



2021 Air Quality Annual Status Report (ASR)

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

Date: June 2021

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Executive Summary: Air Quality in Our Area

This report details the results of air quality monitoring undertaken in 2020 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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with inequalities issues because areas with poor air quality are also often less affluent areas^{1,2}.

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

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

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 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. The district also contains part of the High Weald Area of Outstanding Natural Beauty (AONB). 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 did not deliver the predicted reductions in emissions and this was 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. Information on this declared AQMA has been included on the Council's web pages at [Air Quality - Mid Sussex District Council](#)

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 2020 are positive, with all sites showing a decrease in the nitrogen dioxide (NO₂) levels compared to those recorded in 2019, including all the monitoring points inside the Stonepound Crossroads AQMA which show a decrease. Other sites, including the 3 main urban centres, show a clear decrease in NO₂ levels. As a result of impacts from COVID-19 and the associated restrictions on activity, it was anticipated that measured NO₂ levels would be lower than would have

³ Defra. Air quality appraisal: damage cost guidance, July 2020

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

been expected in a “normal” year, and no long-term conclusions should be drawn from this year’s data given that lockdowns in response to COVID-19 affected traffic levels so significantly.

Additionally, diffusion tube data for the month of May is not available as the laboratory which processes our diffusion tubes was closed at that time. These COVID-19 impacts are discussed more fully in Appendix F.

Within the Council’s only 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 third time in the last four years, there are no exceedances within the AQMA. An AQMA can usually be considered for revocation after three consecutive years with no exceedance, but the circumstances of the last 12 months would make any conclusions unreliable at the current time.

Following 2019’s annual review of monitoring locations, one of the new sites the Council decided to monitor, MSAQ29 in London Road, East Grinstead is registering high levels. 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 will be installing a real time monitor close-by during 2022. The situation is complicated by the nearest residential facades being at first floor level, higher than the monitoring site, so we installed a monitor at first floor level (MSAQ38) to take account of this. Whilst this year’s data is not representative due to the unusual circumstances of COVID-19, the fact that the measured levels from MSAQ38 are significantly lower than at MSAQ29 is encouraging.

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 NO₂ air quality objective of 40ug/m³.

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

The work under Local Air Quality Management (LAQM) is the legal obligation of both district and county councils, as set out in Defra Policy Guidance PG16 paragraph 3.2:

More than 200 local areas are governed by two-tier authorities e.g. a district council and a county council, each of which have powers and functions that are important in tackling air quality. There are obligations on both district and county councils within Part IV of the Environment Act. In summary, although district councils prepare the annual reports and Action Plans under LAQM, the Secretary of State expects lower and upper tier councils to work together to develop their content and, with respect to Action Plans, ensure that all necessary measures to address air pollution in their local area are included.

In practical terms, actions aimed at improving air quality often require the cooperation of various departments and organisations. MSDC Environmental Protection works in conjunction with other stakeholders, such as our Planning department, Public Health England, West Sussex County Council (WSCC) 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' industrial 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

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

The 2019 Clean Air Strategy⁵ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero⁶ sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

MSDC has continued a number of measures during the current reporting year of 2020 in pursuit of improving local air quality. The key actions in 2020 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 an alternative route
- Commencement of the widening of the A2300 as part of a forthcoming development, completion expected by end of 2021 or early 2022
- Continuing to work with local schools to raise awareness
- 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 has been adopted as informal planning guidance.

⁵ Defra. Clean Air Strategy, 2019

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

- 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 were 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. Web pages were designed and hosted on the Sussex-Air website with information about the effects of particulate matter on health and what can be done to reduce it ([Clean Burning Sussex](#)). This campaign has also harvested data from a survey of over 1700 people regarding how, why and what they burn.
- The Council website's sustainability page provides a link to a map of EV charging points within the district [Sustainability - Mid Sussex District Council](#)

Conclusions and Priorities

No exceedances were identified during this reporting year and the underlying trend remains downward. If the trend continues, it seems likely that the AQMA can be considered for revocation in the next few years. The large Northern Arc development in Burgess Hill has been assessed as part of the Planning process and is not expected to have a significant impact upon air quality in the district. The Air Quality Action Plan and the locations of monitoring points will continue to be reviewed on an annual basis.

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, but has been delayed by the necessary response to the pandemic. Subject to funding and approvals 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](#) 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, a shared approach is being taken by MSDC, Horsham DC and Crawley BC in investigating the rollout of further EV infrastructure across these districts. A feasibility study of a number of potential sites in Mid Sussex has been carried out and between 22 and 26 charging points are likely to be considered, although locations have not yet been finalised.
- Car sharing continues to be promoted through the Green Travel Pages on the MSDC intranet.
- Hassocks Parking Scheme - Stage 2 was 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 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.
- The Sussex Air Quality Partnership (SAQP) to investigate an evaluation of the effectiveness of anti-idling signs
- SAQP to consider extending the current Sustrans schools project for another year.

- Sustrans to develop educational content for the SAQP website.
- A Defra AQ grant of £150,000 has been awarded to Brighton & Hove City Council to retrofit at least 17 double decker buses that will be in operation for the next 3 or 4 years. The affected routes have yet to be confirmed but are likely to include routes through the MSDC area and possibly through the AQMA

Local Engagement and How to get Involved

Given the elevated concentrations of NO₂ at London Road, Councillors at County, District and Town level were invited to attend an online meeting outlining MSDC's plans for a new real time air quality monitoring station for NO₂ and PM in East Grinstead. The rationale behind the location of the monitoring station was explained and attending Councillors were supportive of the plans. Funding has now been approved and it is hoped that the installation will be completed by Spring 2022.

The Council holds an annual meeting of the Hassocks Air Quality Steering Group which reviews and updates the AQAP and is comprised of Air Quality officers, the Sustainability officer, colleagues from WSCC Highways and local Members from the Parish, District and County Councils.

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 [Environment - Mid Sussex District Council](#)

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1 Local Air Quality Management

This report provides an overview of air quality in Mid Sussex 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 Mid Sussex to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

Air Quality Management Areas

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

A summary of AQMA declared by Mid Sussex can be found in Table 2.1. The table presents a description of the one AQMA that is currently designated within Mid Sussex. Appendix D:

Maps of Monitoring Locations and AQMA provides maps of the AQMA and also the air quality monitoring locations in relation to the AQMA.

The air quality objectives pertinent to the current AQMA designation are as follows:

- NO₂ annual mean;

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Mid Sussex District Council AQMA (No.1) 2012	13/03/2012	NO2 Annual Mean	An area encompassing 3 residential properties at the junction of Stonepound Crossroads	YES	47	None	Mid Sussex District Council Air Quality Action Plan 2020	Air Quality Action Plan - Stonepound Crossroads (midsussex.gov.uk)

- ☒ Mid Sussex confirm the information on UK-Air regarding their AQMA(s) is up to date.
- ☒ Mid Sussex confirm that all current AQAPs have been submitted to Defra.

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

Defra's appraisal of last year's ASR concluded that "on the basis of the evidence provided by the Local Authority, the conclusions reached are accepted for all sources and pollutants". Defra also raised a number of points to be addressed. These are listed in bullet points below, with our response in italics:

- The council have addressed comments from the last ASR's appraisal such as making Public Outcomes Framework links, in the 2020 ASR, this is commended.

Public Outcomes Framework links to be included in future year's reports

- It appears as though the Council have updated Table 2.1 however there are many blank spaces. It is recommended that blank spaces are to be filled with 'TBC', 'NA' or 'Unknown' so it is clear that all elements of the table have been addressed.

Blank spaces have now been filled as suggested

- The 2019 monitoring results show one exceedance outside the AQMA. The council may consider continuing monitoring at MSAQ29 to see if it continues to exceed. If so, then the council should consider declaring AQMA.

Monitoring points have been increased in this area to provide continuing and more detailed data. If monitored levels exceed air quality objective levels where relevant receptors are located, we will declare an air quality management area. Gathered data from the increased monitoring sites to be reported in this and future ASR's.

- Although details have been provided about the bias adjustment of the diffusion tubes in Appendix C and annualization was not required, more discussion could be added to describe why these decisions were made.

The rationale for the bias adjustment factor chosen and the fact that annualization was not required, have been added to the text.

- Distance correction calculations are missing. It would be beneficial for the Council to include the distance correction calculations for all tubes where this applies, especially exceeding locations such as MSAQ29, as they have done in previous ASRs.

The calculations were added to the report

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

This was completed at the annual Hassocks AQAP Steering Group. The progress of the action plan is included in the agenda.

- The Local Authority have taken onboard comments from the previous appraisal and have introduced a new monitoring location in 2019. This shows good practice and the Council should continue to review their monitoring locations and adjust monitoring locations if/when they feel it is appropriate/necessary.

The monitoring sites are reviewed each year.

- It is appreciated that the Council provides in-depth maps of their monitoring locations and has also included a single map with all the monitoring locations. This is good practice.

This good practice will be continued.

- Although the council have been thorough and all the data in the excel sheet and ASR is identical and updated (this is excellent), the labelling of Table A.1 and A.2 in the ASR do not match the excel sheet. Labels should be identical for constancy e.g. labels should have shown Table A.2 and Table A.3.

The report was amended.

Mid Sussex District Council has 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 2.2. Current measures are included within Table 2.2, with the type of measure and the progress Mid Sussex District Council have made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

Key completed measures are:

- Review of traffic light sequencing
- Cut engine, cut pollution signage on each arm of crossroads
- MSDC Travel Plan and Green Travel Scheme review
- Local schools travel plans
- Car share and sustainable travel promotion
- Link to Air Alert service on council website
- Promotion of energy efficiency schemes
- *Air quality and emissions mitigation guidance for Sussex* incorporated into Council planning policy

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

- Improved access into Burgess Hill via A2300 which should encourage HGV traffic in particular to avoid the AQMA (may not complete by end of year – date not yet known)
- New, more visible “Cut engine, cut pollution” signs intended to negate any habituation relating to current signs.
- Local Cycling and Walking Infrastructure Programme (LCWIP) to consider Stonepound area – invitation for quotes currently live, contractor to be appointed this year.

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

- Install a real time air quality monitor in East Grinstead (NO₂ and PM)
- Rollout additional EV infrastructure throughout the district (joint approach with 2 neighbouring authorities)

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

- Change in priorities for MSDC and partners due to COVID-19
- Funding and resources likely to continue to be significantly reduced as a result of the above

- New development near to the AQMA likely to cause roadworks, traffic issues and additional HGV movements

Progress on the following measures has been slower than expected due to:

- New updated signage at Stonepound Crossroads delayed due to COVID-19 causing changed priorities
- Local Cycling and Walking Infrastructure Programme (LCWIP) delayed for the same reason

Mid Sussex District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in the Stonepound Crossroads AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Minimising HGV movements – advisory lorry routes	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	2019	2022	WSCC	Developers & highway infrastructure funding	NO	Fully funded	£100k - £500k	Implementation	Reduced traffic through AQMA	Volume of through traffic	Implementation on-going	Expected completion early 2022, signage to divert traffic already in place, roadworks likely to affect use until completion. Advisory lorry route map available at WSCC website.
2	"Cut Engine, Cut pollution" signs	Public Information	Via other mechanisms	2012	2021	WSCC	WSCC and MSDC	NO	Funded	< £10k	Planning	Reduced vehicle emissions	Measured concentration in AQMA	Implementation on-going	WSCC to investigate the removal or replacement of the existing "cut Engine / cut pollution" signs (alternative designs required). Was awaiting confirmation of budget & approval, now postponed due to COVID 19.
3	Improve & Promote cycle Routes	Alternatives to private vehicle use	Other	2014	2022	WSCC and S106	WSCC	NO	Partially Funded	£1 million - £10 million	Planning	Reduced traffic through AQMA	Measured concentration in AQMA	Implementation on-going	Local Cycling and Walking Infrastructure Programme (LCWIP) to consider Stonepound area – invitation for quotes currently live, contractor to be appointed Oct 2020. WSCC undertaking preliminary design work on part of the cycle route between Sayers Common and Hassocks (prioritised Hurstpierpoint section) but funding not yet confirmed. construction in 202/21. If approved, construction in 2021/22
4	Encourage Alternative Transport	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2015	2022	MSDC and neighbouring LA's	MSDC	NO	Partially Funded	£50k - £100k	Planning	Reduced vehicle emissions	Measured concentration in AQMA	Implementation on-going	A shared approach is being taken by MSDC, Horsham DC and Crawley BC in investigating the rollout of further EV infrastructure across these districts. A feasibility study of a number of potential sites in Mid Sussex has been carried out and between 22 and 26 charging points are likely. Locations not yet finalised.

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 5.4%. This compares to a national average of 5.1% and an average of 5.6% in the South East region.

By way of more local comparison, levels in neighbouring authorities are 5.3% in Horsham District, 5.8% in Crawley, 5.2% in Lewes District and 5.1% in Wealden District.

Mid Sussex District Council is taking the following measures to address PM_{2.5}: 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 utilises the “*Air quality and emissions mitigation guidance for Sussex authorities*” 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 had 2 distinct phases:

- 1) Education – publicizing the message that 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. The findings have also been submitted to Defra and Sussex Air will consider possible next steps.

Whilst we currently have no automatic monitors in the district, a real-time air quality monitoring station has been purchased and should be installed by Spring 2022. This will monitor PM₁₀ initially and subsequently PM_{2.5}. Background levels from national mapping measured PM_{2.5} in Mid Sussex at 9.95 µg/m³ as an annual mean in 2020. The underlying trend is gradually downwards (from 12.08 µg/m³ in 2011). 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

This section sets out the monitoring undertaken within 2020 by Mid Sussex District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Mid Sussex District Council undertook no automatic (continuous) monitoring during 2020.

3.1.2 Non-Automatic Monitoring Sites

Mid Sussex District Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 33 sites during 2020. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 33%), and distance correction. Further details on adjustments are provided in Appendix C.

