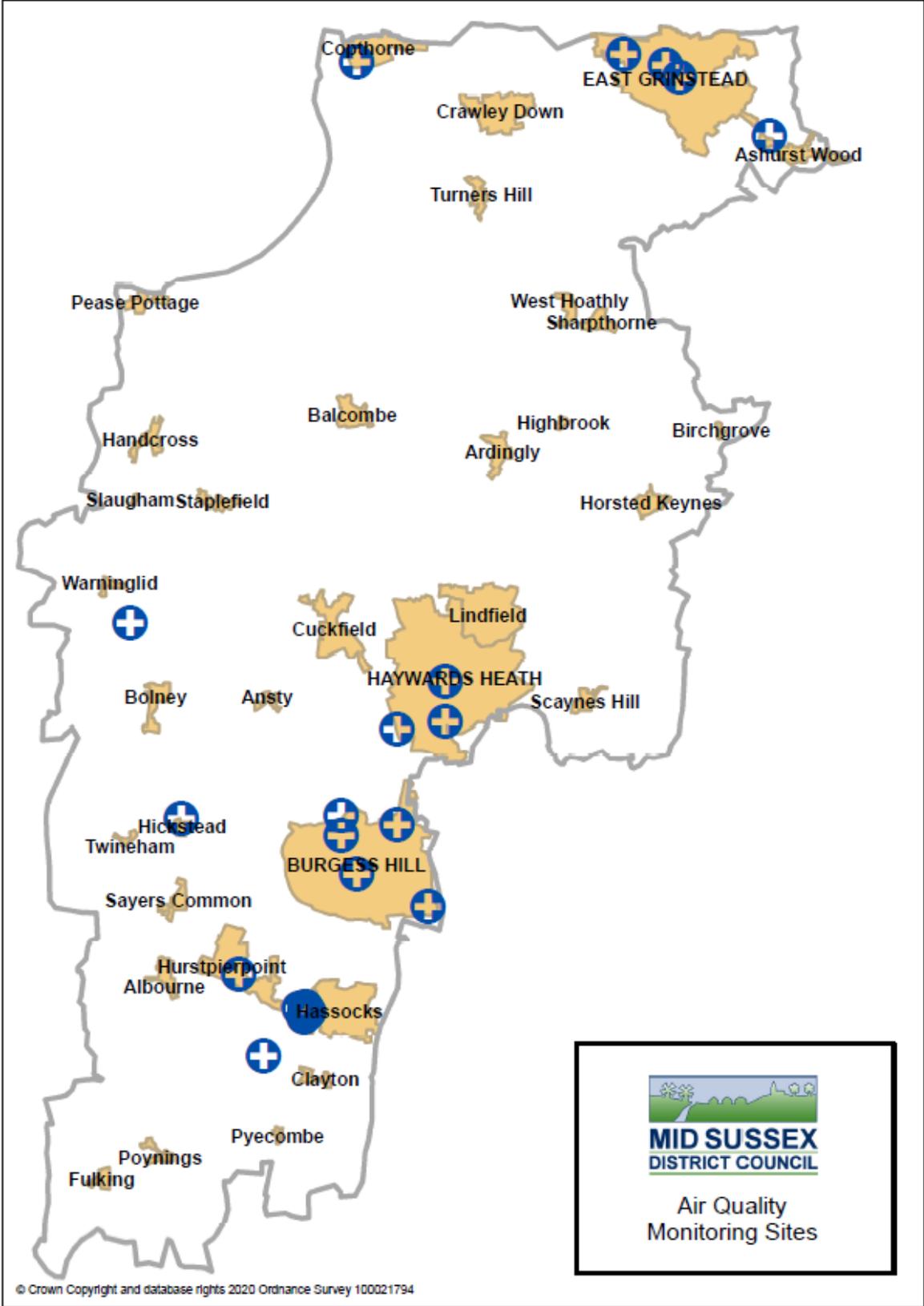


Figure 2 MSAQ1 South Road, Haywards Heath, adjacent to The Cook Shop

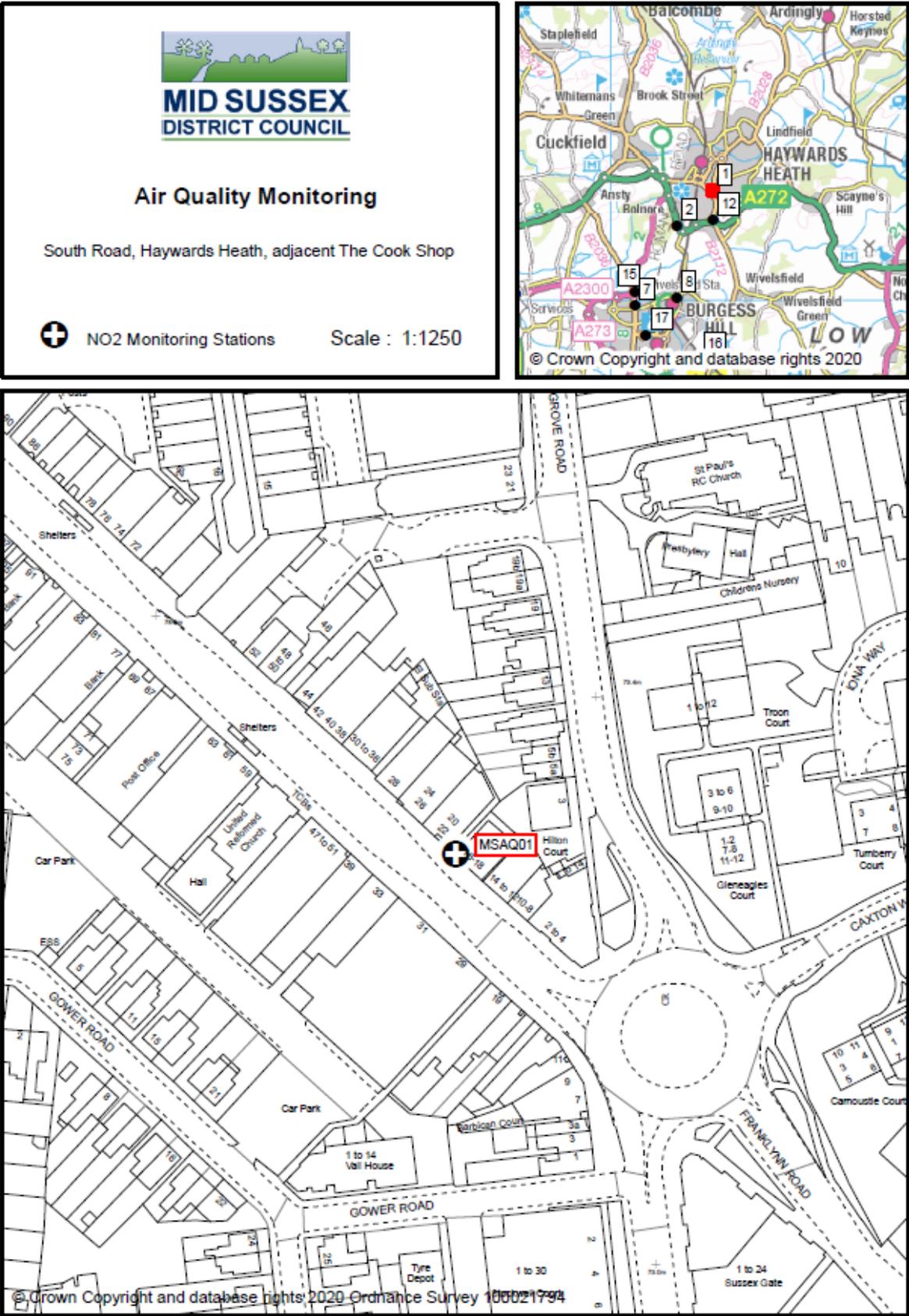


Figure 3 MSAQ2 Lower Village roundabout, Traunstein Way, Haywards Heath

