



# 2022 Air Quality Annual Status Report (ASR)

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

Date: June 2022

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Report Reference Number	MSDC ASR 2022
Date	June 2022

## Executive Summary: Air Quality in Our Area

This report details the results of air quality monitoring undertaken in 2021 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 declined. 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 equalities issues because areas with poor air quality are also often less affluent areas<sup>1,2</sup>.

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

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages<sup>3</sup>, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017<sup>4</sup>.

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 (NO<sub>2</sub>).

Road transport is responsible for approximately 80% of NO<sub>2</sub> 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 area 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](#)

Previous air quality monitoring and modelling carried out by the Council indicated that despite good air quality within most of the District, the air quality objective for nitrogen dioxide (NO<sub>2</sub>) was 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 2021 are encouraging overall. There are no exceedances in the district and all results are lower than 2019 levels. As expected, there has been a general increase in NO<sub>2</sub> levels compared to those recorded in 2020, as 2021 had a shorter Coronavirus lockdown period than 2020. As a result of impacts from COVID-

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<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, July 2021

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



19 and the associated restrictions on activity during the first seven months of 2021, it was anticipated that measured NO<sub>2</sub> levels would be lower than would have been expected in a “normal” year, and no long-term conclusions should be drawn from this year’s data, given that restrictions in response to COVID-19 affected traffic levels significantly.

Within the Council's only AQMA at Stonepound Crossroads in Hassocks, the main pollutant (NO<sub>2</sub>) 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 NO<sub>2</sub>. For the fourth time in the last five 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 24 months would make any conclusions unreliable at the current time.

Due to concerns over measured levels of NO<sub>2</sub> in London Road, East Grinstead, we 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 again significantly lower than at nearby 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 NO<sub>2</sub> air quality objective of 40ug/m<sup>3</sup>.

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\* 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 email 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 Strategy<sup>5</sup> sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero<sup>6</sup> 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 2021 in pursuit of improving local air quality. The key actions in 2021 focused on a range of measures designed to limit the exceedance of the NO<sub>2</sub> 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 and WSCC are trialling of a new system of pollutant sensor responsive controls to allow the traffic light timings to adjust to measured pollution levels
- Signage and advertising to encourage use of the A2300 as an alternative route
- Completion and opening of the widened A2300 as part of a forthcoming development
- Continuing to work with local schools to raise awareness
- Using the planning system to ensure maximum mitigation measures are 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.
- 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

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<sup>5</sup> Defra. Clean Air Strategy, 2019

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

- 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 Burn](#)). This campaign has also gathered 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. To register see [Sustainability - Mid Sussex District Council](#)

## Conclusions and Priorities

No exceedances for NO<sub>2</sub> 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. Council staff also have access to electric bikes.
- The Sayers Common to Hassocks Cycle Route has been approved by WSCC and 2 of the 8 sections are due to be completed by the end of 2023. Design work on other sections will commence at the same time.
- MSDC are part of West Sussex County Council's *Breathing Better: a partnership approach to improving air quality in West Sussex* and we have previously attended 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.

- WSCC has adopted the West Sussex Electric Vehicle Strategy 2019-2030. Connected Kerb is fully funding EV chargepoint deployment working with WSCC, Adur and Worthing, Arun, Crawley, Horsham and Mid Sussex district and borough councils.
- Car sharing continues to be promoted through the Sustainability pages on the MSDC intranet.
- Hassocks Parking Scheme - Stage 2 has now been completed 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.
- Continued effective communication of the issues to the public, professional partners and colleagues
- SAQP has extended 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

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 responds to Defra consultations and benefits from the co-ordinated monitoring of air pollutants across the region, including the airAlert service:

## **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.

To receive local air pollution alerts you register at

- airAlert online at [www.airalert.info/](http://www.airalert.info/)
- 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](#)

## Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Mid Sussex District Council with the support and agreement of the following officers and departments:

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This ASR has been approved by:

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This ASR has not been signed off by a Director of Public Health.

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# 1 Local Air Quality Management

This report provides an overview of air quality in Mid Sussex during 2021. 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

### 2.1 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 the AQMA declared by Mid Sussex can be found in Table 2.1. The table presents a description of the only 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 objective pertinent to the current AQMA designation is as follows:

- NO<sub>2</sub> annual mean

**Table 2.1 – Declared Air Quality Management Areas**

AQM Area Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	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)	Declared 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 2021	<a href="https://midsussex.gov.uk/air-quality/action-plan-stonepound-crossroads">Air Quality Action Plan - Stonepound Crossroads (midsussex.gov.uk)</a>

☒ Mid Sussex confirm the information on UK-Air regarding their AQMA is up to date.

☒ Mid Sussex confirm that all current AQAPs have been submitted to Defra.

## 2.2 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 report includes detailed discussion of PM<sub>2.5</sub> and draws links to the Public Health Outcomes Framework and fraction of mortality attributable to PM<sub>2.5</sub> emissions. Comparisons to neighbouring authorities and the national average are provided. This is indicative of good practice and is encouraged to be included in all future reports.