3.1.3 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and

annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 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 regularly 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 2019, 1 site (MSAQ2) was removed as a location where levels were both relatively consistent and well below National Objective levels. Additionally, 5 new sites have been installed, 1 in Pease Pottage where a large housing development is under construction and the data capture from 2019 was excluded due to location removal (MSAQ30), and 4 new sites in East Grinstead (MSAQ36, 37, 38 and 39) as part of our further investigation into a possible exceedance.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Mid Sussex have no automatic monitoring sites

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSAQ1	South Road Haywards Heath	Roadside	533342	123587	NO2	No	0.0	2.5	No	1.6
MSAQ3	Southwick House London Road East Grinstead	Kerbside	538690	138759	NO2	No	18.0	0.5	No	2.2
MSAQ5	Bus Stop Lewes Road East Grinstead	Suburban	541245	136996	NO2	No	16.0	1.5	No	2.3
MSAQ9	Water Tower Colwood Lane Warringlid	Rural	525664	125035	NO2	No	40.0	35.0	No	2.1
MSAQ10	Traffic Light Keymer Road Hassocks	Roadside	529911	115489	NO2	Yes, MSDC AQMA (No 1)	6.7	1.5	No	1.7
MSAQ11a, MSAQ11b, MSAQ11c	Over Court Keymer Road Hassocks	Roadside	529930	115481	NO2	Yes, MSDC AQMA (No 1)	0.0	5.5	No	2.5
MSAQ12	Telegraph Pole Keymer Road Hassocks	Kerbside	529999	115488	NO2	No	26.0	1.1	No	2.4
MSAQ13	Lamp Post Keymer Road Hassocks	Kerbside	529995	115476	NO2	No	19.0	0.9	No	2.3
MSAQ14	Bus Stop London Road Hassocks	Kerbside	529911	115598	NO2	No	23.0	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 Brighton Road Hassocks	Roadside	529918	115441	NO2	No	0.0	11.5	No	2.4
MSAQ17	Lamp Post Brighton Road Hassocks	Kerbside	529894	115340	NO2	No	10.0	1.3	No	2.2

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSAQ18	Bus Stop Brighton Road Hassocks	Kerbside	529907	115428	NO2	No	9.0	2.0	No	2.6
MSAQ19	Lamp Post 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	3.0	1.5	No	2.0
MSAQ23	Over Court Eastern Façade Keymer Road Hassocks	Roadside	529935	115478	NO2	Yes, MSDC AQMA (No 1)	0.0	5.8	No	2.0
MSAQ24	Over Court Western Façade Keymer Road Hassocks	Roadside	529918	115476	NO2	Yes, MSDC AQMA (No 1)	0.0	7.5	No	1.8
MSAQ25a, MSAQ25b, MSAQ25c	Erica Way Copthorne	Kerbside	531176	138829	NO2	No	0.0	4.0	No	2.0
MSAQ26	High Street Hurstpierpoint	Suburban	528289	116395	NO2	No	0.8	2.1	No	2.5
MSAQ27	Telegraph Pole London Road Hickstead	Suburban	526870	120238	NO2	No	10.0	3.8	No	2.2
MSAQ28	Lamp Post Rocky Lane Haywards Heath	Suburban	533342	122625	NO2	No	11.0	1.3	No	2.3
MSAQ29	184 London Road East Grinstead	Roadside	539040	138451	NO2	No	0.7	2.7	No	2.4
MSAQ30	Roundabout sign adjacent Hardriding Brighton Road Pease Pottage	Roadside	526314	133235	NO2	No	n/a	1.4	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSAQ31	Traffic sign outside entrance to Imberhorne School Imberhorne Lane East Grinstead	Roadside	537680	139009	NO2	No	47.0	3.8	No	2.2
MSAQ32	Lamp Post Woodcroft Burgess Hill	Roadside	530791	120295	NO2	No	5.5	1.5	No	2.2
MSAQ34	Lamp Post No 12 Queen Elizabeth Avenue Burgess Hill	Roadside	531144	118862	NO2	No	5.0	4.4	No	2.4
MSAQ35	New Way Lane Hustpierpoint	Rural	528904	114415	NO2	No	20.0	n/a	No	1.8
MSAQ36	Lamp Post adjacent Bridgeway London Road East Grinstead	Roadside	537609	139406	NO2	No	10.5	1.5	No	2.3
MSAQ37	Lamp Post adjacent 10 Station Road East Grinstead	Roadside	538932	138472	NO2	No	5.1	2.5	No	2.3
MSAQ38	Lamp Post adjacent to La Farola London Road East Grinstead	Roadside	539005	138480	NO2	No	0.4	2.1	No	4.2
MSAQ39	Highway sign adjacent to 1 to 45 White Lion Close East Grinstead	Roadside	539116	138384	NO2	No	1.1	2.8	No	2.3
MSAQ40	Telegraph Pole adjacent to development site Folders Lane Burgess Hill	Roadside	532895	118061	NO2	No	18.5	4.0	No	2.0

Notes:

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

(2) n/a if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Mid Sussex have no automatic monitoring sites

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
MSAQ1	533342	123587	Roadside		82.9	21.7	20.8	20.1	19.3	12.7
MSAQ3	538690	138759	Kerbside		90.5	36.7	35.8	34.4	31.7	22.7
MSAQ5	541245	136996	Suburban		90.5	34.5	31.0	30.0	28.6	20.9
MSAQ9	525664	125035	Rural		90.5	10.0	9.0	9.0	8.5	6.1
MSAQ10	529911	115489	Roadside		90.5	43.4	38.8	41.2	39.4	28.4
MSAQ11a, MSAQ11b, MSAQ11c	529930	115481	Roadside		90.5	43.2	38.5	40.1	36.3	27.6
MSAQ12	529999	115488	Kerbside		90.5	38.2	33.7	33.5	33.9	23.9
MSAQ13	529995	115476	Kerbside		81.0	44.7	43.8	38.9	36.6	26.1
MSAQ14	529911	115598	Kerbside		73.6	36.0	32.5	34.0	33.5	26.0
MSAQ15	529930	115600	Kerbside		90.5	37.9	35.1	35.1	34.0	26.0
MSAQ16	529918	115441	Roadside		90.5	20.7	19.8	19.9	18.0	13.6
MSAQ17	529894	115340	Kerbside		90.5	28.0	25.7	28.7	24.3	20.6
MSAQ18	529907	115428	Kerbside		90.5	33.4	29.5	28.1	29.3	17.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
MSAQ19	529779	115557	Roadside		82.9	18.7	18.6	17.4	15.7	11.9
MSAQ21	530792	119821	Roadside		90.5	32.1	29.5	29.0	27.6	21.0
MSAQ22	532160	120069	Roadside		90.5	28.4	27.9	27.0	26.0	20.1
MSAQ23	529935	115478	Roadside		90.5	35.3	33.9	34.5	33.4	23.4
MSAQ24	529918	115476	Roadside		90.5	28.3	23.1	24.0	22.9	17.8
MSAQ25a, MSAQ25b, MSAQ25c	531176	138829	Kerbside		90.5	30.0	28.8	26.9	26.8	18.4
MSAQ26	528289	116395	Suburban		90.5	25.7	23.9	23.6	21.5	16.1
MSAQ27	526870	120238	Suburban		90.5	23.3	20.5	22.8	19.3	13.6
MSAQ28	533342	122625	Suburban		90.5			24.7	25.3	22.2
MSAQ29	539040	138451	Roadside		81.5				44.1	32.5
MSAQ30	526314	133235	Roadside		82.9					17.6
MSAQ31	537680	139009	Roadside		90.5				13.2	10.3
MSAQ32	530791	120295	Roadside		81.0				13.7	11.2
MSAQ34	531144	118862	Roadside		82.9				24.4	19.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
MSAQ35	528904	114415	Rural		72.0				7.2	6.6
MSAQ36	537609	139406	Roadside		90.5					31.6
MSAQ37	538932	138472	Roadside		81.5					29.8
MSAQ38	539005	138480	Roadside		82.9					20.4
MSAQ39	539116	138384	Roadside		90.5					23.6
MSAQ40	532895	118061	Roadside		75.3					11.5

☒ Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16

☒ Diffusion tube data has been bias adjusted.

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

Notes:

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

Exceedances of the NO_2 annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO_2 annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

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

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

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

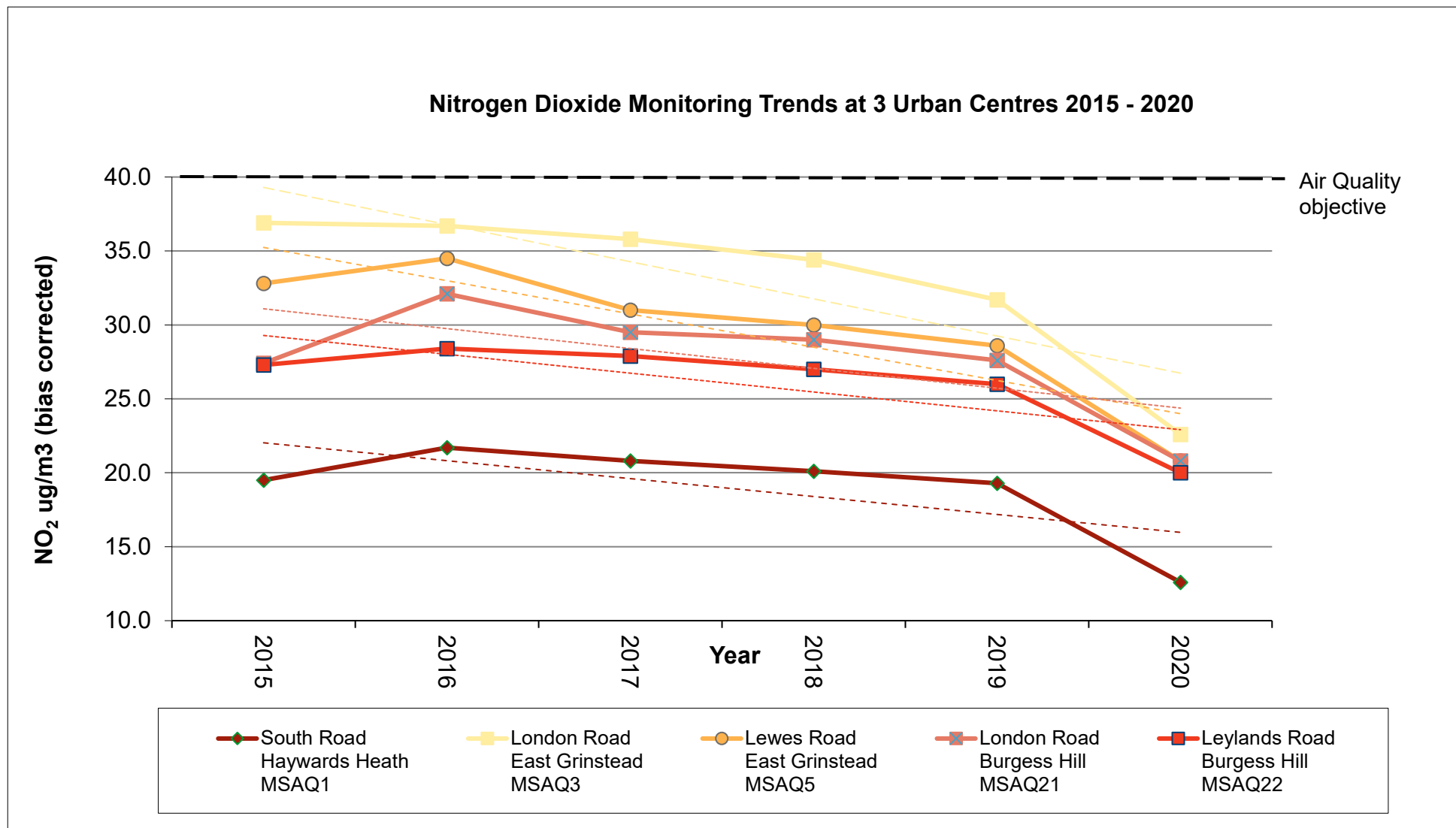
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO₂ concentrations

Annual mean concentrations (bias corrected) 2015 to 2020 of nitrogen dioxide diffusion tube measurements at three 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
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
2020	12.6	22.6	20.8	20.8	20.0

All sites have showed a reduction in recorded levels of NO₂ since 2015



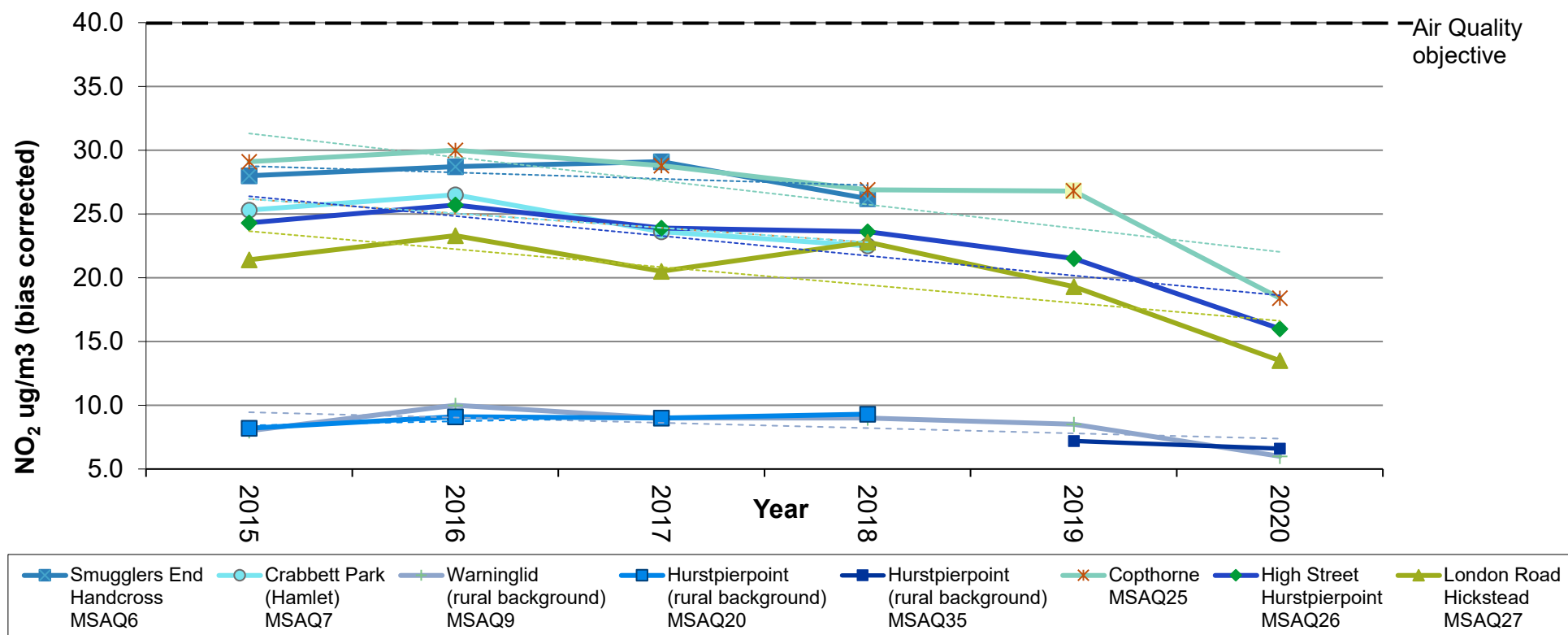
Annual mean concentrations (bias corrected) 2015 to 2020 of nitrogen dioxide diffusion tube measurements at four villages, one hamlet and two rural background sites

Year	Smugglers End Handcross MSAQ6	Crabbett Park (Hamlet) MSAQ7	Warninglid (rural background) MSAQ9	Hurstpierpoint (rural background) MSAQ20	Hurstpierpoint (rural background) MSAQ35	Copthorne MSAQ25	High Street Hurstpierpoint MSAQ26	London Road Hickstead MSAQ27
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		7.2	26.8	21.5	19.3
2020			6.0		6.6	18.4	16.0	13.5

All of the sites have shown a reduction in recorded levels from 2015 to 2020

3 sites were 'retired' at the end of 2018

Nitrogen Dioxide Monitoring Trends at 4 Villages 1 Hamlet and 2 Rural Background Sites 2015 - 2020

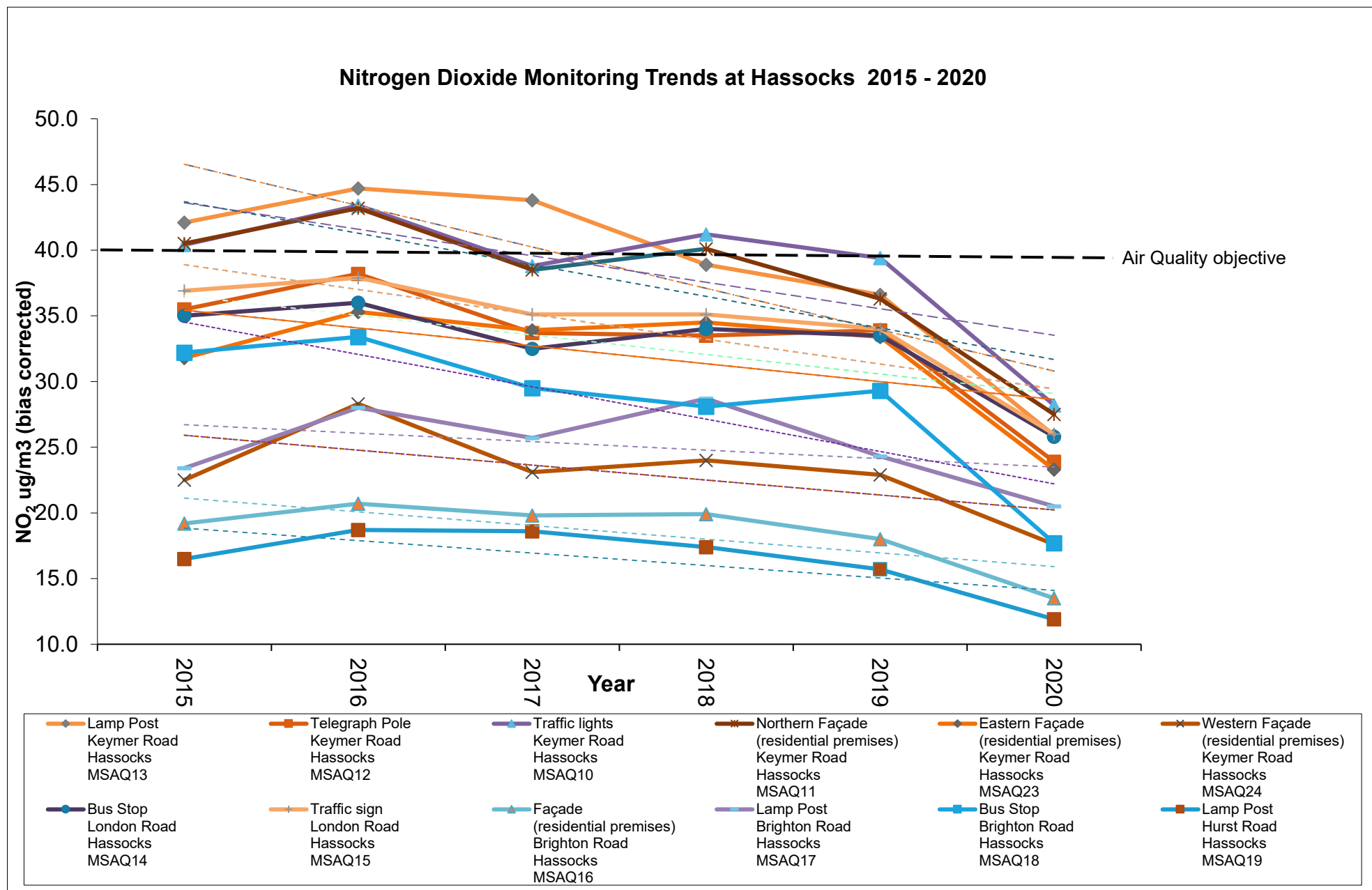


Annual mean concentrations (bias corrected) 2015 to 2020 of nitrogen dioxide diffusion tube measurements at Hassocks.