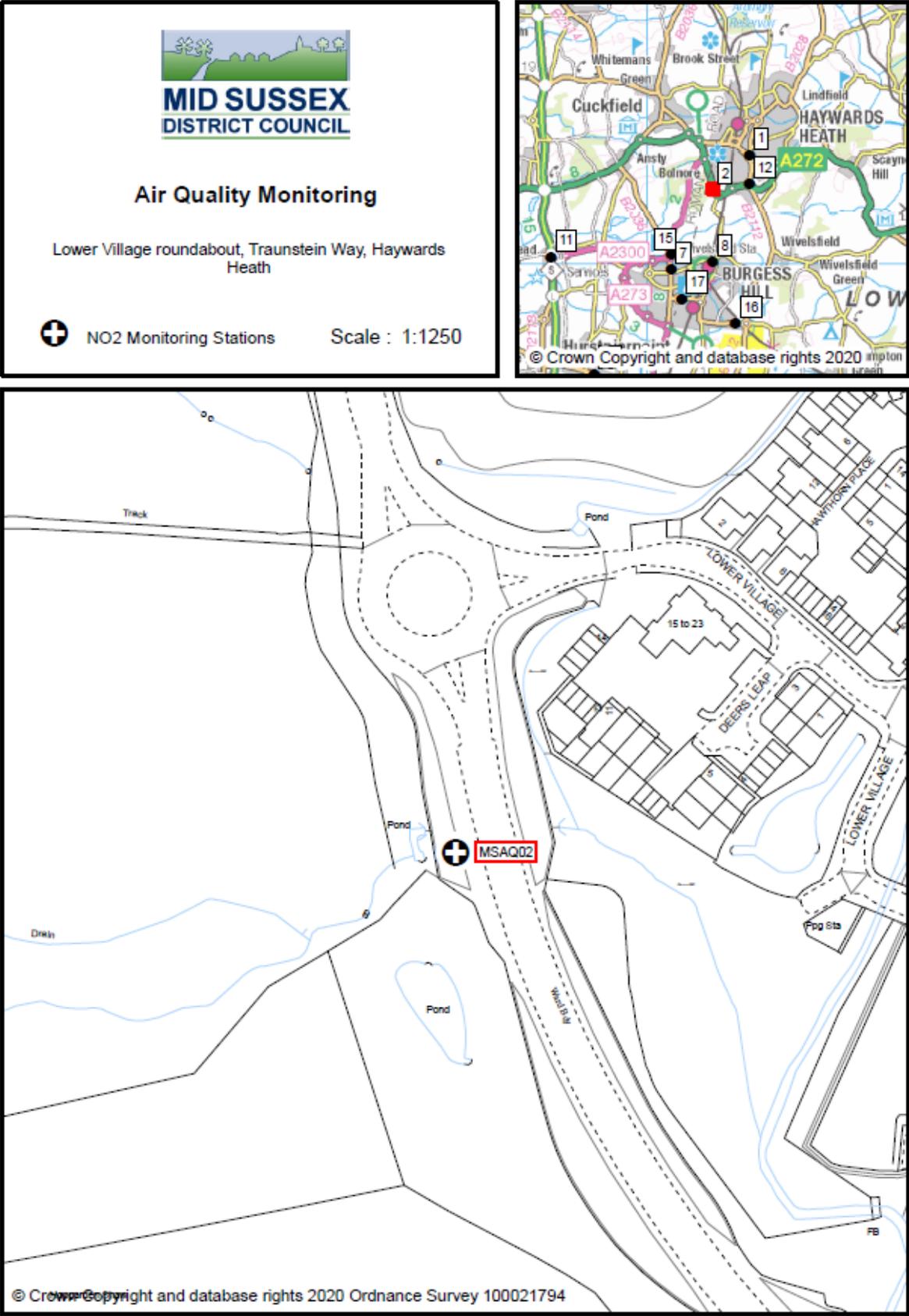


Figure 4 MSAQ3 London Road, East Grinstead, adjacent to Southwick House

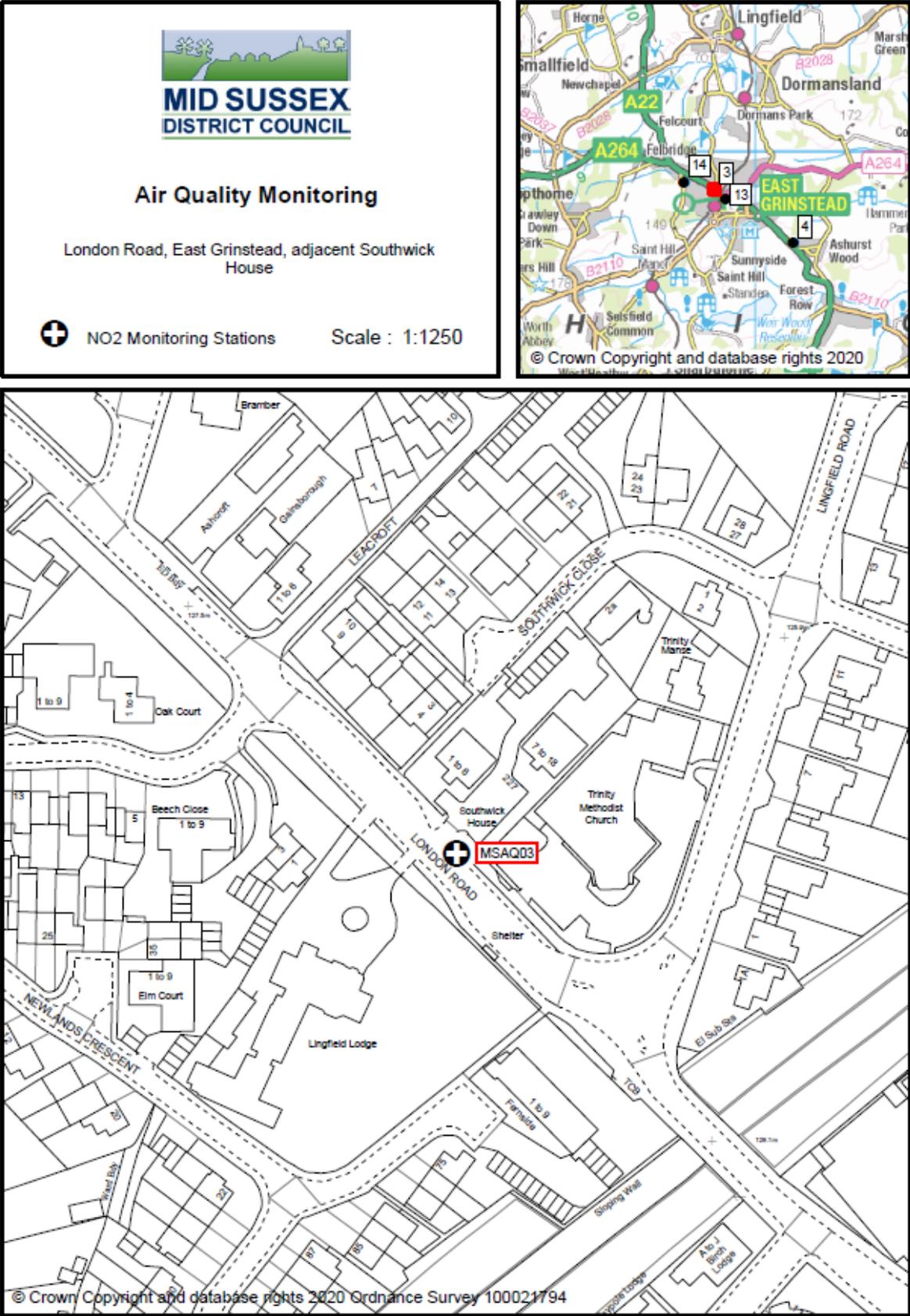


Figure 5 MSAQ5 Lewes Road, East Grinstead