*Noted and agreed*

- The measures for reducing NO<sub>2</sub> contained within the Council's AQAP will contribute to tackling PM<sub>2.5</sub> emissions as these emissions share similar sources. It would however be encouraged that the AQAP include measures specific to tackling PM<sub>2.5</sub> emissions, given the well-documented adverse health impacts of exposure.

*Given the small size of the AQMA and the likely revocation in the next few years, separate measures specific to reducing PM<sub>2.5</sub> emissions are not presently considered to be feasible or cost effective. This will be regularly reviewed in future.*

- The Council intend to deploy an automatic monitoring unit in the East Grinstead area during 2021 as part of an investigation into a potential exceedance in this area. This is commended, and it is expected that an update on this action be provided within the Council's 2022 ASR.

*Update included in 2022 ASR*

- Appendix C states that "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 Table A.4, sites MSAQ14 and MSAQ35 are stated to have 73.6% data capture and 72.0% data capture, respectively, and therefore would require annualisation. However, per Table B.1, these sites each have data for 9 out of 12 months (i.e. 75%) which would suggest that annualisation is not required. The Council's decision to not annualise is supported on the basis there are 9 months of monitoring data, however the Council are advised to ensure consistency in data capture calculation throughout the report to avoid confusion (i.e using the number of periods OR the number of days of exposure to calculate data capture, ensuring this is consistent).

*A clarifying statement is included under the Diffusion Tube Annualisation section to show that the DTDPT has not identified any sites requiring annualisation.*

- The national bias adjustment factor has been applied to the Council's 2020 monitoring results, however it is noted that the version of the national bias adjustment factor spreadsheet used (v03\_20) will have been out of date at the time of report submission. The Council should have instead used the v03\_21

spreadsheet to obtain their adjustment factor. This error is not considered to be grounds for rejection of the ASR as the factor applied (v03\_20, 0.93) is higher than the factor obtained from the v03\_21 spreadsheet (0.81) and therefore offers a more conservative indication of NO<sub>2</sub> concentrations within the District during 2020. The Council are however required to ensure the most recent version of the spreadsheet is utilised for bias adjustment calculation in future ASRs.

*Defra have subsequently confirmed that the correct factor was in fact applied and that no further action is required.*

- Detailed discussion on the impacts of COVID-19 on LAQM has been provided within Appendix F. This indicates a high level of understanding by the Council of the impacts of the pandemic, and discusses the challenges faced by the Council as a result.

*Noted and agreed*

- Table 2.2 has been completed in detail, and the Council have additionally provided an in-depth discussion on AQAP progress, which is commended.

*Noted and agreed*

- Diffusion tube mapping is robust and clearly demonstrates the extent of the Council's monitoring network. The Council are encouraged to continue this level of mapping in future reports.

*Noted and agreed*

Mid Sussex District Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures 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 2021 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
- Improved access into Burgess Hill via A2300 which should encourage HGV traffic in particular to avoid the AQMA

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

- Any vegetation obscuring the “Cut engine, cut pollution” signs will be trimmed back.
- Local Cycling and Walking Infrastructure Programme (LCWIP) work on sections of cycle route to be commenced.

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

- Install a real time air quality monitor in East Grinstead (NO<sub>2</sub> and PM)
- Rollout additional EV infrastructure throughout the district

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 and the cost of living crisis
- 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
- Installation of real time air quality monitor delayed due to administrative issues between MSDC and UK Power Networks

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	Recently completed	Signage to divert traffic already in place, roadworks from other development may affect use until completion. Advisory lorry route map available at WSCC website.
2	“Cut Engine, Cut pollution” signs	Public Information	Via other mechanisms	2012	2022	WSCC	WSCC and MSDC	NO	Funded	< £10k	Planning	Reduced vehicle emissions	Measured concentration in AQMA	Implementation on-going	WSCC to check if vegetation needs trimming back from around signs
3	Improve & Promote cycle Routes	Alternatives to private vehicle use	Other	2014	2023	WSCC and S106	WSCC	NO	Partially Funded	£1 million - £10 million	Planning	Reduced traffic through AQMA	Measured concentration in AQMA	Implementation on-going	WSCC undertaking design work on part of the cycle route between Sayers Common and Hassocks (prioritised Hurstpierpoint section). The design work has been divided into 8 sections, 2 of which are to be delivered 2022/23.
4	Encourage Alternative Transport	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2015	2023	MSDC and neighbouring LA's	MSDC	NO	Partially Funded	£50k - £100k	Planning	Reduced vehicle emissions	Measured concentration in AQMA	Implementation on-going	WSCC has adopted the West Sussex Electric Vehicle Strategy 2019-2030.  Connected Kerb is fully funding EV chargepoint deployment working with WSCC, Adur and Worthing, Arun, Crawley, Horsham and Mid Sussex district and borough councils.
5	Optimize Traffic Lights to Real time pollution data	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	WSCC	WSCC	NO	Funded	< £10k	Implementation	Reduced vehicle emissions	Measured concentration in AQMA	Testing and calibrating	Pollution sensors are installed and operational, and initial calibration is complete. 6-8 weeks of data collection is now underway, before air quality threshold levels are to be agreed between WSCC and MSDC. Configuration will then be undertaken to give priority/additional time to junction arms exceeding the agreed threshold. The proposal has a number of what if calculations, i.e. what if more than one arm exceeds the threshold in any given 15min period, as the key here is to improve the air quality levels, not

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
															continually layer priorities which will only increase delays and air pollution levels on other arms. If the trial is successful, a report will be prepared that explains how the special conditioning works in managing the site.