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
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
2020	23.9	25.9	28.2	27.5	23.3	17.6	25.8	26.0	13.5	20.5	17.7	11.9

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

All of the sites have shown a reduction in recorded levels from 2015 to 2020 and are below the Air Quality Objective of 40µg/m³



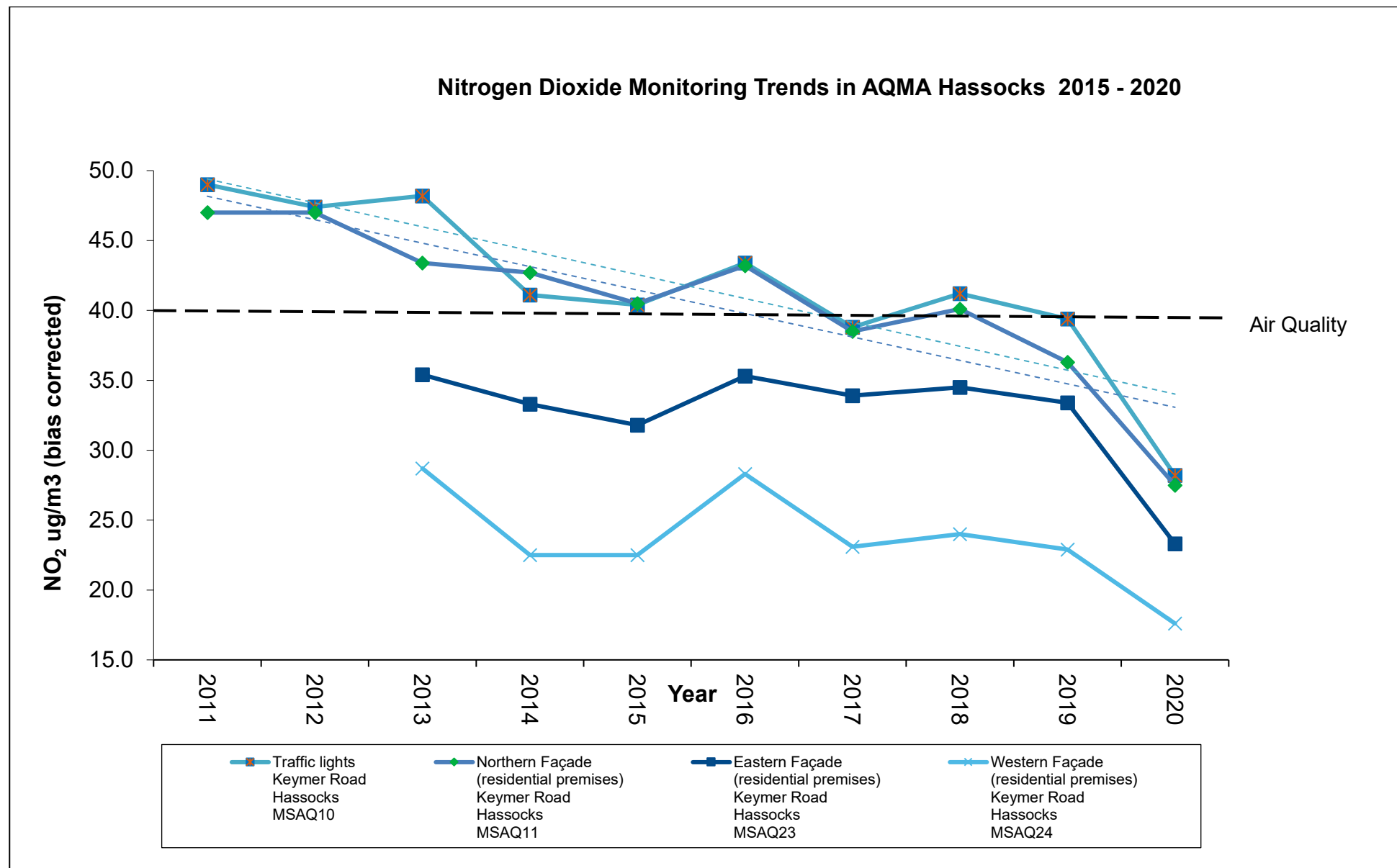
Annual mean concentrations (bias corrected) 2015 to 2020 of nitrogen dioxide diffusion tube measurements within the AQMA at Stonepound Hassocks

Year	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
2015	40.4	40.5	31.8	22.5
2016	43.4	43.2	35.3	28.3
2017	38.8	38.5	33.9	23.1
2018	41.2	40.1	34.5	24.0
2019	39.4	36.3	33.4	22.9
2020	28.2	27.5	23.3	17.6

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.

Currently none of the sites have recorded NO₂ levels above the Air Quality Objective.



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Eastin g)	Y OS Grid Ref (Northi ng)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MSAQ1	533342	123587		16.6	14.8	12.7		13.5	12.4	17.5	9.2	17.6	19.9	21.2	15.6	12.7	-	
MSAQ3	538690	138759	36.7	32.3	25.2	18.7		22.1	22.6	28.8	29.3	28.1	31.3	32.3	28.1	22.7	-	
MSAQ5	541245	136996	30.5	29.7	24.5	16.7		20.9	21.7	26.1	27.9	26.5	29.6	28.4	25.8	20.9	-	
MSAQ9	525664	125035	9.1	5.3	6.7	7.3		4.7	4.2	6.7	7.3	6.9	12.6	11.2	7.5	6.1	-	
MSAQ10	529911	115489	35.2	33.0	34.1	31.7		30.4	30.0	37.7	42.6	39.1	36.9	32.2	35.0	28.4	-	
MSAQ11a	529930	115481	40.2	39.1	31.4	22.6		27.5	31.8	37.2	39.1	37.0	38.2	32.4	-	-	-	Triplicate Site with MSAQ11a, MSAQ11b and MSAQ11c - Annual data provided for MSAQ11c only
MSAQ11b	529930	115481	42.5	39.3	29.6	23.7		29.7	29.7	35.0	39.8	36.2	34.2	33.1	-	-	-	Triplicate Site with MSAQ11a, MSAQ11b and MSAQ11c - Annual data provided for MSAQ11c only
MSAQ11c	529930	115481	39.7	36.4	31.0	23.7		29.7	29.5	38.3	38.1	35.2	34.5	33.2	34.1	27.6	-	Triplicate Site with MSAQ11a, MSAQ11b and MSAQ11c - Annual data provided for MSAQ11c only
MSAQ12	529999	115488	33.6	35.4	27.0	24.6		24.5	26.3	31.3	32.6	29.5	29.2	30.1	29.6	23.9	-	
MSAQ13	529995	115476	36.6	35.0	30.0	24.9		23.6	27.1		40.7	36.1	33.6	32.1	32.2	26.1	-	
MSAQ14	529911	115598	36.9	29.6	28.1	24.0		32.4	28.0	37.1	33.8	36.5			32.1	26.0	-	
MSAQ15	529930	115600	41.3	34.1	30.5	22.1		28.1	29.3	35.4	31.4	34.7	34.7	30.9	32.2	26.0	-	
MSAQ16	529918	115441	18.8	15.6	15.0	13.3		11.1	14.2	15.6	19.0	19.6	20.3	20.3	16.8	13.6	-	
MSAQ17	529894	115340	24.6	26.4	23.7	18.6		22.9	26.0	31.7	33.1	21.4	30.4	19.9	25.4	20.6	-	
MSAQ18	529907	115428	30.2	17.2	19.0	20.4		15.5	17.2	21.2	21.0	30.4	28.8	20.0	22.0	17.9	-	
MSAQ19	529779	115557	20.7		12.4	12.0		9.8	10.1	13.0	13.1	15.7	21.8	17.7	14.7	11.9	-	

DT ID	X OS Grid Ref (Eastin g)	Y OS Grid Ref (Northi ng)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MSAQ21	530792	119821	29.3	20.7	23.7	22.8		19.3	20.4	27.4	28.3	27.0	32.8	31.4	25.9	21.0	-	
MSAQ22	532160	120069	31.3	20.8	25.7	19.2		17.2	20.2	24.4	29.0	25.7	30.6	27.0	24.8	20.1	-	
MSAQ23	529935	115478	34.7	33.2	23.7	22.1		22.3	23.7	27.2	33.8	30.3	32.9	32.7	28.9	23.4	-	
MSAQ24	529918	115476	24.1	18.1	19.0	18.4		14.1	16.3	22.1	29.0	27.7	26.5	23.3	22.0	17.8	-	
MSAQ25a	531176	138829	31.2	31.2	24.6	15.2		20.0	15.9	23.1	22.2	22.6	25.3	24.4	-	-	-	Triplicate Site with MSAQ25a, MSAQ25b and MSAQ25c - Annual data provided for MSAQ25c only
MSAQ25b	531176	138829	32.2	23.5	24.3	15.5		18.4	16.3	21.1	21.6	24.9	24.3	24.5	-	-	-	Triplicate Site with MSAQ25a, MSAQ25b and MSAQ25c - Annual data provided for MSAQ25c only
MSAQ25c	531176	138829	29.9	29.2	24.7	16.2		19.1	15.8	21.9	21.1	22.8	24.7	23.0	22.8	18.4	-	Triplicate Site with MSAQ25a, MSAQ25b and MSAQ25c - Annual data provided for MSAQ25c only
MSAQ26	528289	116395	25.6	20.7	16.0	15.8		14.6	16.2	19.4	19.7	19.8	23.8	25.5	19.8	16.1	-	
MSAQ27	526870	120238	20.7	12.2	16.1	15.5		13.1	12.4	17.5	19.6	17.8	21.9	17.1	16.8	13.6	-	
MSAQ28	533342	122625	39.3	28.9	25.8	18.4		20.1	20.4	26.4	29.2	27.2	33.7	30.7	27.4	22.2	-	
MSAQ29	539040	138451	48.7	46.0	41.2	32.2		36.8	32.7	41.2	40.4	38.6	43.7		40.2	32.5	-	
MSAQ30	526314	133235		23.4	22.5	17.6		14.0	16.9	21.8	26.1	24.2	24.6	24.5	21.8	17.6	-	
MSAQ31	537680	139009	18.4	9.6	11.8	12.3		7.3	6.9	10.3	13.2	12.8	18.0	18.3	12.7	10.3	-	
MSAQ32	530791	120295	17.5	14.1	12.1	10.6		9.4	12.1	12.2	14.2		28.9	7.6	13.8	11.2	-	
MSAQ34	531144	118862	30.8		19.6	19.4		16.9	15.4	22.4	22.8	27.2	31.4	27.5	23.5	19.0	-	
MSAQ35	528904	114415	10.7	7.5	7.3	7.5		5.0	5.1	6.7			13.3	9.8	8.1	6.6	-	
MSAQ36	537609	139406	46.4	33.0	40.2	31.1		36.7	33.7	39.6	42.9	42.2	38.3	42.5	39.0	31.6	-	
MSAQ37	538932	138472	48.4	36.7	36.3	27.6		35.3	26.9	40.1	39.4	37.0	38.8		36.8	29.8	-	
MSAQ38	539005	138480	32.6		22.7	18.4		20.5	18.3	24.3	25.5	29.6	30.3	28.4	25.2	20.4	-	

DT ID	X OS Grid Ref (Eastin g)	Y OS Grid Ref (Northi ng)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MSAQ39	539116	138384	31.1	36.3	25.3	20.7		24.2	22.0	31.8	29.9	29.1	33.5	34.5	29.1	23.6	-	
MSAQ40	532895	118061		11.1		22.1		7.9	8.2	10.3	16.5	14.5	20.1	17.0	14.2	11.5	-	

- ☒ All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- ☒ Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.
- ☐ Local bias adjustment factor used.
- ☒ National bias adjustment factor used.
- ☒ Where applicable, data has been distance corrected for relevant exposure in the final column.
- ☒ Mid Sussex confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

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**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Mid Sussex During 2021

Mid Sussex District Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Mid Sussex District Council During 2020

Mid Sussex District Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

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

Results for the nitrogen dioxide diffusion colocation studies available at <http://laqm.defra.gov.uk/diffusion-tubes/precision.html> show Gradko laboratory had good precision for 2020.

The 2020 Diffusion Tube Monitoring Calendar was not adhered to in May as the laboratory was closed due to Covid-19.

In November, December and January due to divergence of staff to Covid-19 work the tubes were not exposed on the required dates.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Mid Sussex recorded data capture of 75% or more and, therefore, it was not required to annualise any monitoring data. In addition, any sites with a data capture below 33% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Mid Sussex have applied a national bias adjustment factor of 0.81 to the 2020 monitoring data reported in this 2021 ASR.

The national factor has been used as Mid Sussex have no automatic monitoring sites and so no co-location studies (resulting in a local bias factor) have been undertaken.