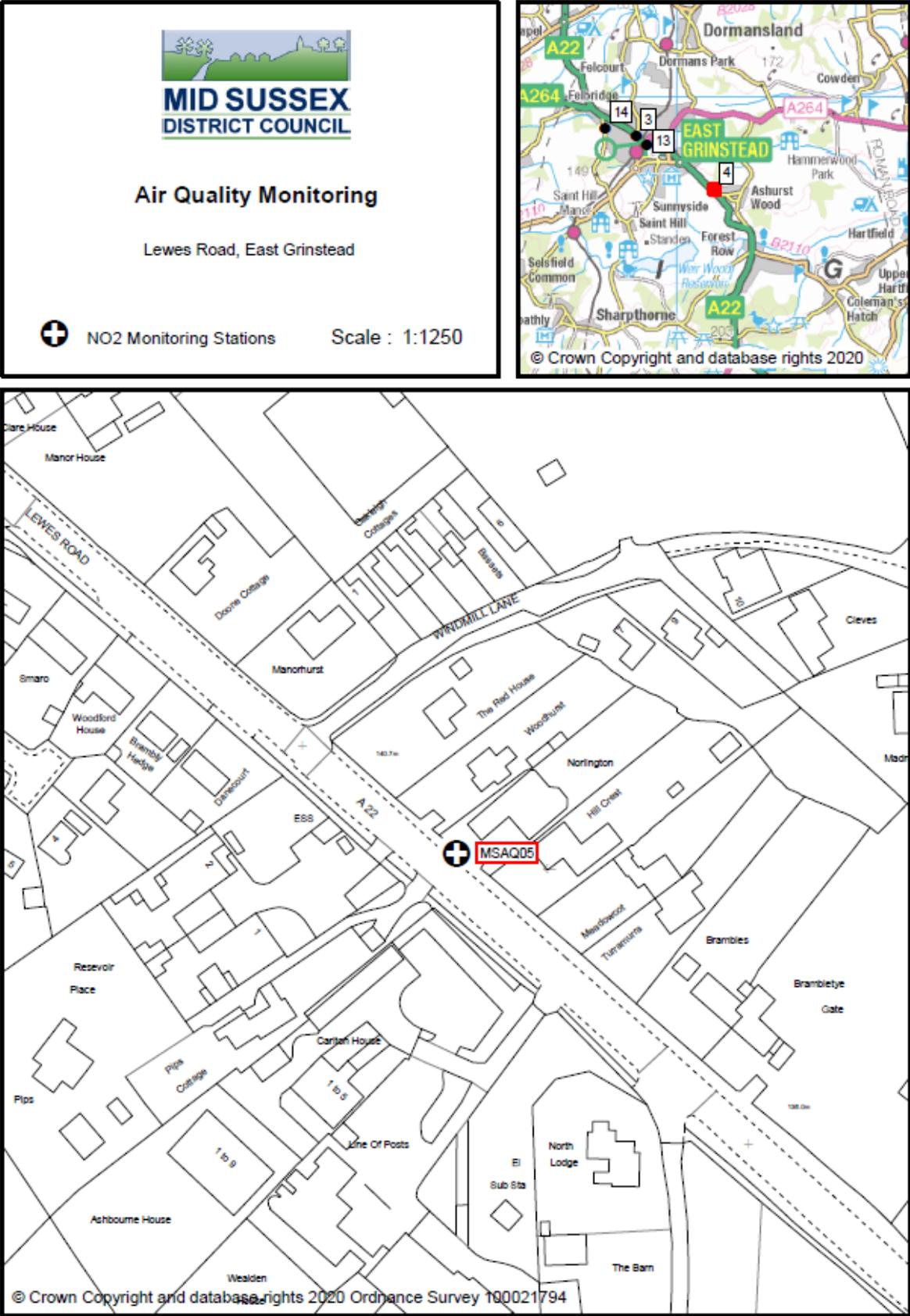


Figure 6 MSAQ9 Water Tower, Colwood Lane, Warninglid

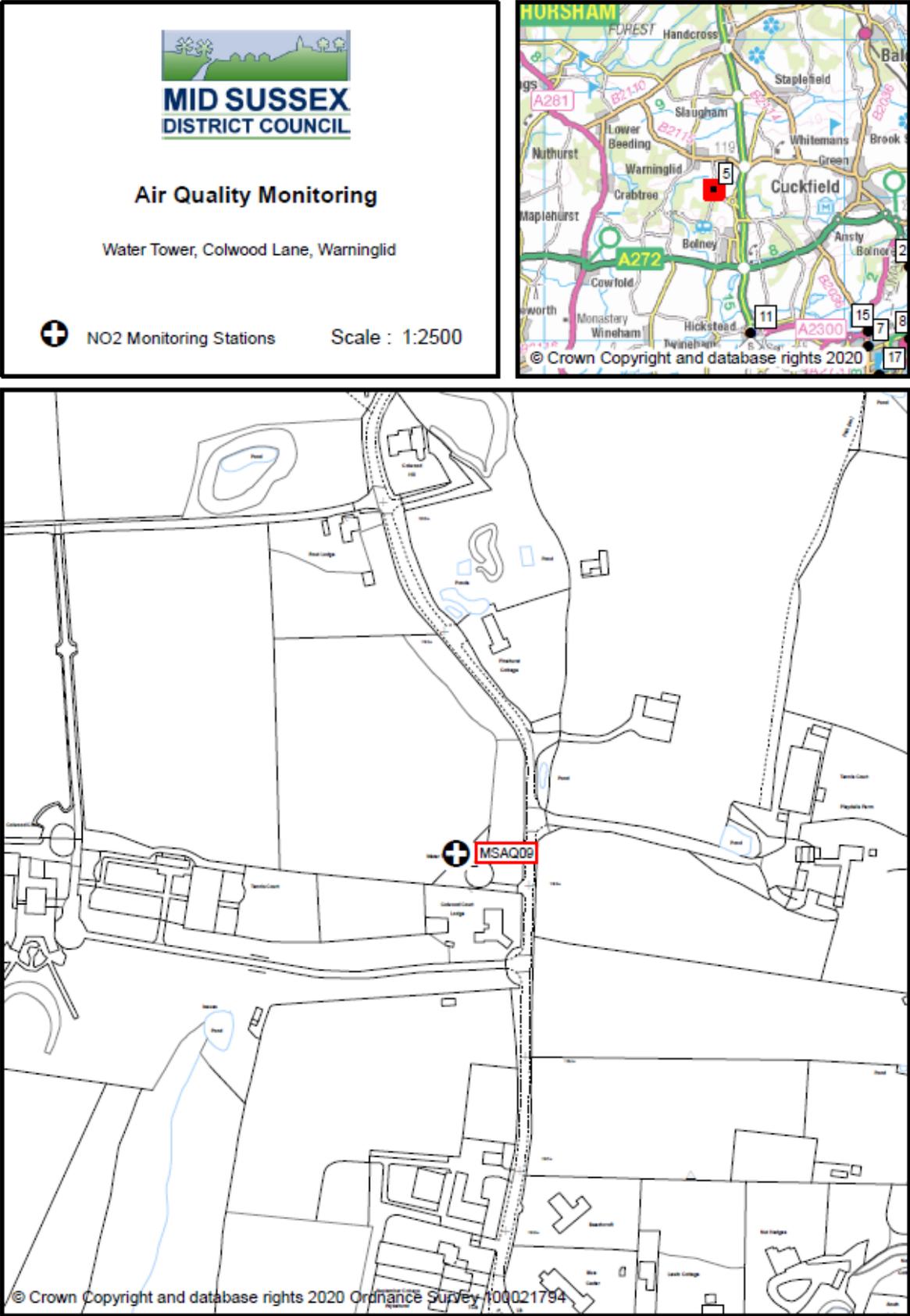


Figure 7 MSAQ10 to MSAQ19 and MSAQ23 and MSAQ24
Stonepound Crossroads, Keymer Road, Hassocks