A summary of bias adjustment factors used by Mid Sussex over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factors

ASR Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	v03_20	0.93
2019	National	v06_19	0.92
2018	National	V06_18	0.87
2017	National	v03.17	0.94
2016	National	v03.16	0.91

NO₂ Fall-off with Distance from the Road

Distance correction did not need to be considered for Mid Sussex monitoring locations as there were no sites where the annual mean concentration (bias corrected) was greater than 36µg/m³.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Sites in Mid Sussex

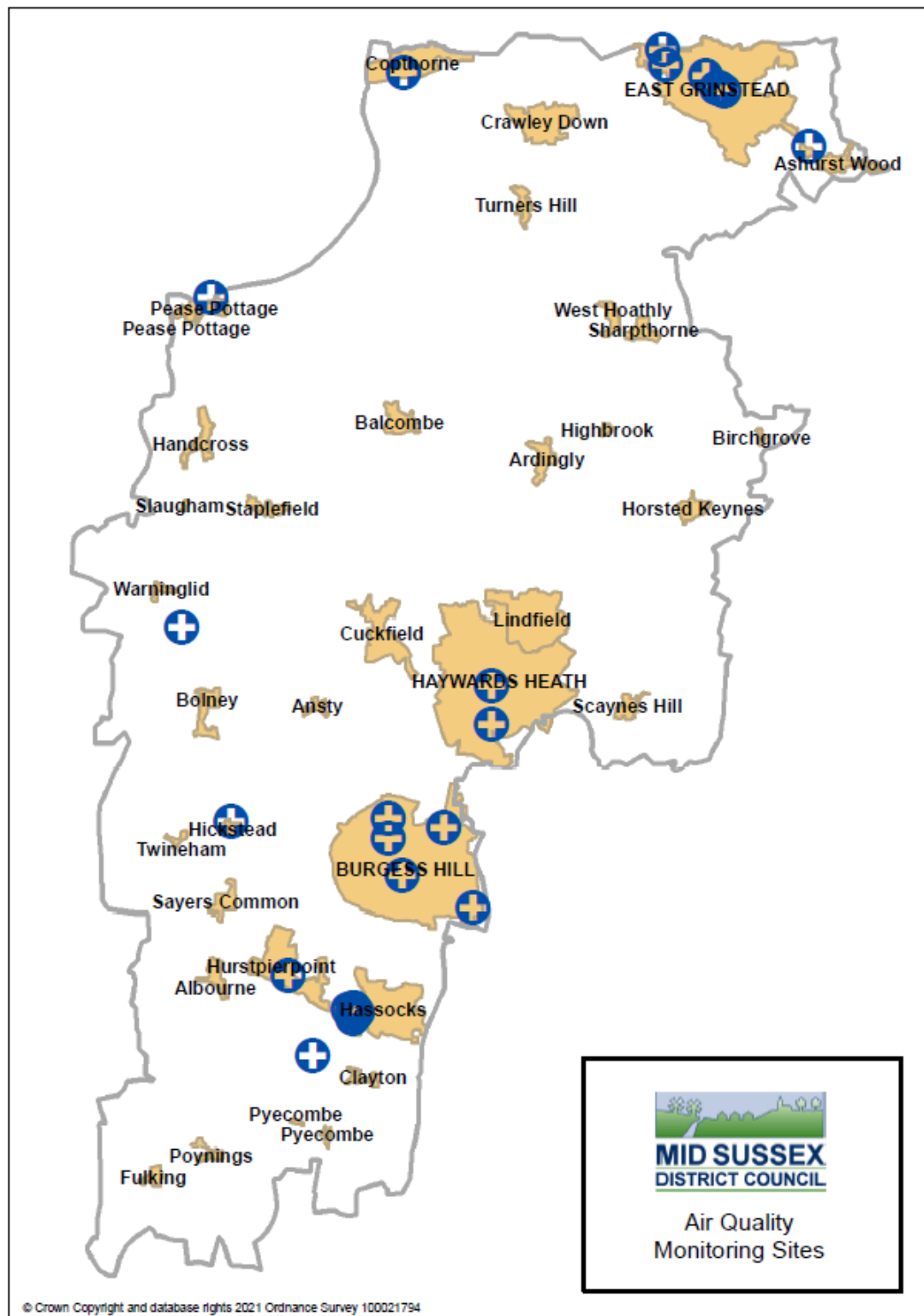


Figure 1 MSAQ1 South Road, Haywards Heath, adjacent to The Cook Shop

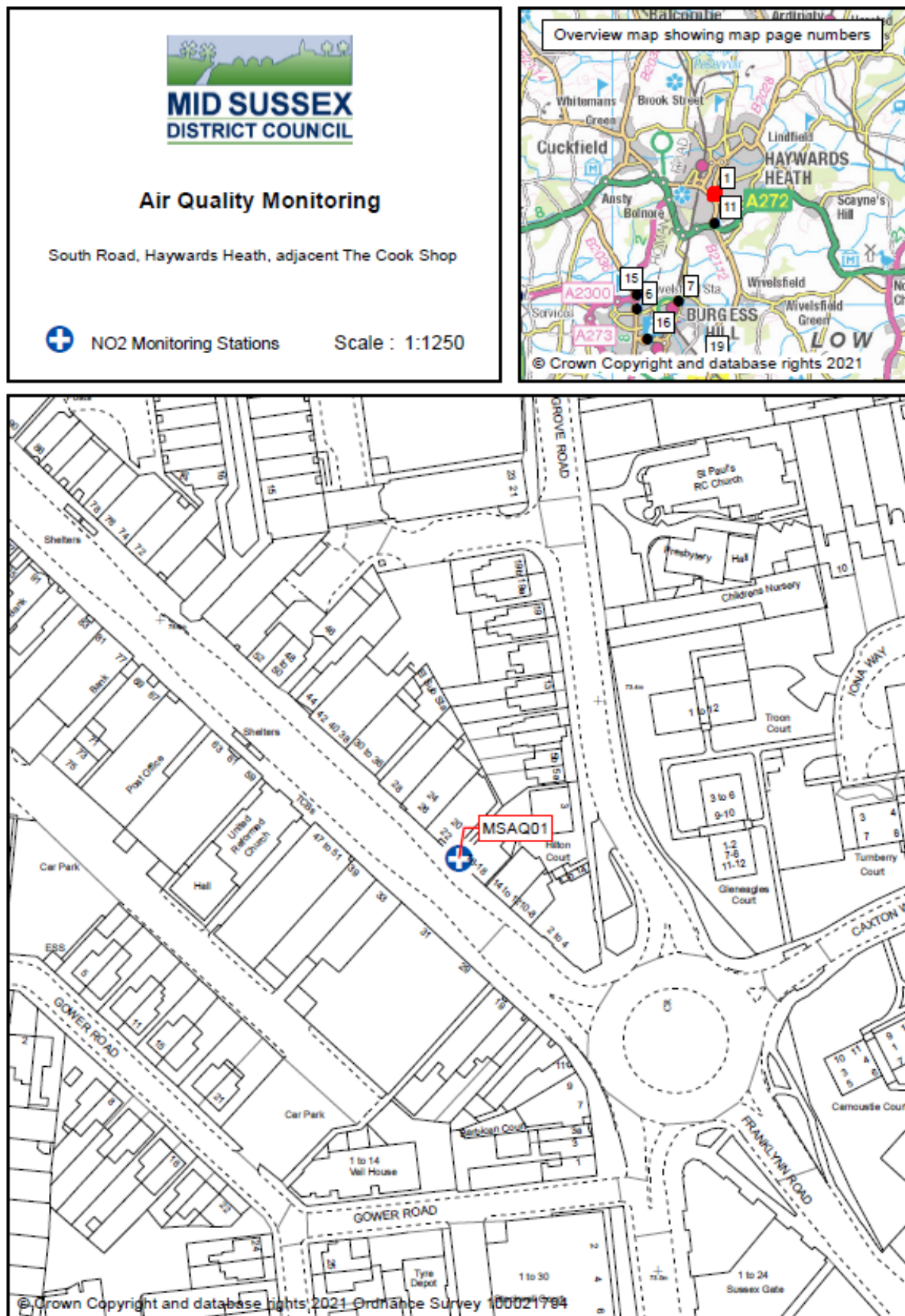


Figure 2 MSAQ28 Lamp Post, Rocky Lane, Haywards Heath

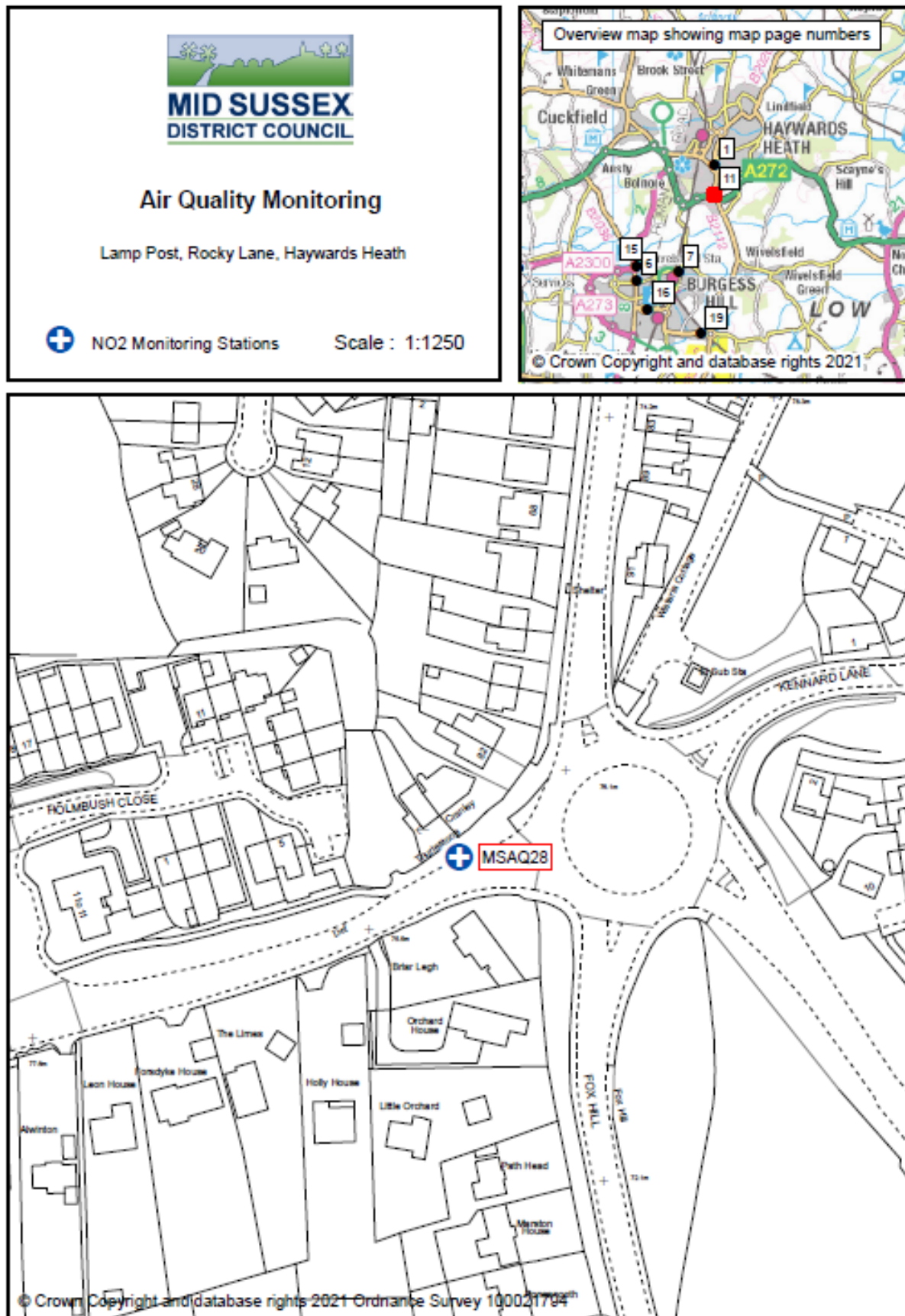


Figure 3 MSAQ3 London Road, East Grinstead, adjacent to Southwick House

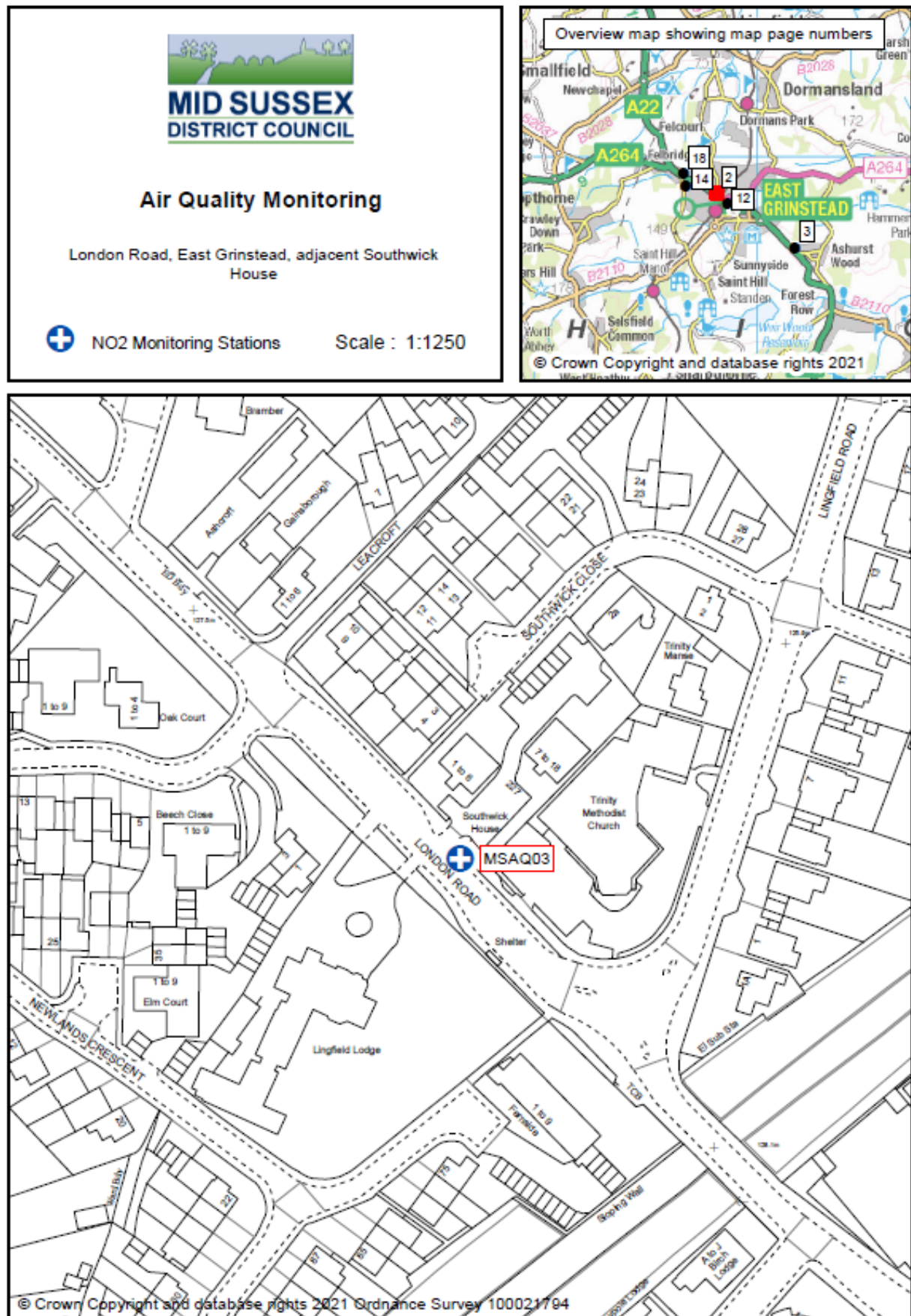


Figure 4 MSAQ29, MSAQ37, MSAQ38 and MSAQ39 London Road, East Grinstead

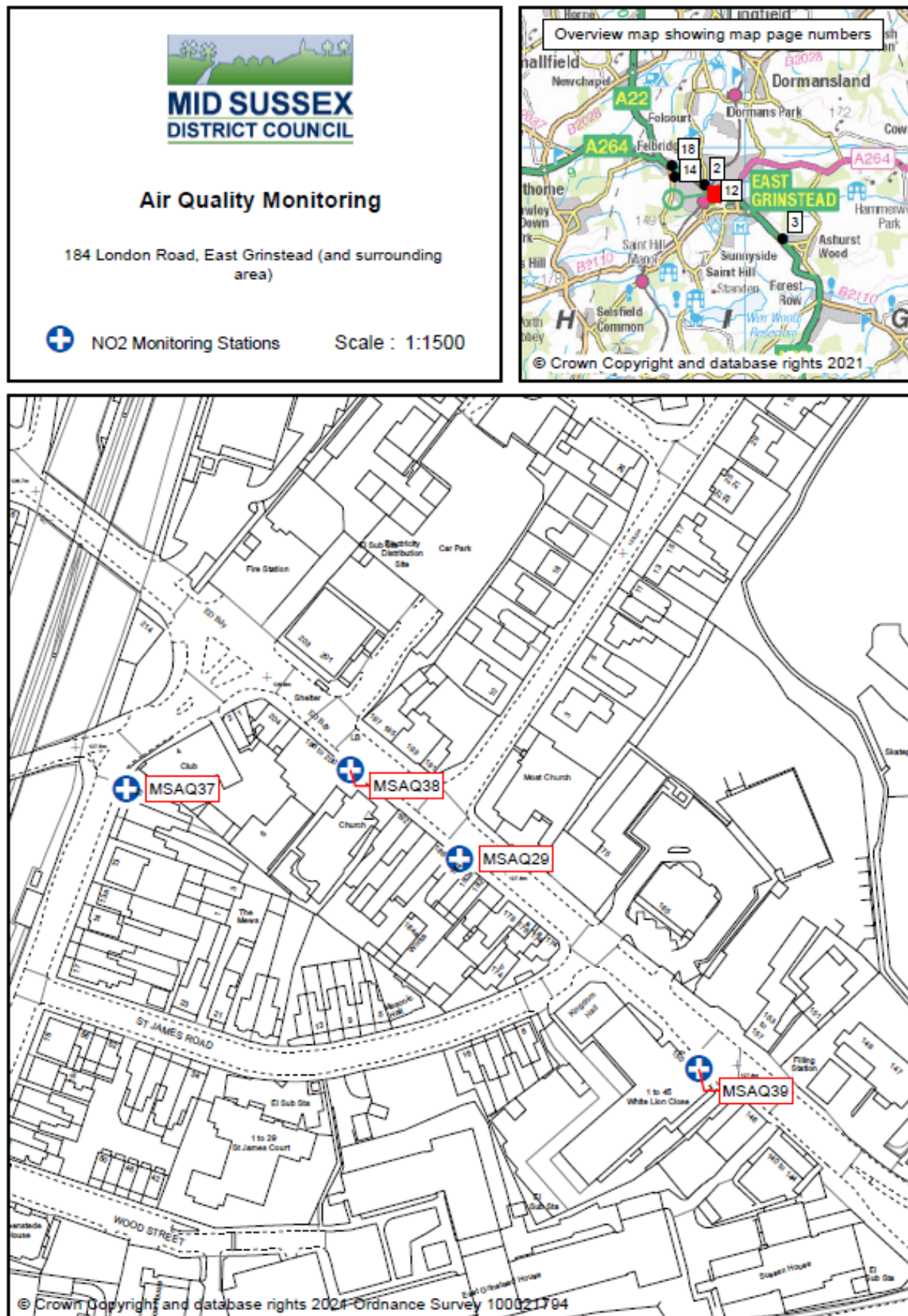


Figure 5 MSAQ5 Lewes Road, East Grinstead

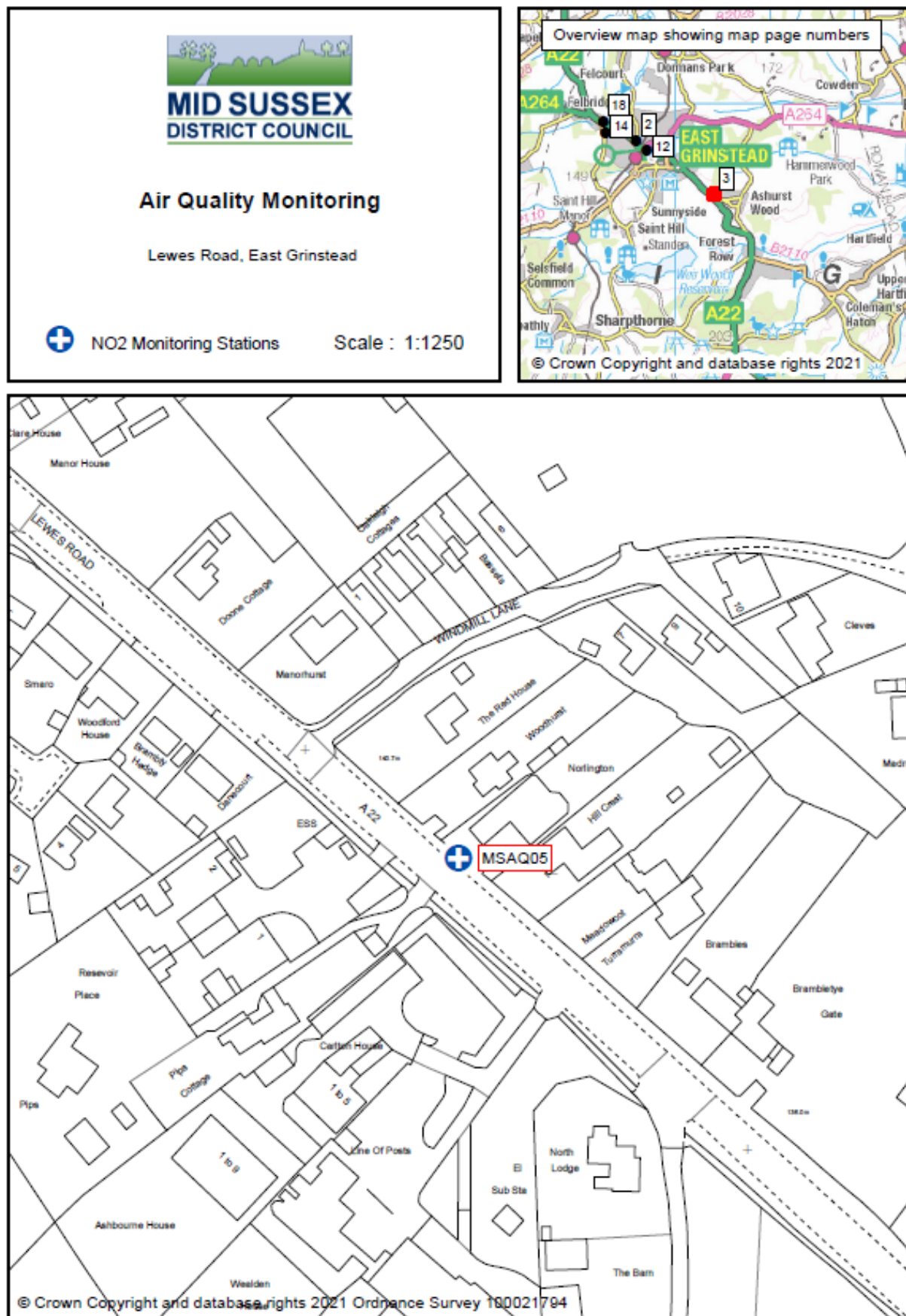


Figure 6 MSAQ36 Lamp Post outside Bridgeway, London Road, East Grinstead

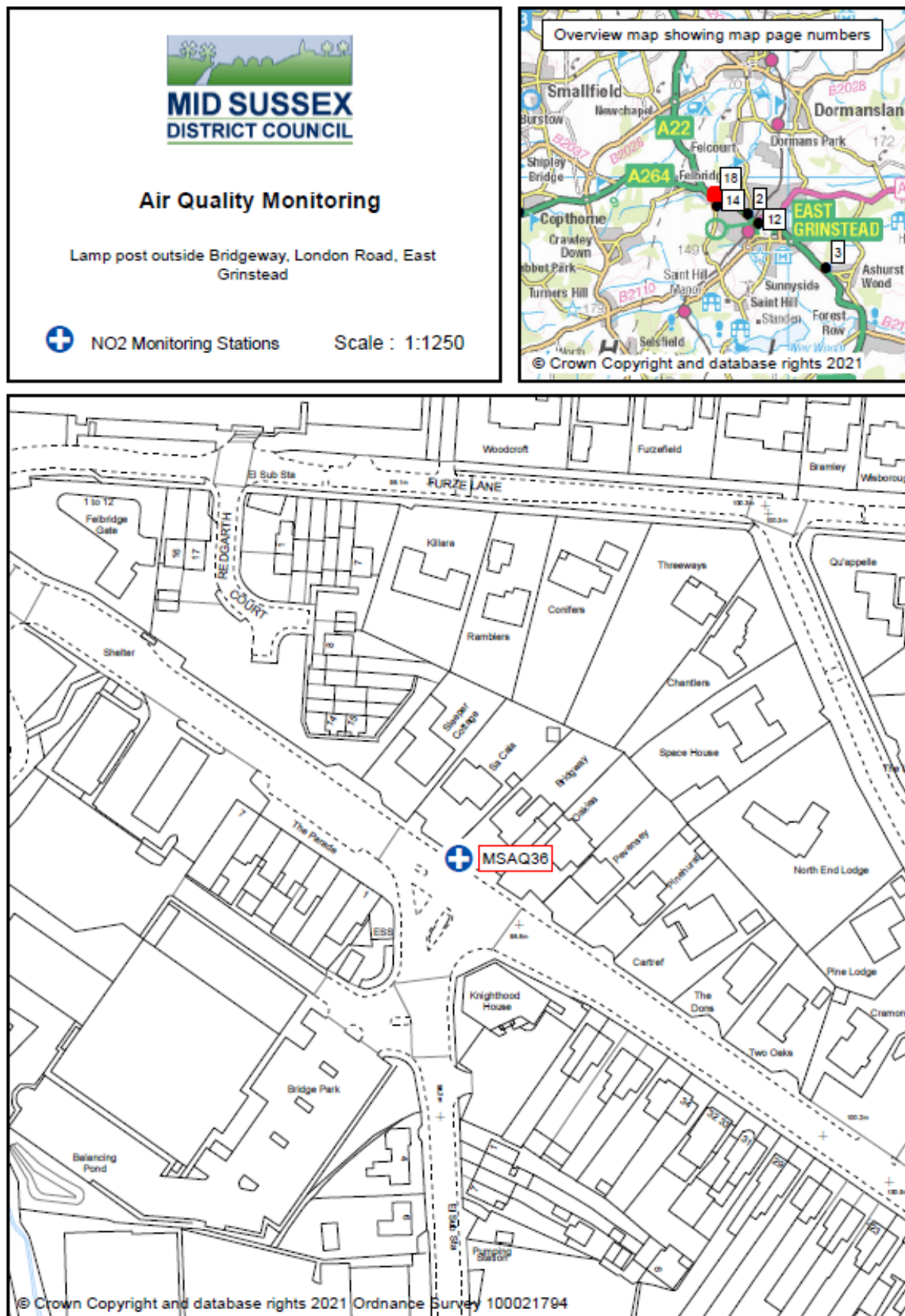


Figure 7 MSAQ36 Traffic sign outside Imberhorne School, Imberhorne Lane, East Grinstead