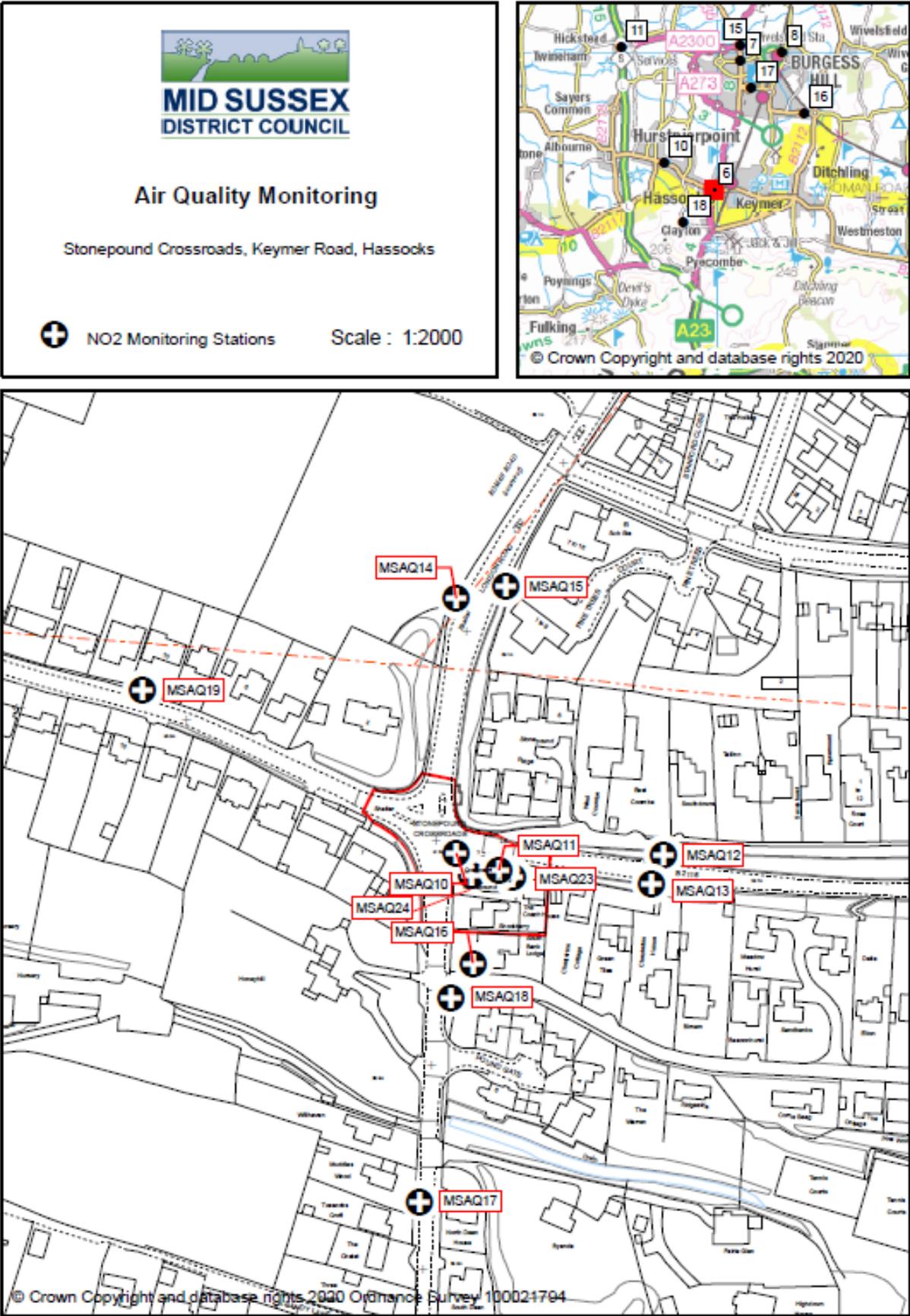


Figure 8 NO₂ Monitoring sites within AQMA Stonepound Crossroads Hassocks

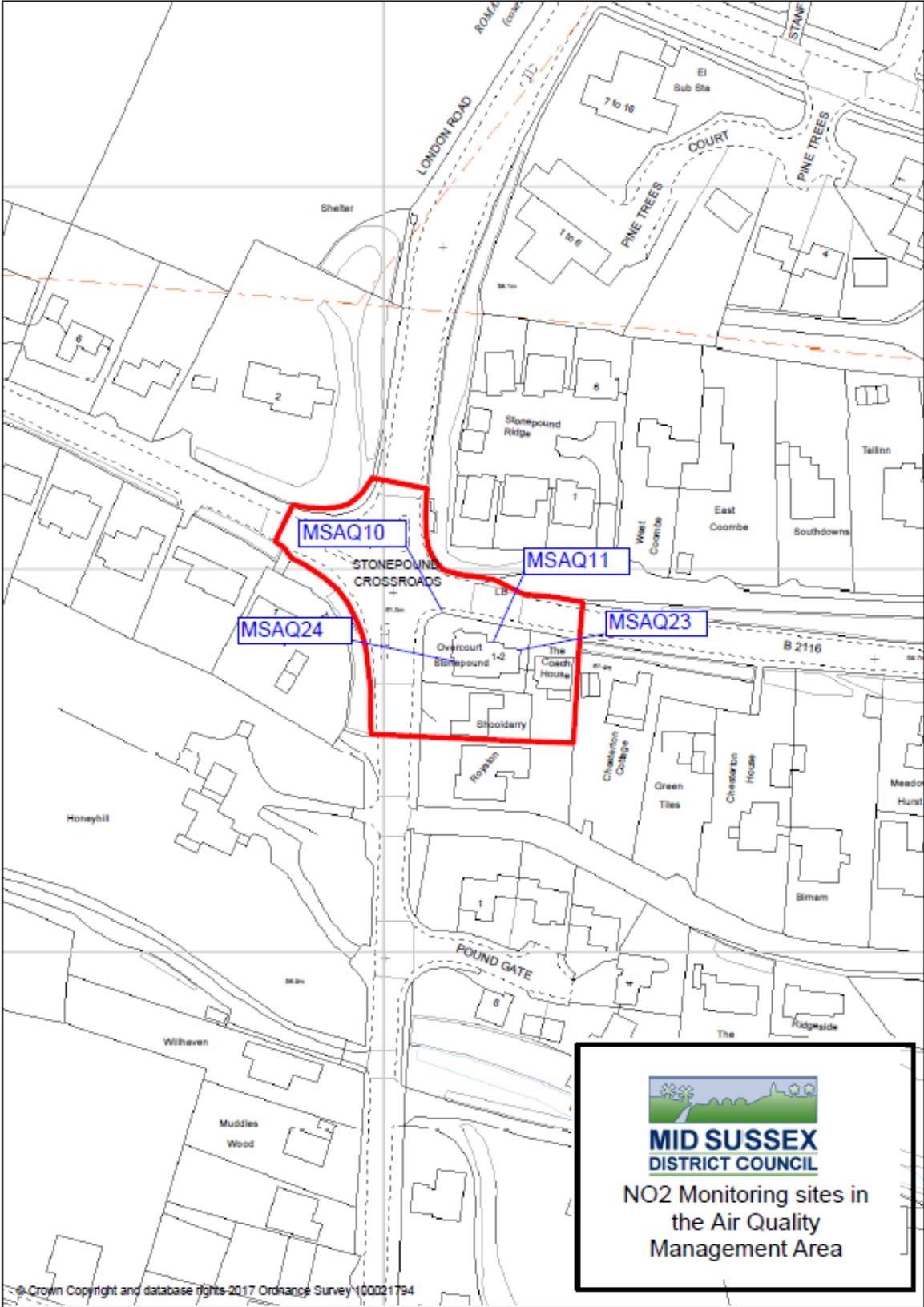


Figure 9 MSAQ35 New Way Lane, Hurstpierpoint

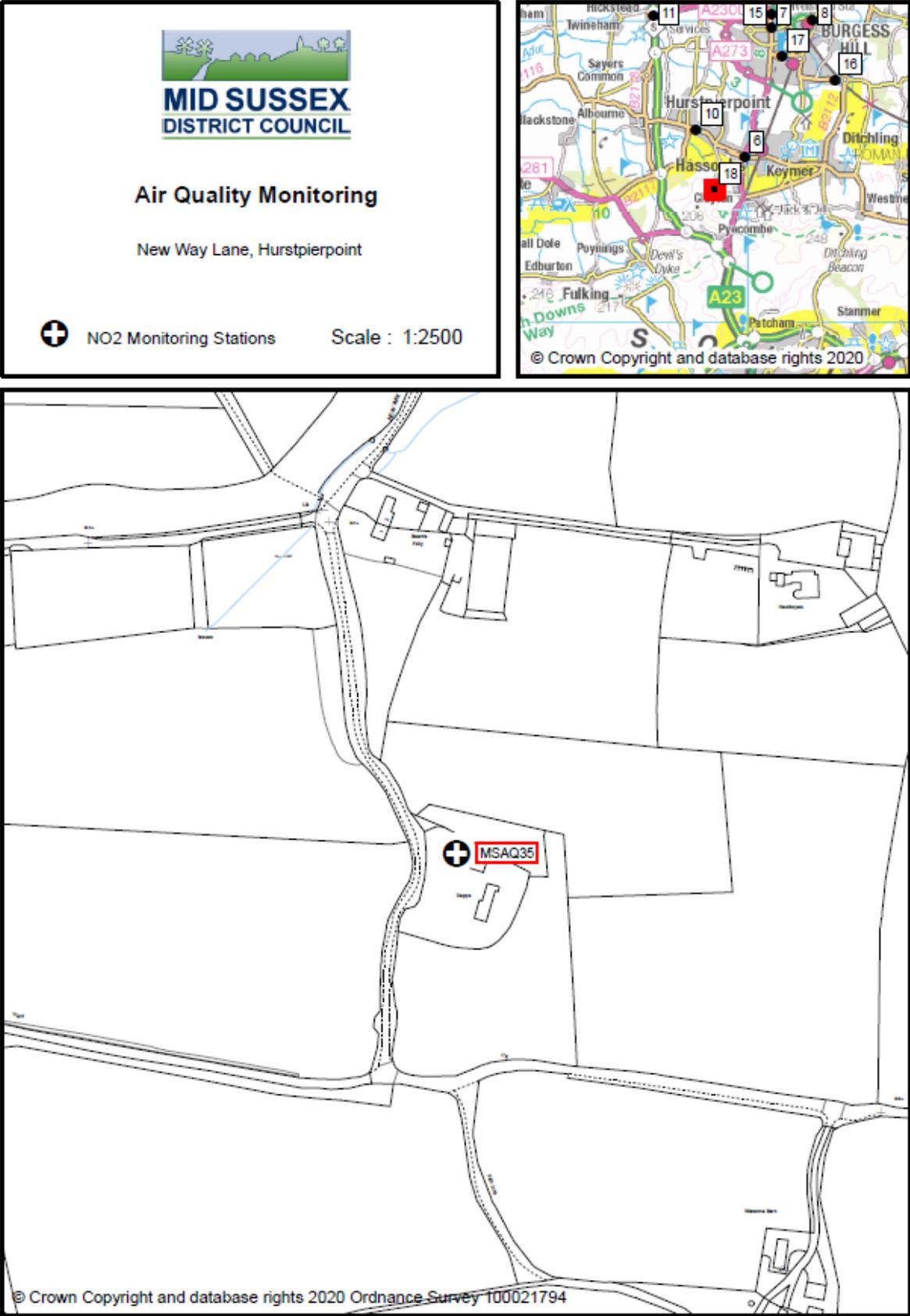