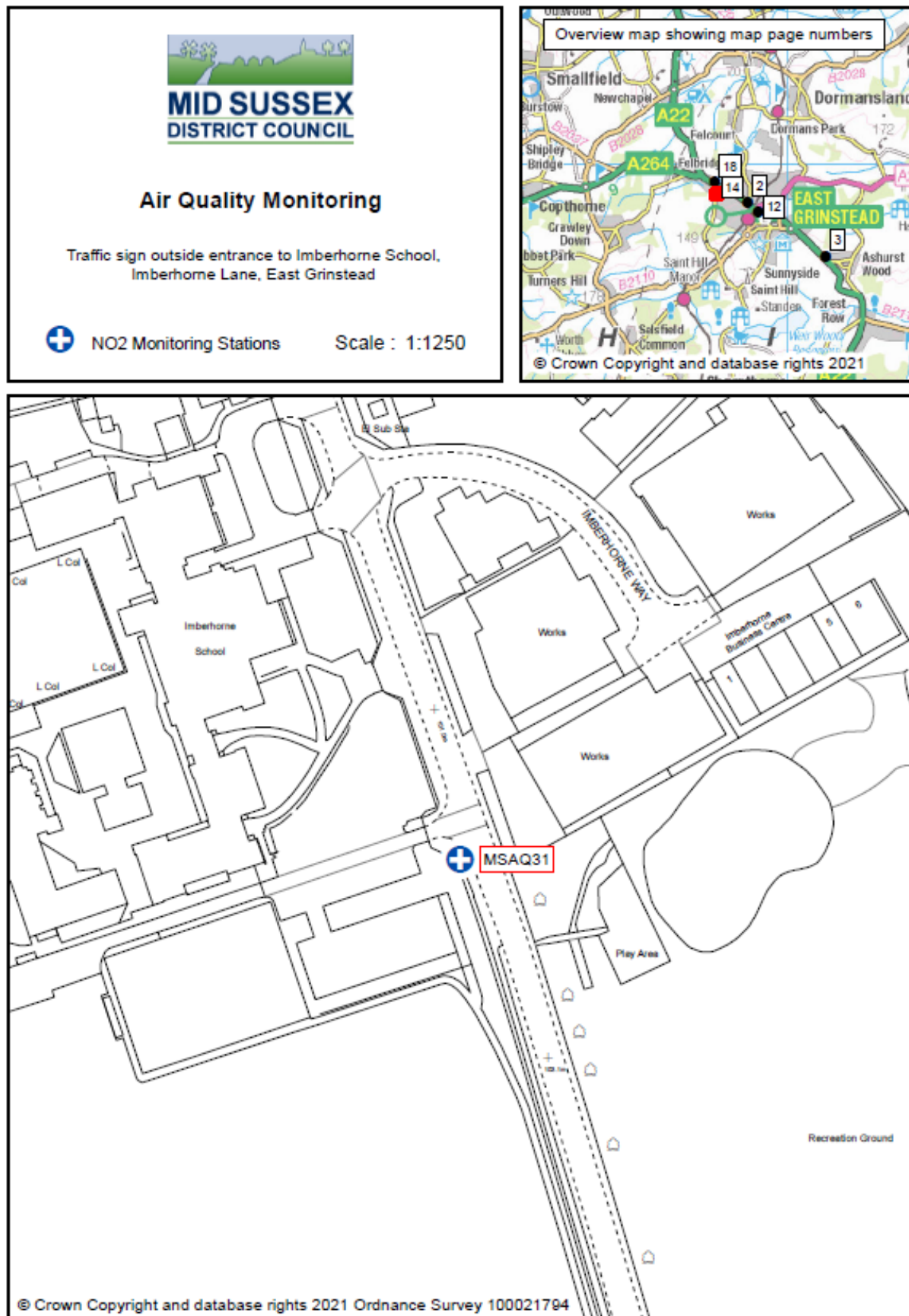


Figure 8 MSAQ9 Water Tower, Colwood Lane, Warninglid

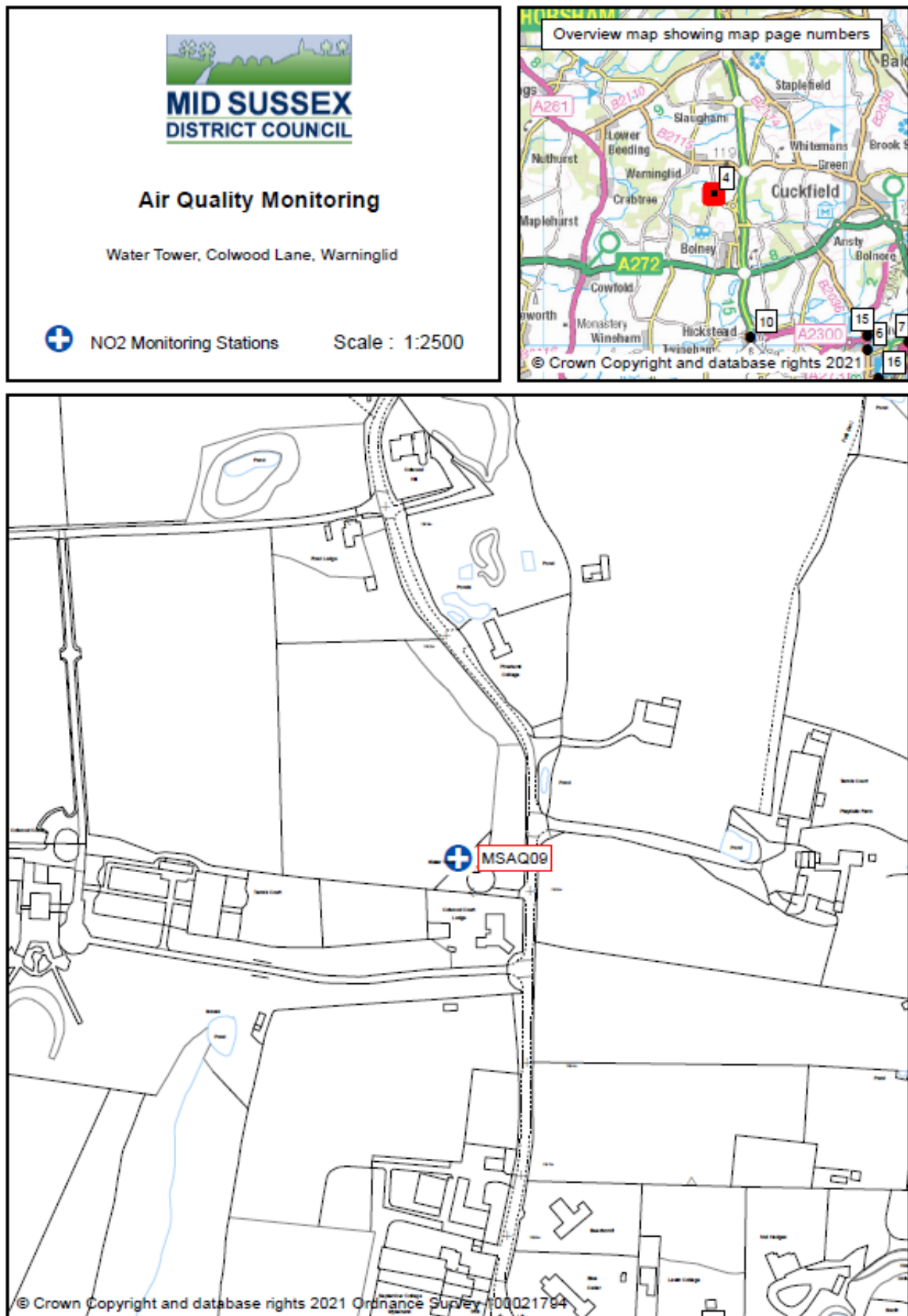


Figure 9 MSAQ30 Roundabout sign adjacent to Hardriding, Brighton Road, Pease Pottage

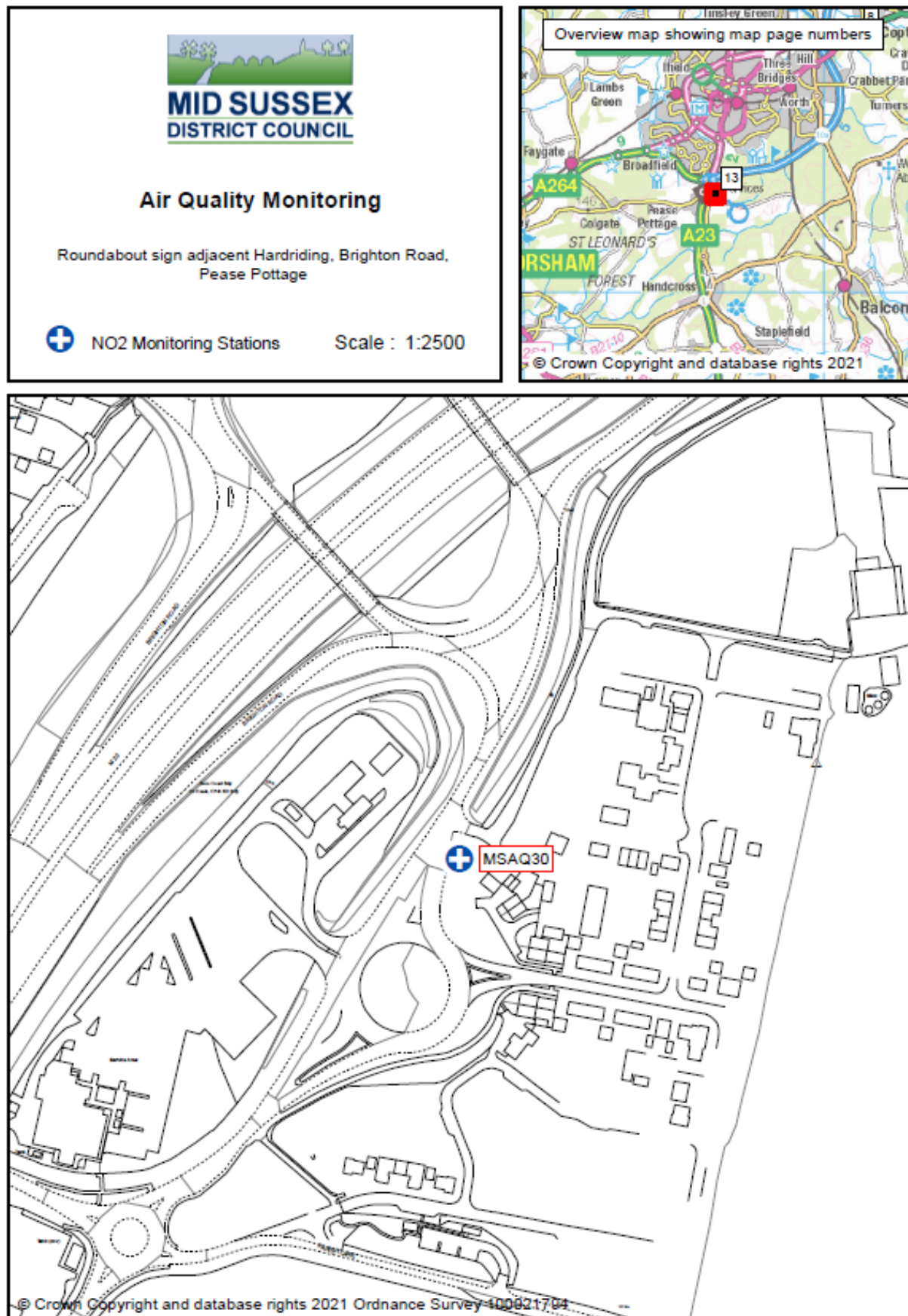


Figure 10 MSAQ10 to MSAQ19 and MSAQ23 and MSAQ24
Stonepound Crossroads, Keymer Road, Hassocks