Figure 10 MSAQ21 86-88 London Road, Burgess Hill

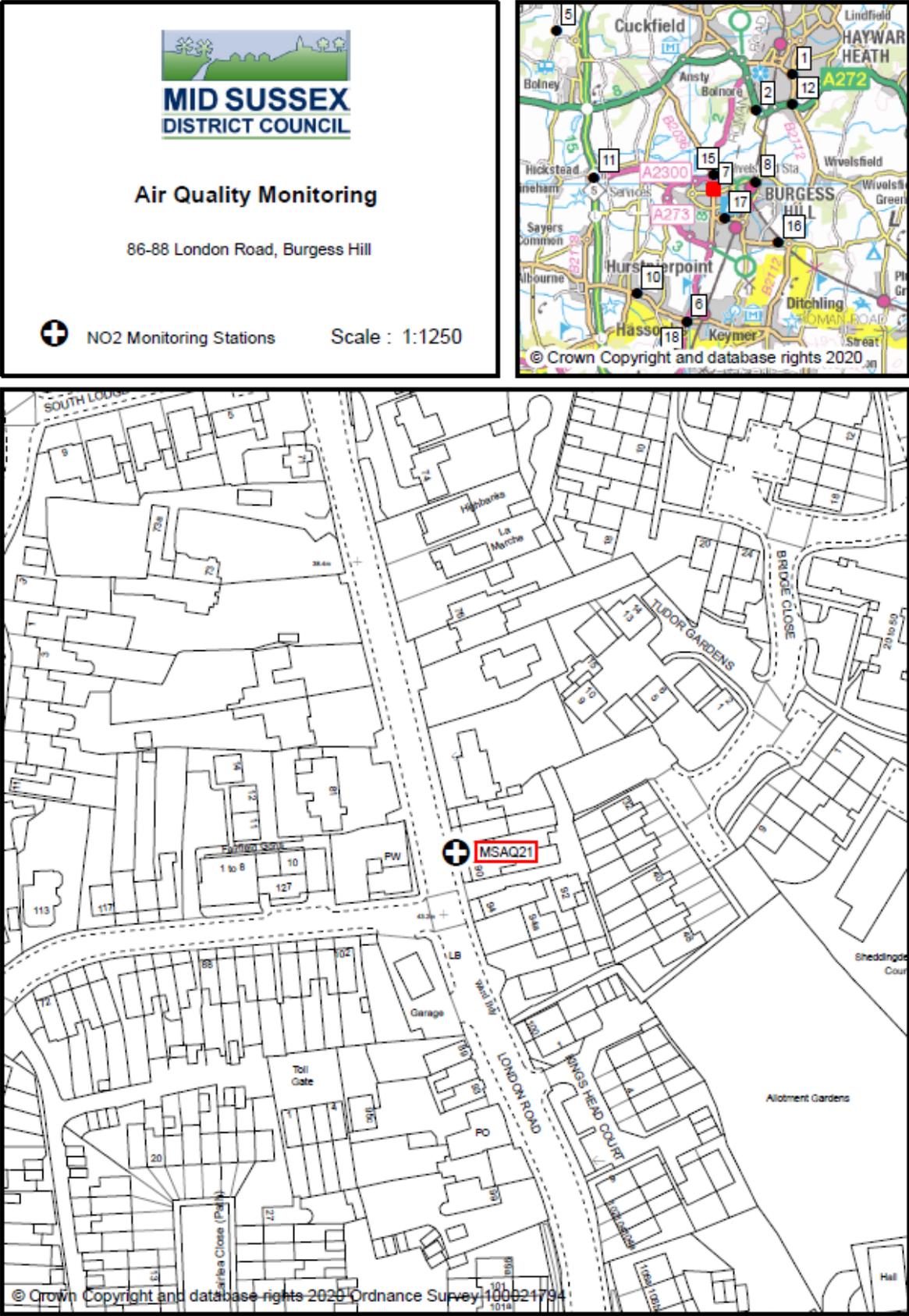


Figure 11 MSAQ22 Leylands Road, Burgess Hill

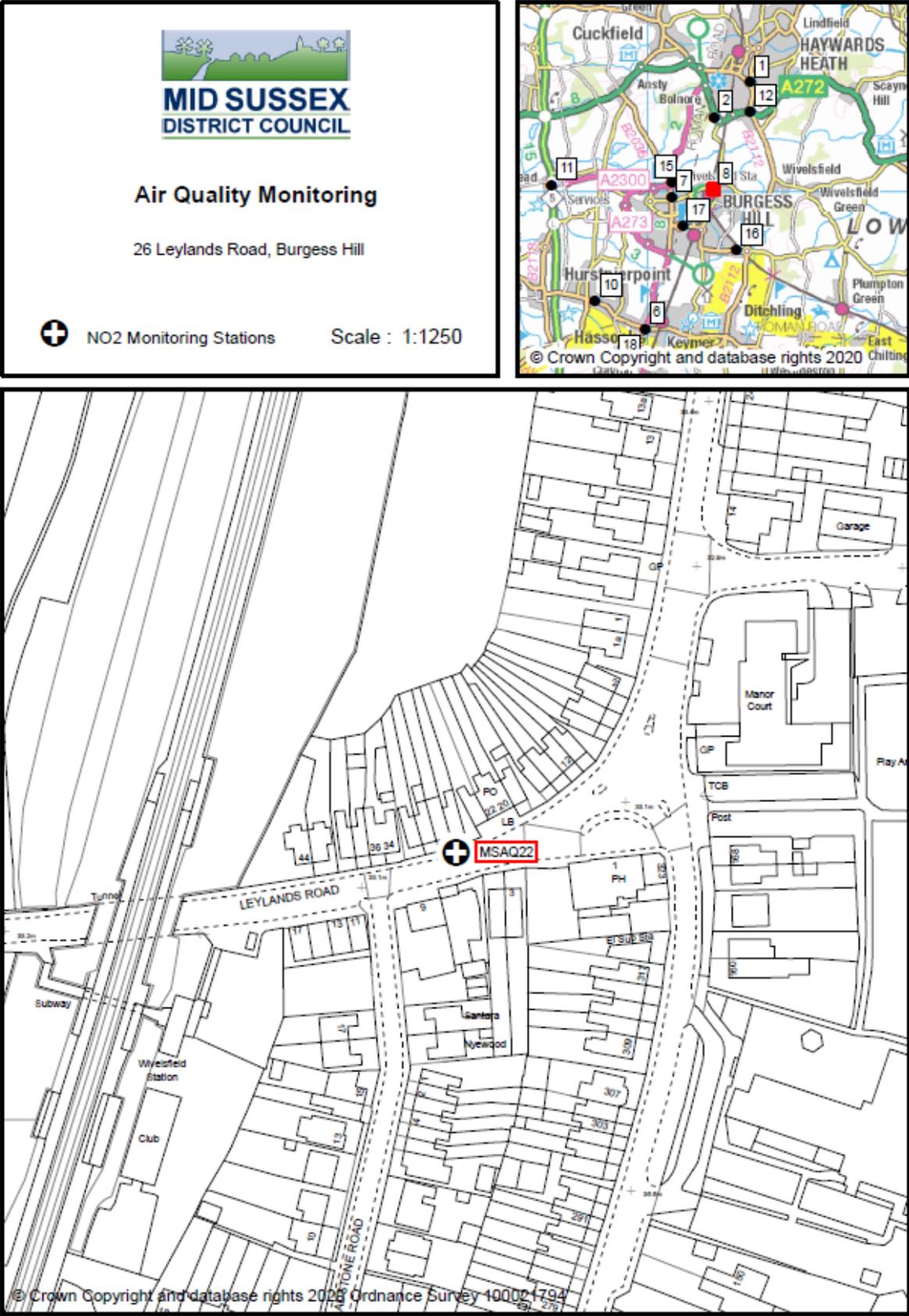


Figure 12 MSAQ25 Erica Way, Copthorne

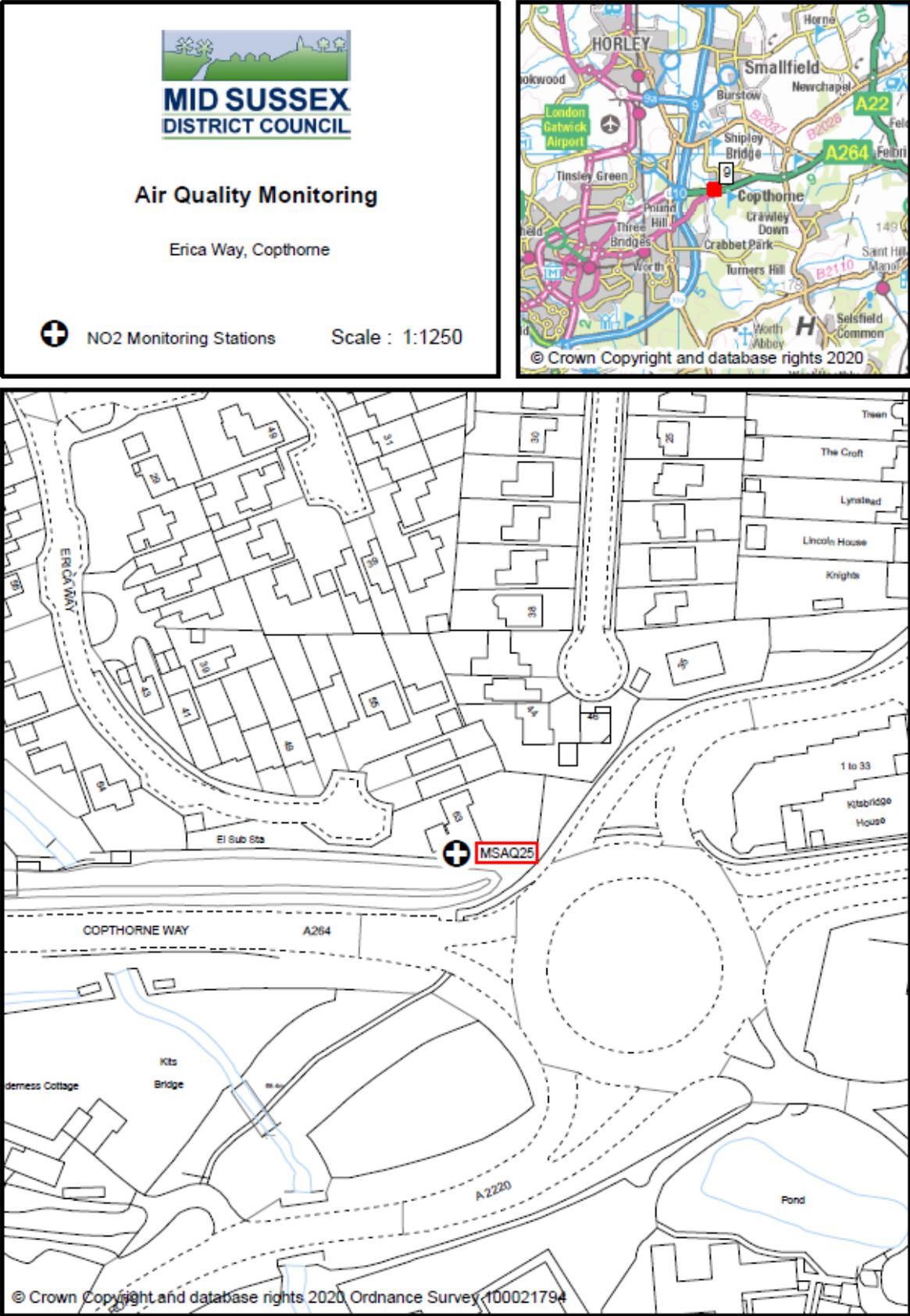


Figure 13 MSAQ26 Lamp Post 14, High Street, Hurstpierpoint

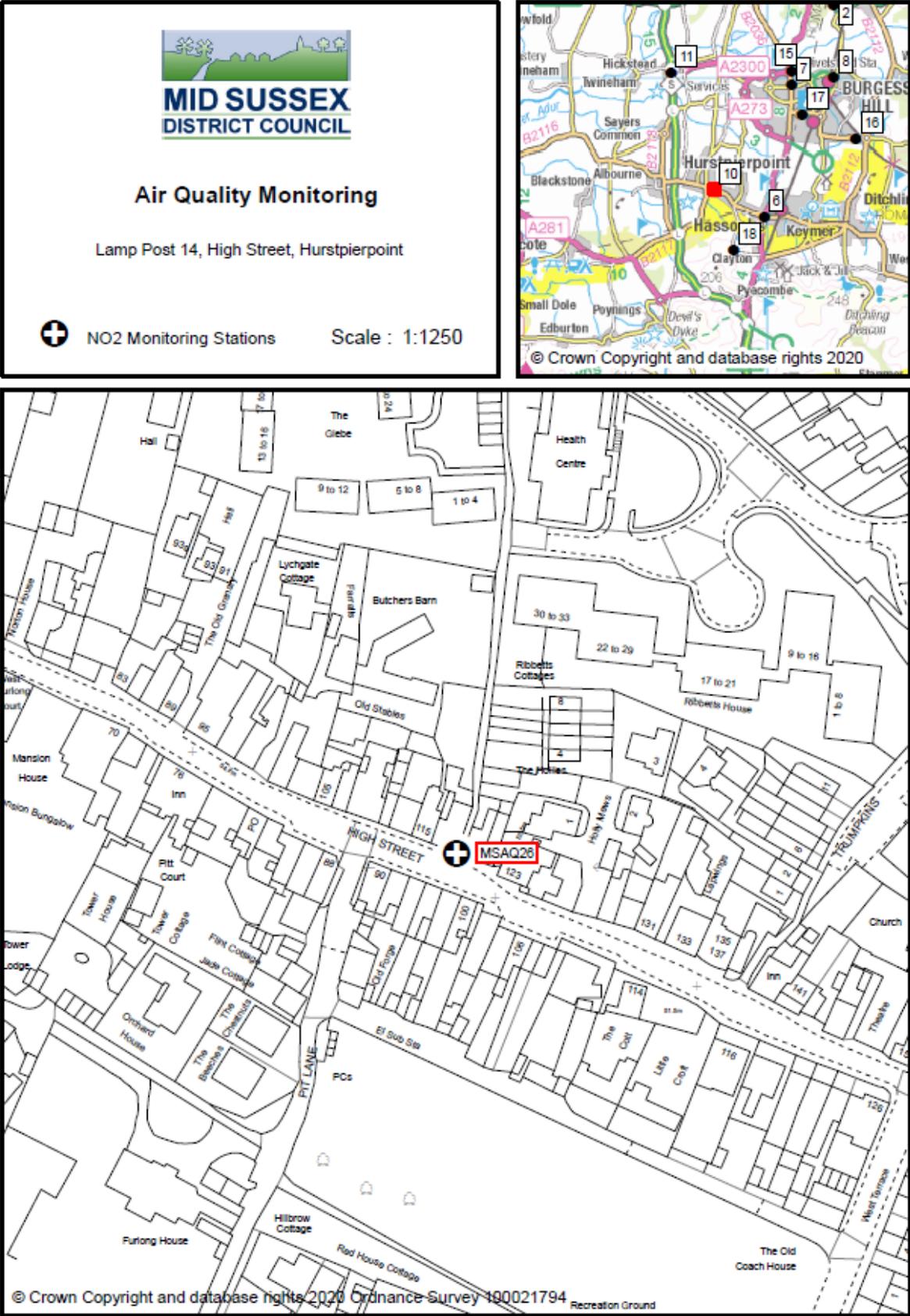


Figure 14 MSAQ27 Telegraph pole, London Road, Hickstead



Figure 15 MSAQ28 Lamp Post, Rocky Lane, Haywards Heath