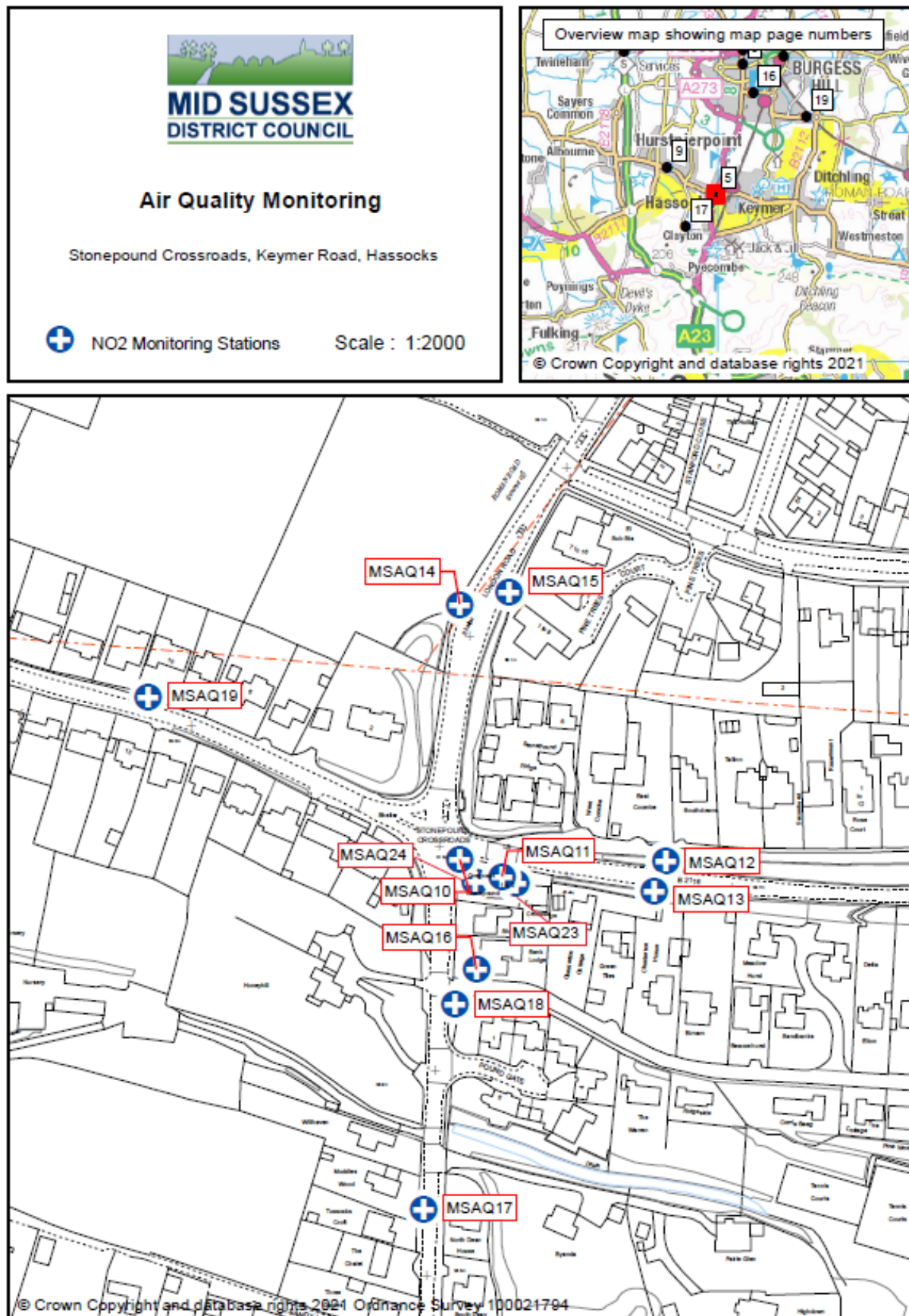


Figure 11 NO₂ Monitoring sites within AQMA Stonepound Crossroads Hassocks

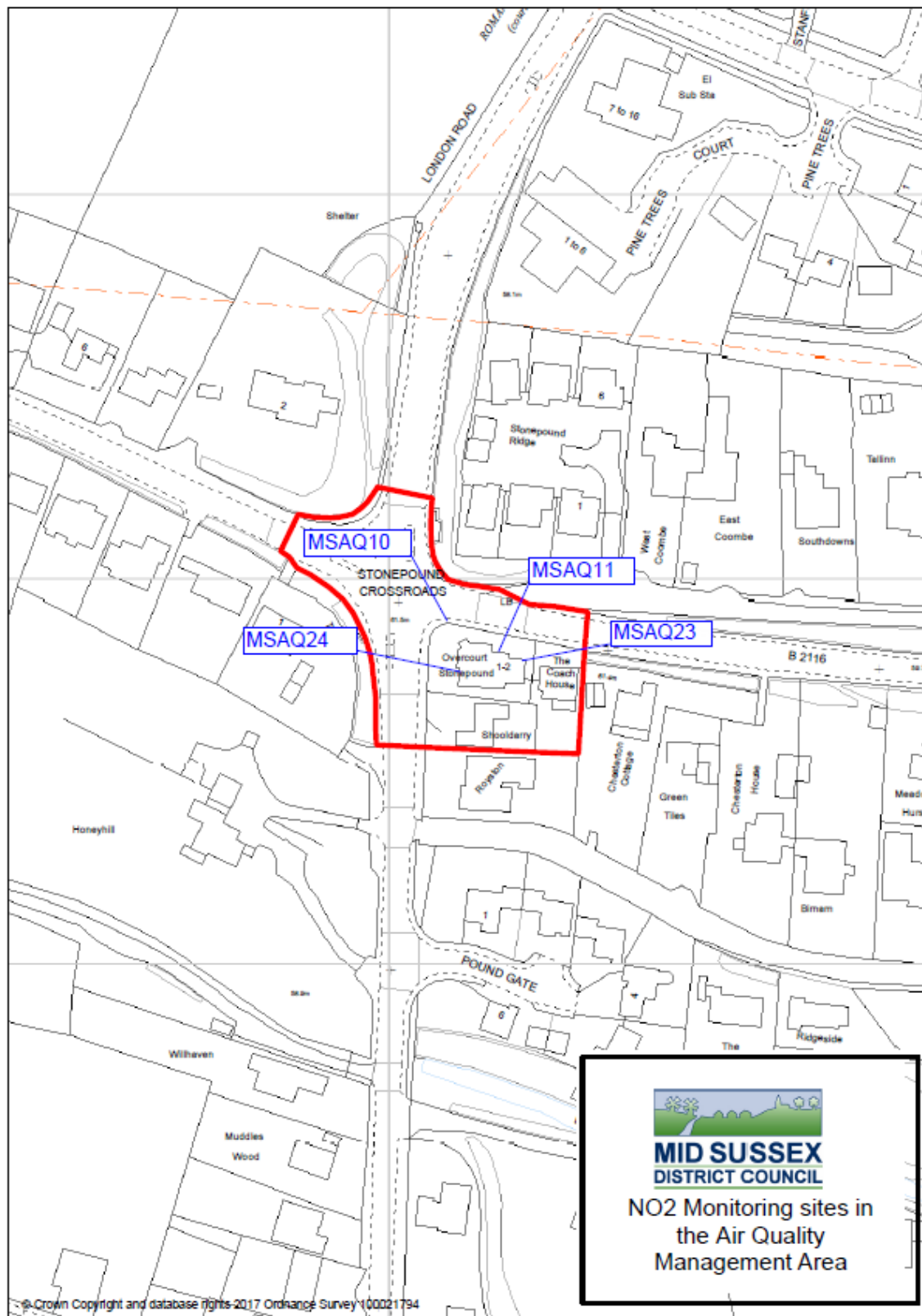


Figure 12 MSAQ35 New Way Lane, Hurstpierpoint

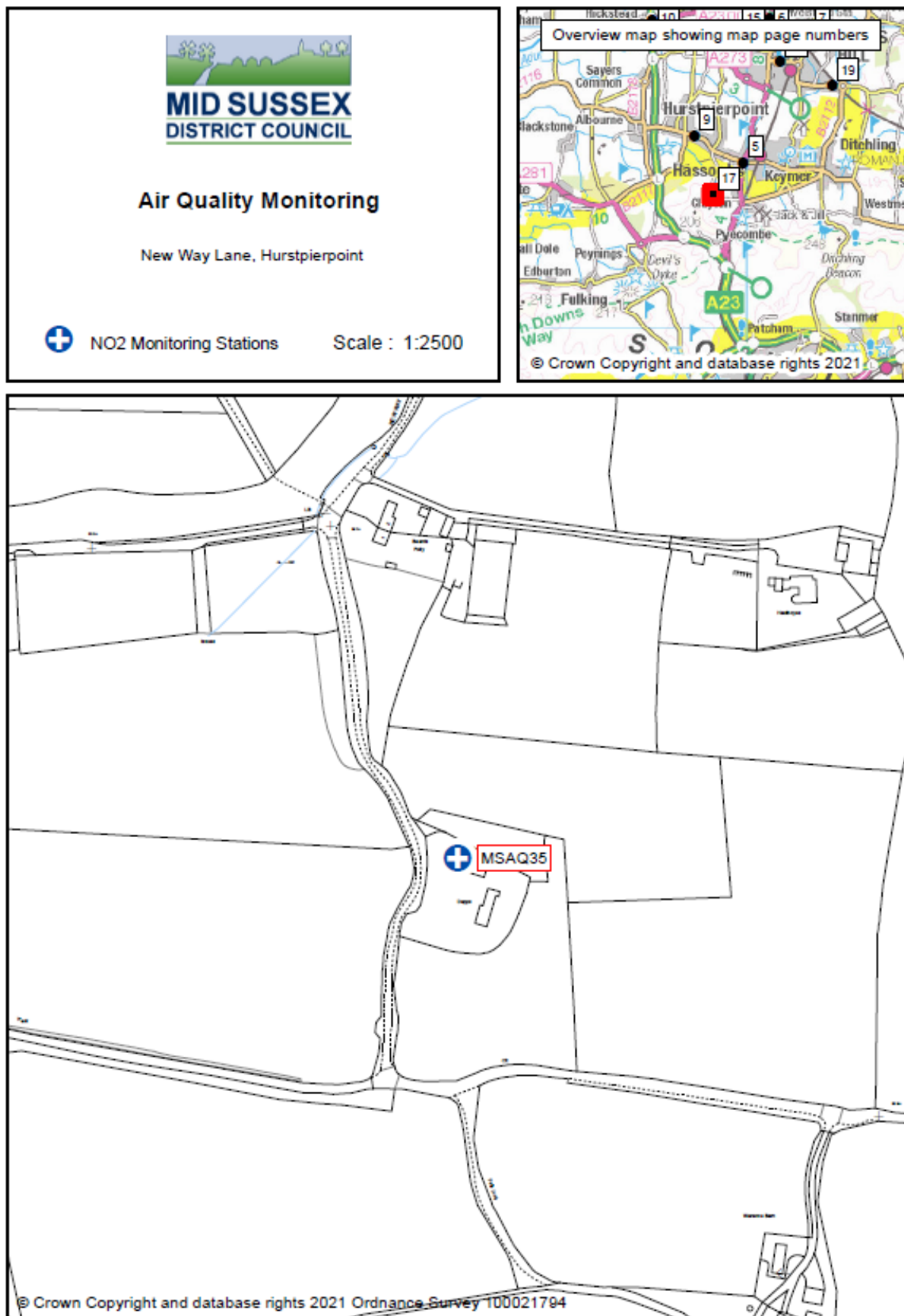


Figure 13 MSAQ26 Lamp Post 14, High Street, Hurstpierpoint

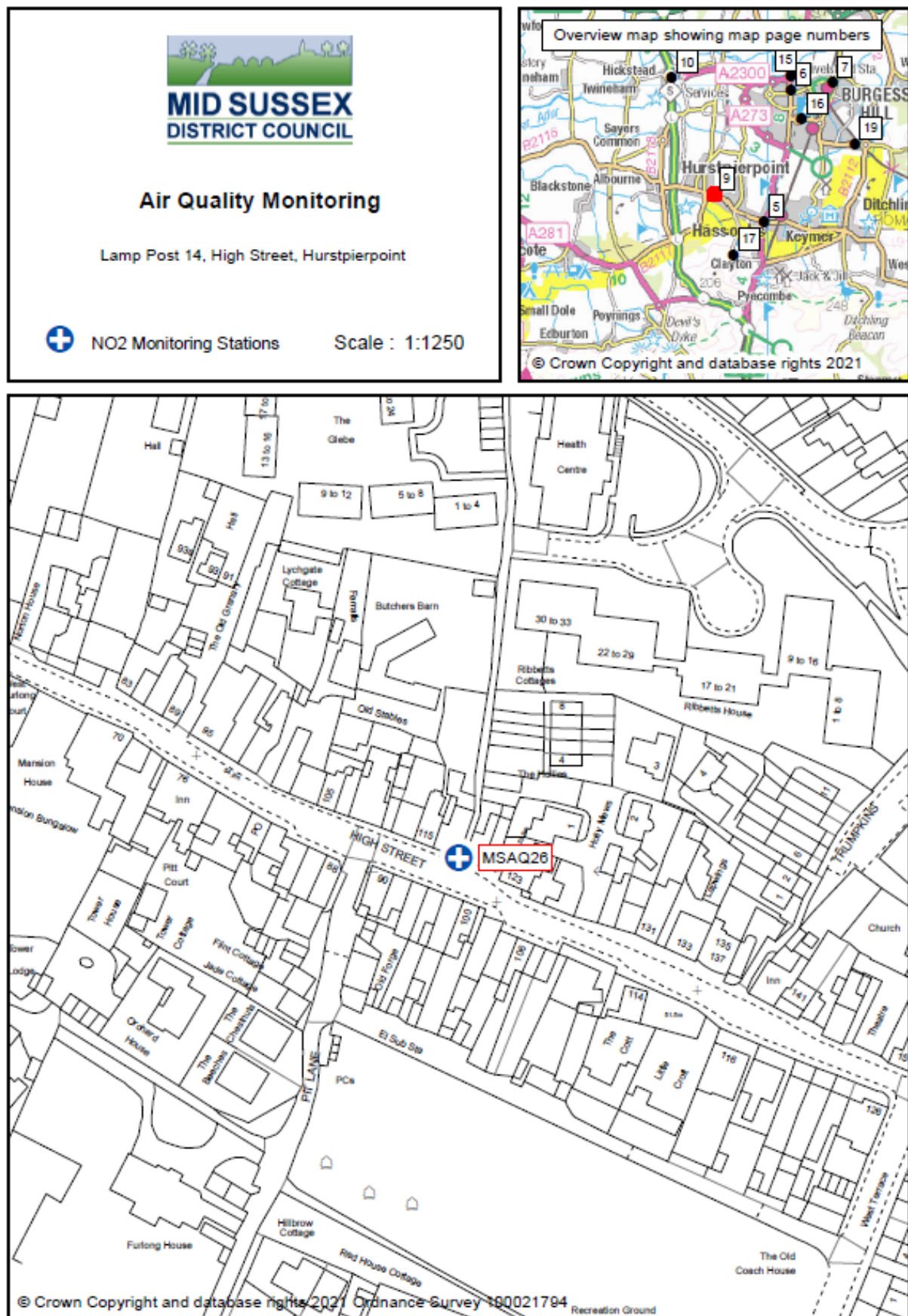


Figure 14 MSAQ27 Telegraph pole, London Road, Hickstead

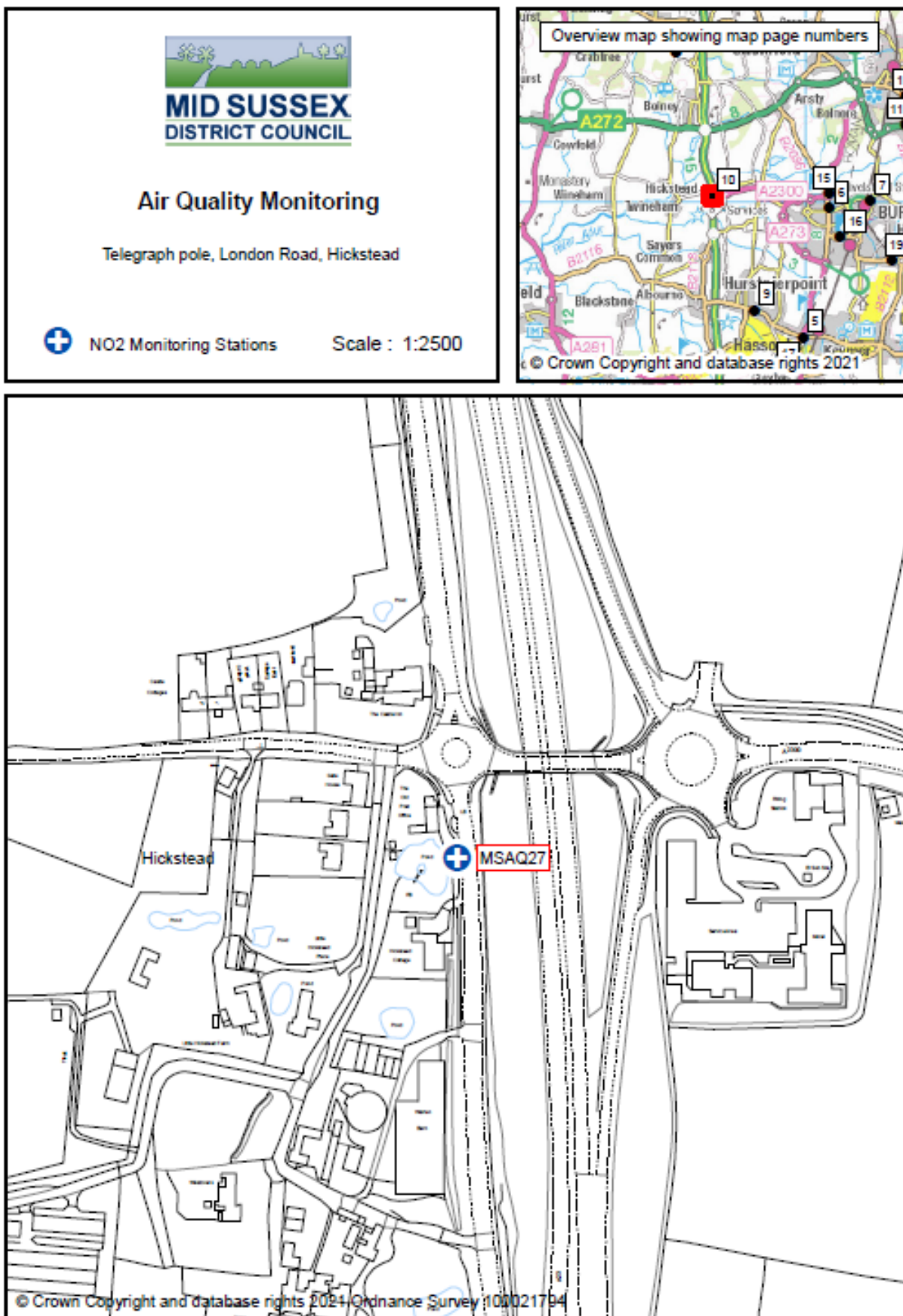


Figure 15 MSAQ40 Telegraph pole, 90 Folders Lane, Burgess Hill

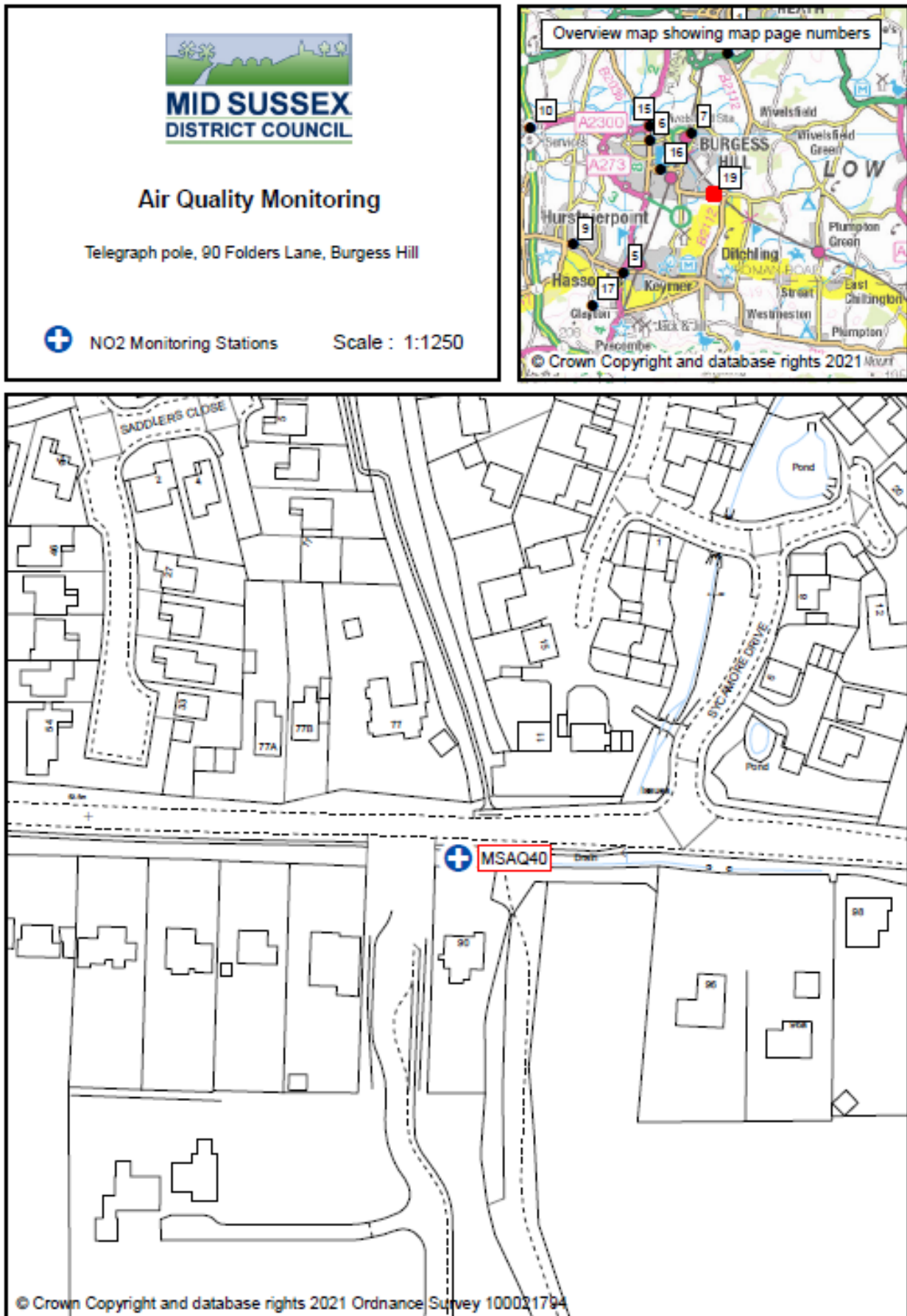


Figure 16 MSAQ22 Leylands Road, Burgess Hill

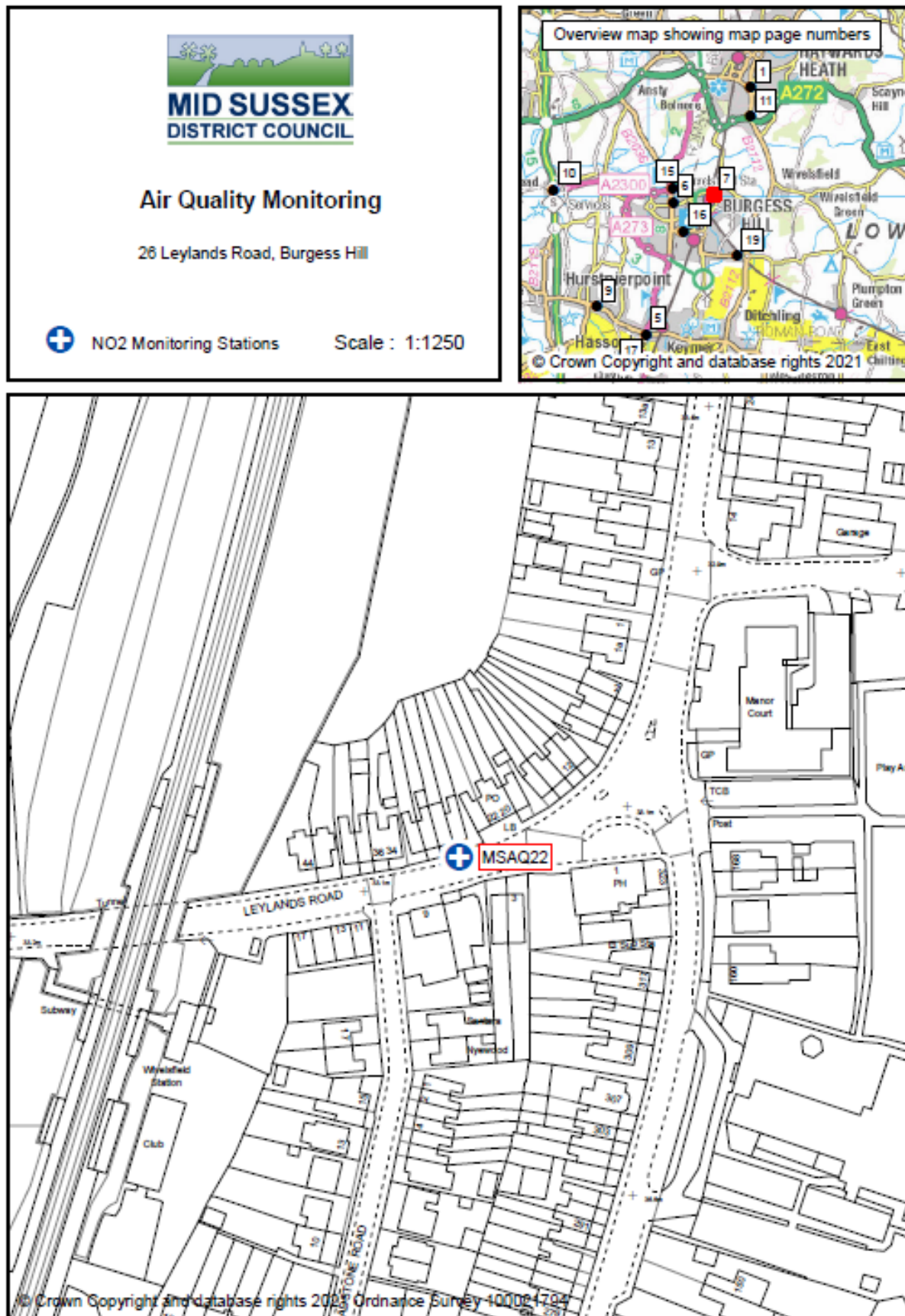


Figure 17 MSAQ21 86-88 London Road, Burgess Hill

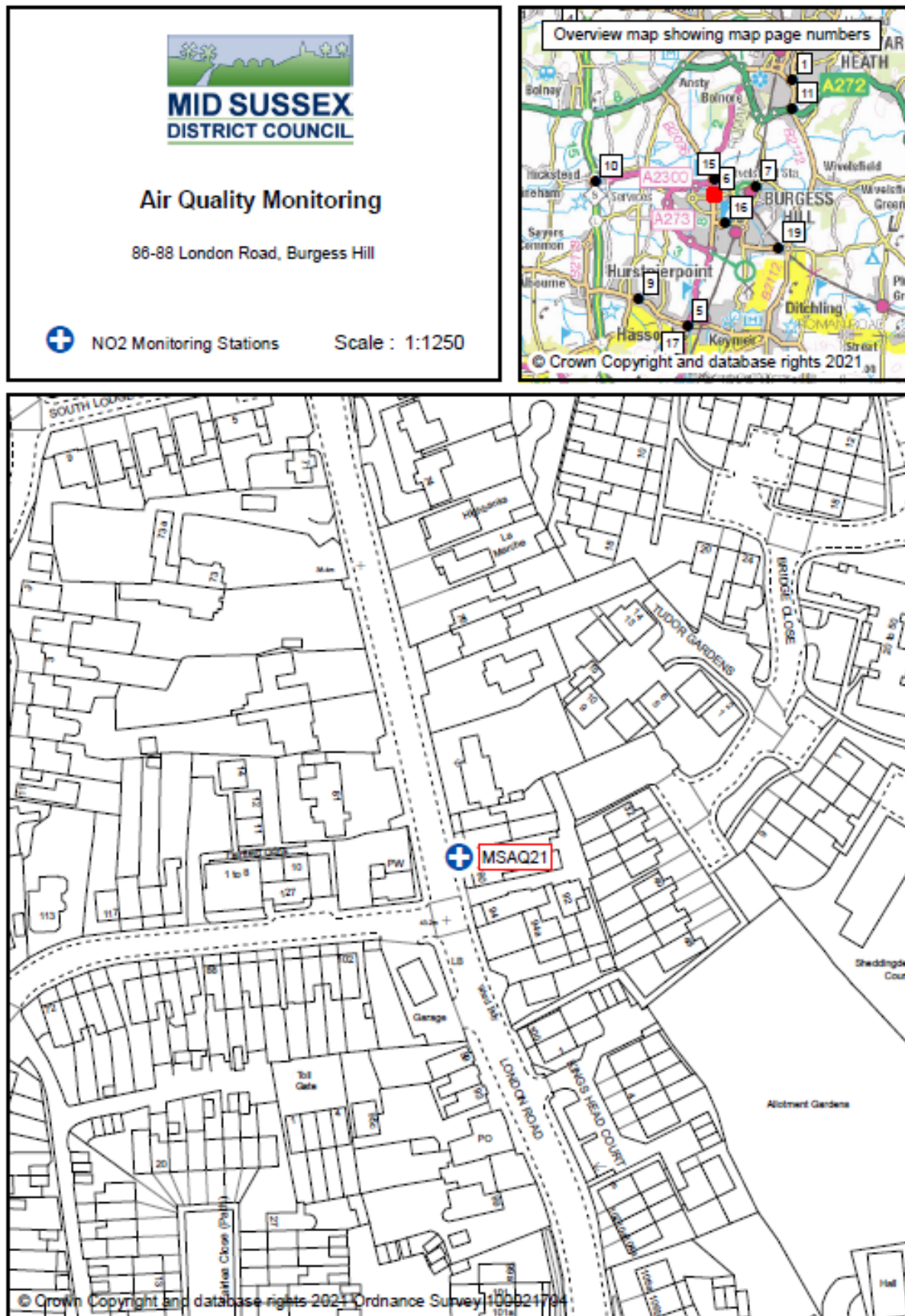


Figure 18 MSAQ34 Lamp Post, 11 Queen Elizabeth Avenue, Burgess Hill

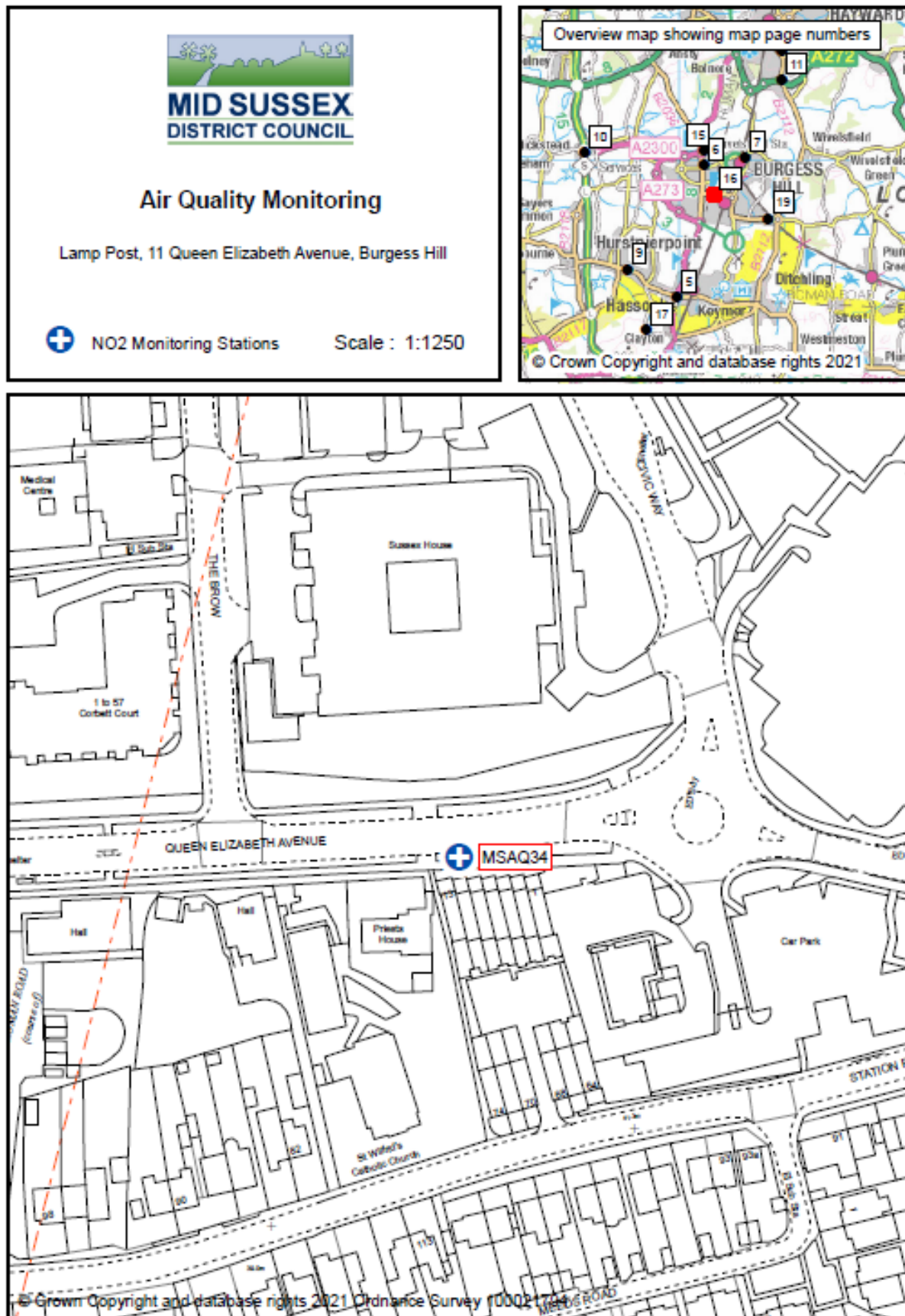
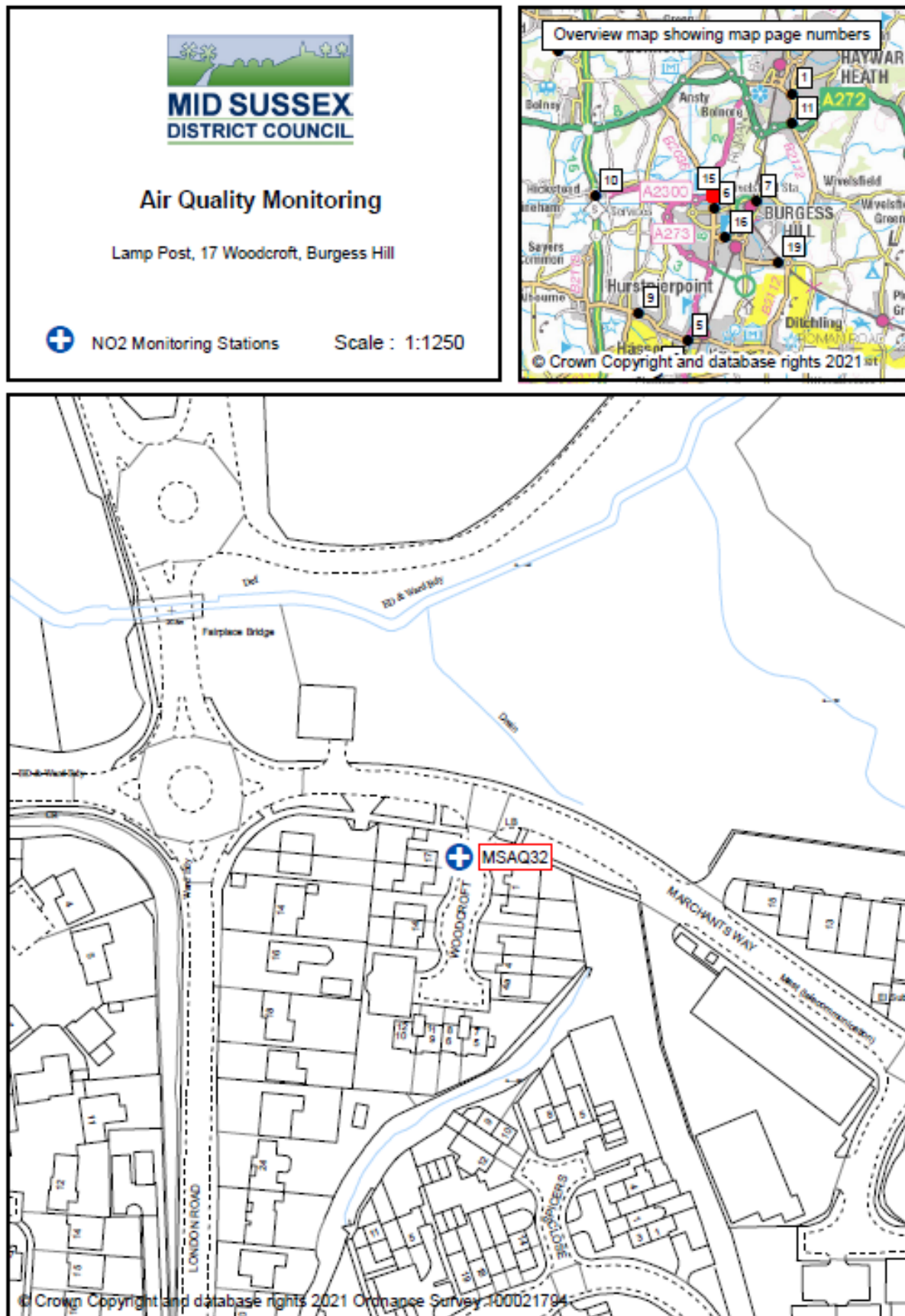


Figure 19 MSAQ32 Lamp Post, Woodcroft, Burgess Hill



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

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

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent the other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data⁸ suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)⁹ has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO₂ annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

⁸ Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

⁹ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/m³ if expressed relative to annual mean averages. During this period, changes in PM_{2.5} concentrations were less marked than those of NO₂. PM_{2.5} concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that PM_{2.5} concentrations during the initial lockdown period are of the order 2 to 5µg/m³ lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within Mid Sussex

- Reductions of NO₂ concentrations of between 15 and 35% were experienced at most roadside diffusion tube monitoring sites within AQMA 1 between April 2020 and June 2020. This equated to a 13 to 36% reduction in annual mean concentration relative to 2019. The majority of monitoring sites within AQMA 1 have complied with the annual mean objective since declaration. The reduction in NO₂ experienced within 2020 has allowed the Council to provide an evidence base in relation to the annual mean objective being achievable.