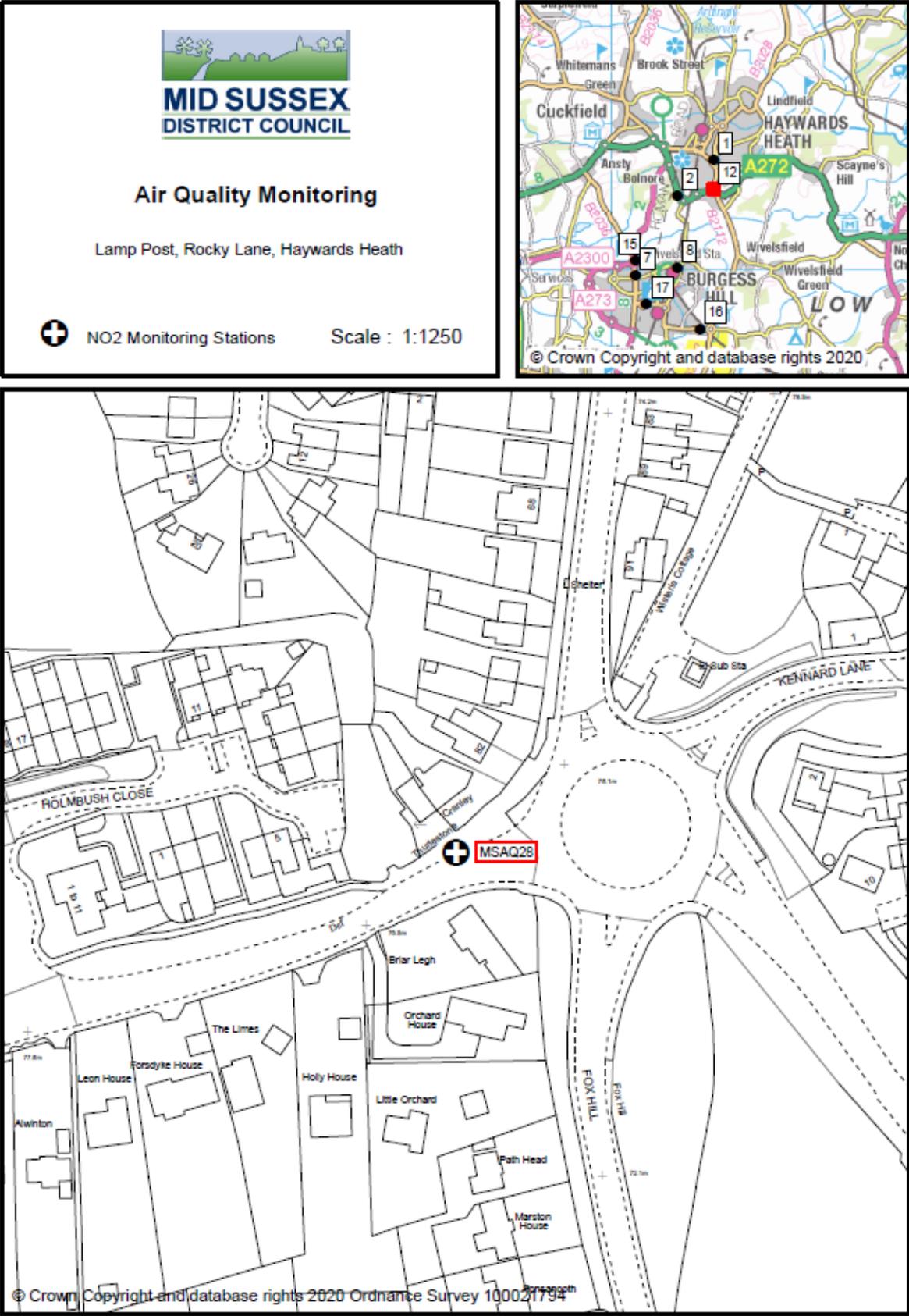


Figure 16 MSAQ29 Lamp Post, adjacent 184 London Road, East Grinstead

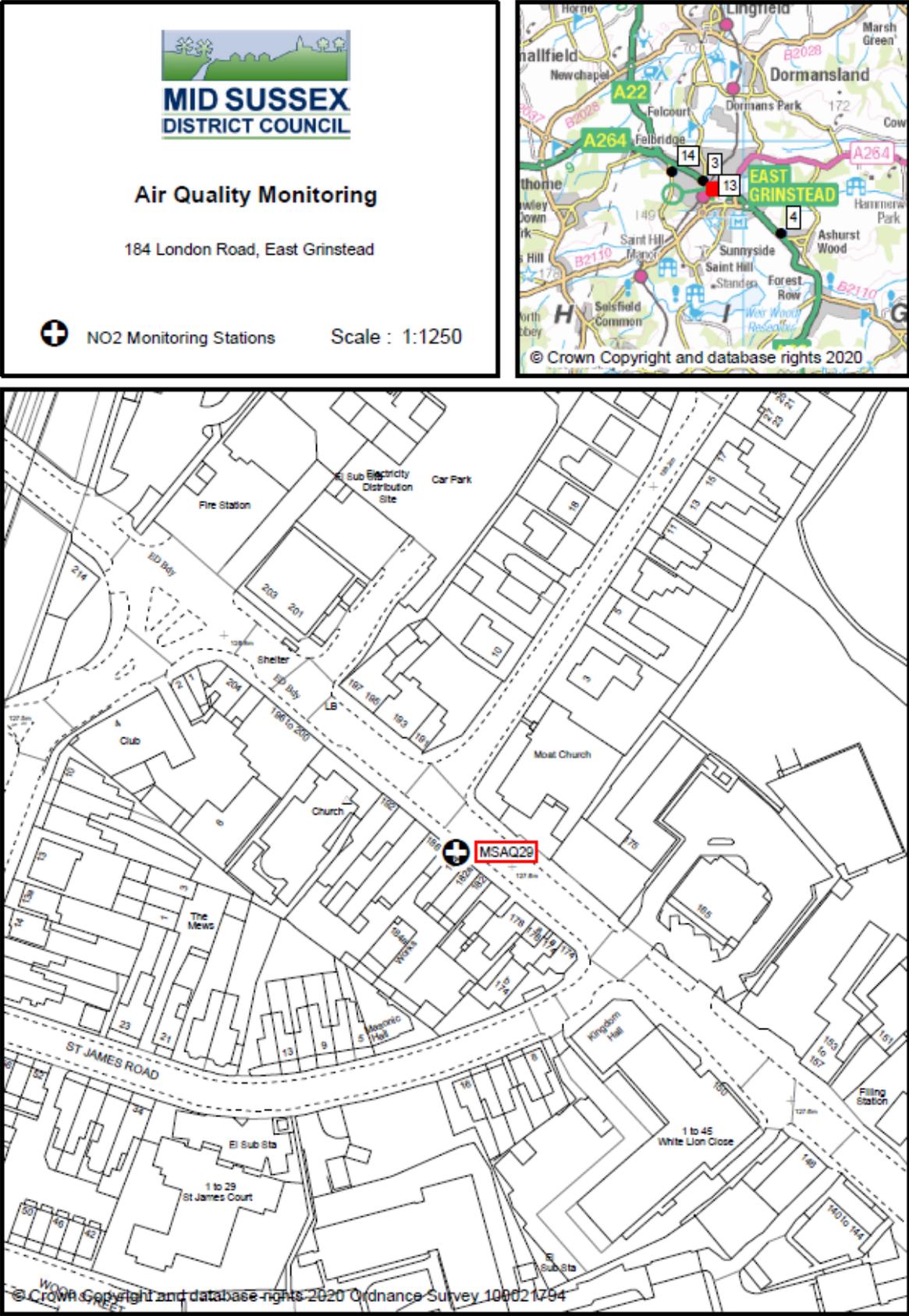


Figure 17 MSAQ31 Traffic sign outside entrance to Imberhorne School, Imberhorne Lane, East Grinstead



Figure 18 MSAQ32 Lamp Post, Woodcroft, Burgess Hill

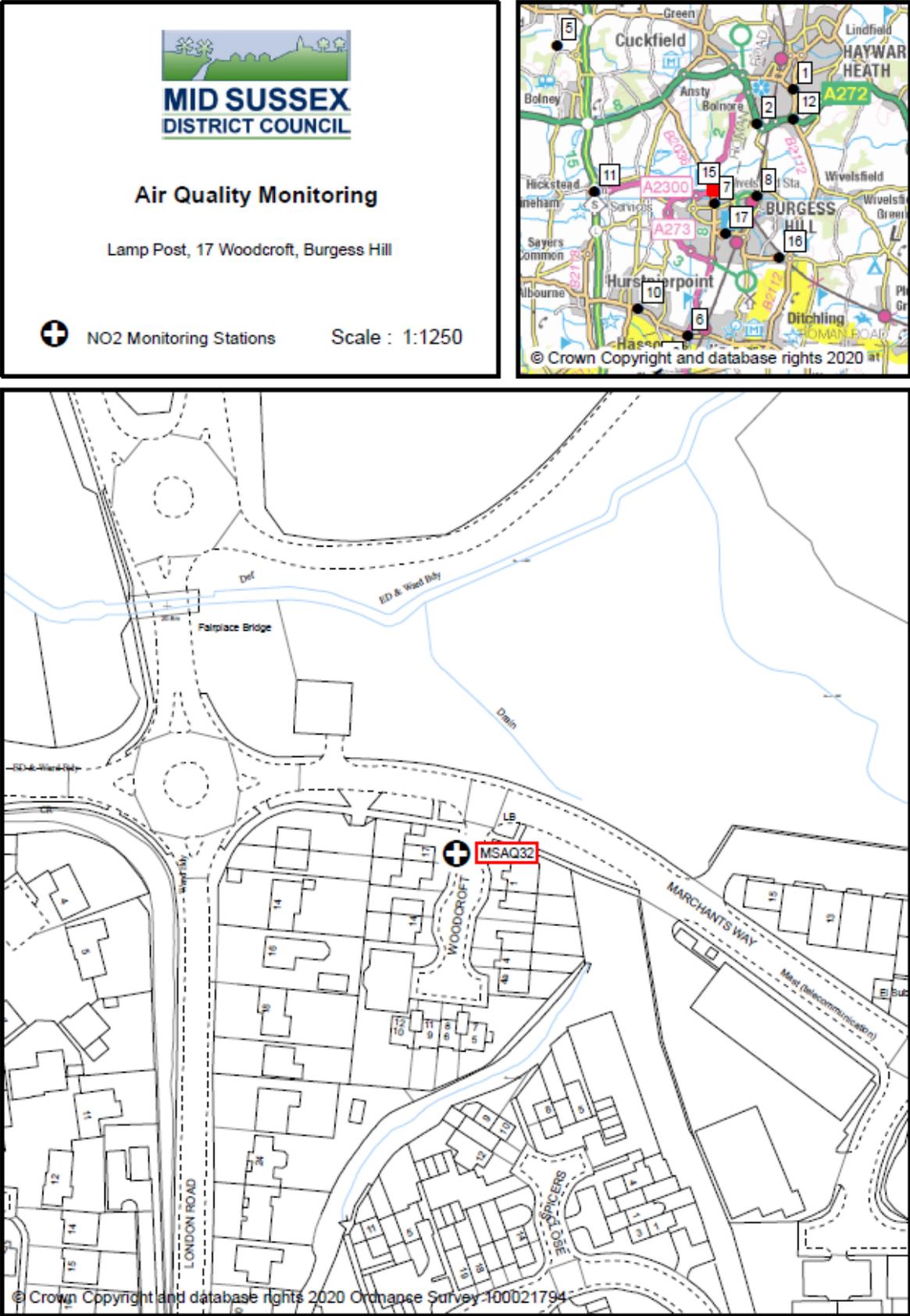


Figure 19 MSAQ33 Telegraph pole, 90 Folders Lane, Burgess Hill

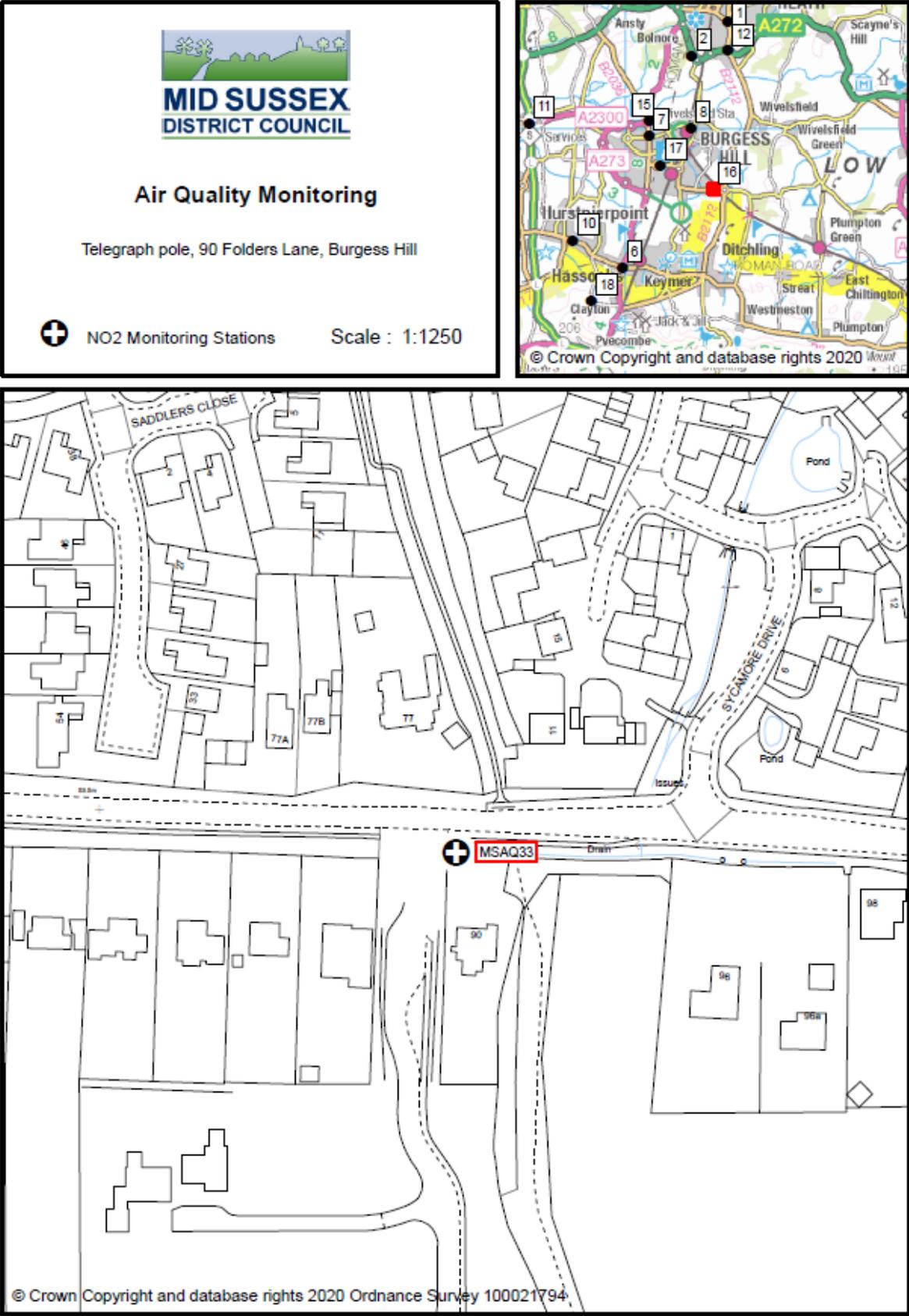
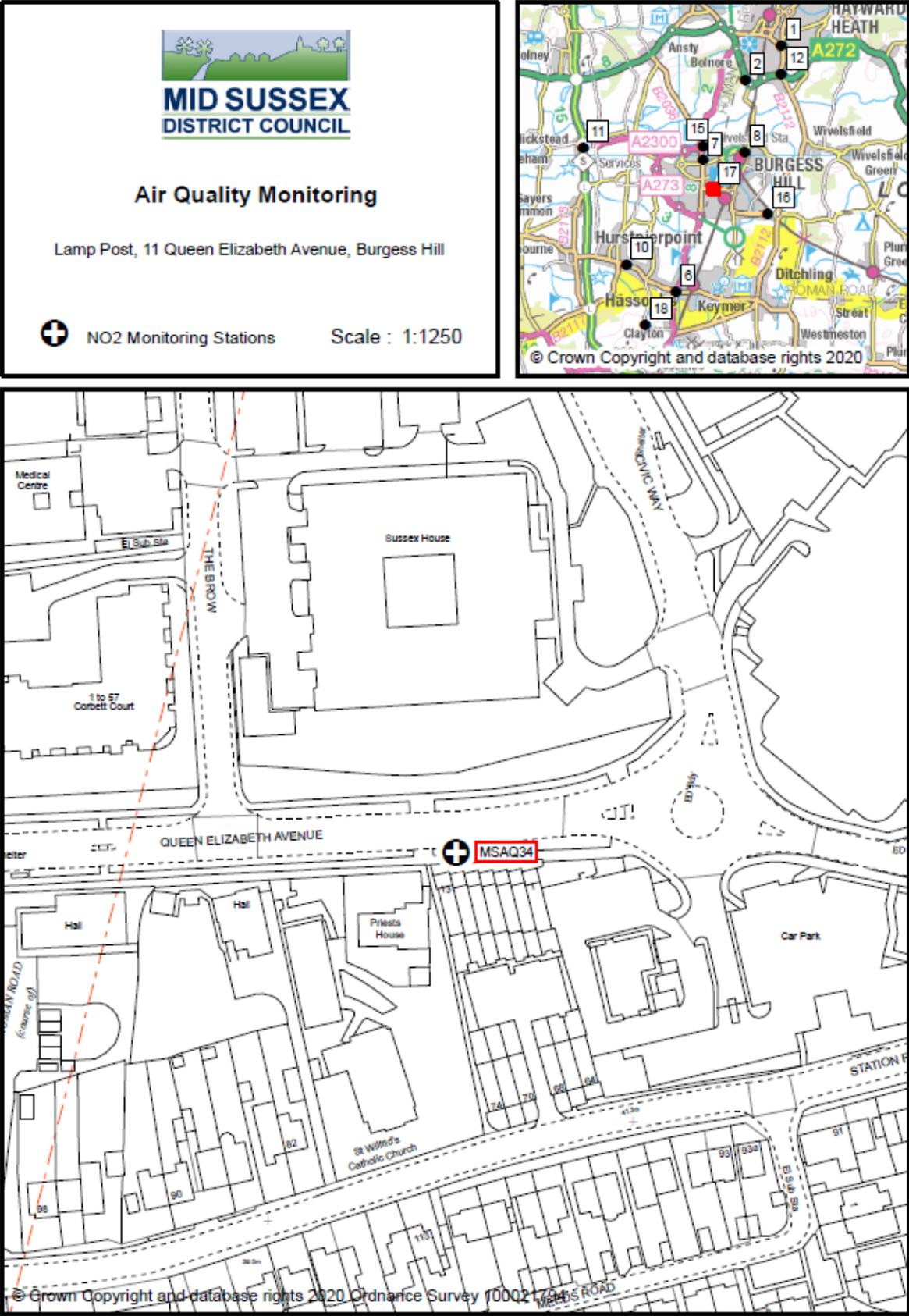


Figure 20 MSAQ34 Lamp Post, 11 Queen Elizabeth Avenue, Burgess Hill



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁶	
	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

⁶ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

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
MSDC	Mid Sussex District Council
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
WSCC	West Sussex County Council

References

1. Mid Sussex District Council (2019), Annual Status Report 2018 by Mid Sussex District Council
<https://www.midsussex.gov.uk/environment/air-quality/>
2. DEFRA (2002) The Air Quality (England) (Amendment) Regulations, HMSO.
3. DEFRA (2003) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Addendum, HMSO.
4. DETR (2000) The Air Quality (England) Regulations, HMSO.
5. DETR (2000) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, HMSO.
6. DEFRA (2015) Local Air Quality Management Policy Guidance, LAQM.PG(16).
7. DEFRA (2015) Local Air Quality Management Technical Guidance, LAQM.TG(16).
8. The Environment Act (1995).
9. The Environmental Protection Act (1990).
10. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006.