- Limited traffic counts on the A273 were in operation during 2020 and have allowed partial comparison of traffic numbers with the reduction of monthly NO₂ concentrations experienced at relevant monitoring locations. It is likely that no additional reduction in traffic numbers will be required to achieve compliance with the annual mean NO₂ objective given the current long-term trend.

Opportunities Presented by COVID-19 upon LAQM within Mid Sussex

- Temporary Cycle Lanes – A22 Felbridge to East Grinstead town centre (1.7km) The pop-up cycleways for West Sussex were an emergency response to increase travel options as part of the Government-led recovery plan from COVID-19.
- These works protected an existing cycle way, including a short extension towards the town centre. They comprised light segregation measures.

The impact of the schemes was monitored during their operation. Public feedback showed that the majority of responses expressed opposition to the cycleways, citing increased congestion as a key issue. Automatic traffic counters also indicated relatively low usage by

cyclists in comparison with other traffic. The Felbridge to East Grinstead scheme has now been removed.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Mid Sussex

- The implementation of action plan measure 2: replacement of “Cut engine – Cut pollution” signs has been delayed due to COVID-19 affecting WSCC priorities.

Small Impact

- As with previous years, a national bias adjustment factor has been utilised to adjust the diffusion tube results for 2020. Within 2019 there were 31 co-location studies that were utilised to calculate the bias factor for the laboratory and preparation method used. For 2020, this number has reduced to 18 studies. There is, therefore, the potential for there to be a greater degree of uncertainty associated with the resultant annual mean NO₂ concentrations in 2020 than in previous years.

Large Impact

- During 2020, access to diffusion tube laboratory analysis was unavailable for May. This has affected data capture within 2020, but good capture rates means no monitoring sites have to be annualised. **No/Negligible Impact**

The impacts as presented above are aligned with the criteria as defined in Table F 1, with professional judgement considered as part of their application.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by 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 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

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Mid Sussex District Council (2020), Annual Status Report 2020 by Mid Sussex District Council
<https://www.midsussex.gov.uk/environment/air-quality/>