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

The most recent data from Public Health Outcomes Framework (PHOF) indicator *Fraction of mortality attributable to particulate air pollution* shows that the percentage in Mid Sussex was 5.7%. This compares to a national average of 5.6% and an average of 6% in the South East region. This data is for 2020 as more recent data is not yet available. Please note that a new method of calculation is now being used (see PHOF website for details).

By way of more local comparison, levels in neighbouring authorities are 5.6% in Horsham District, 6.2% in Crawley, 5.4% in Lewes District and 5.4% in Wealden District.

Mid Sussex District Council is taking the following measures to address PM<sub>2.5</sub>: MSDC undertakes air quality emissions reduction measures (set out in Table 2.2) which are aimed at reducing NO<sub>2</sub> but will also contribute to reducing PM<sub>2.5</sub> emissions as these air pollutants share a similar source, e.g. road traffic emissions and combustion sources. At present Mid Sussex does not undertake any separate reduction measures aimed specifically at tackling PM<sub>2.5</sub> emissions as it is considered that it is more cost effective to continue with the measures specified that will help to reduce both NO<sub>2</sub> and PM<sub>2.5</sub>.

However, this approach is regularly reviewed and will be assessed again in 2022 in conjunction with Sussex Air and the AQAP Steering Group.

Mid Sussex works in partnership with West Sussex Public Health to communicate the impacts of air pollution including PM<sub>2.5</sub>. 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<sub>2.5</sub> emissions.

Furthermore, 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 in 2022 and 2023.

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 Summer 2022. As well as NO<sub>2</sub>, this will monitor PM<sub>10</sub> initially and subsequently PM<sub>2.5</sub>. Background levels from national mapping indicated PM<sub>2.5</sub> in Mid Sussex at 8.9µg/m<sup>3</sup> as an annual mean in 2021. The underlying trend is gradually downwards (from 12.08µg/m<sup>3</sup> in 2011). The national air quality objective level target value is 25µg/m<sup>3</sup>. 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 2021 by Mid Sussex and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

Mid Sussex District Council undertook no automatic (continuous) monitoring during 2021.

#### 3.1.2 Non-Automatic Monitoring Sites

Mid Sussex undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 33 sites during 2021. 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.

### 3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

#### 3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)

Table A.4 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. Note that the concentration data presented represents the concentration at the location of the

monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly bias corrected 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 2020, 2 sites (MSAQ16 and MSAQ30) were removed as locations where levels were both relatively consistent and below National Objective levels. Additionally, based on local knowledge of the district, 2 new sites have been installed in Junction Road, Burgess Hill (MSAQ41) and High Street, Ardingly (MSAQ42).

The 2021 data showed no exceedances and measured levels showed a continuation of the previous downward trend. It should be noted however that Coronavirus restrictions affected traffic levels significantly in both 2020 and 2021 so care should be taken in trying to draw conclusions from data derived from this period.

### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

Mid Sussex do not monitor for PM<sub>10</sub>

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

Mid Sussex do not monitor for PM<sub>2.5</sub>

### **3.2.4 Sulphur Dioxide (SO<sub>2</sub>)**

Mid Sussex do not monitor for SO<sub>2</sub>

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSAQ1	South Road Haywards Heath	Roadside	533342	123587	NO <sub>2</sub>	No	0.0	2.5	No	1.6
MSAQ3	Southwick House London Road East Grinstead	Kerbside	538690	138759	NO <sub>2</sub>	No	18.0	0.5	No	2.2
MSAQ5	Bus Stop Lewes Road East Grinstead	Suburban	541245	136996	NO <sub>2</sub>	No	16.0	1.5	No	2.3
MSAQ9	Water Tower Colwood Lane Warringlid	Rural	525664	125035	NO <sub>2</sub>	No	40.0	35.0	No	2.1
MSAQ10	Traffic Light Keymer Road Hassocks	Roadside	529911	115489	NO <sub>2</sub>	Yes, MSDC AQMA (No 1)	6.7	1.5	No	1.7
MSAQ11a MSAQ11b MSAQ11c	Over Court Keymer Road Hassocks	Roadside	529930	115481	NO <sub>2</sub>	Yes, MSDC AQMA (No 1)	0.0	5.5	No	2.5
MSAQ12	Telegraph Pole Keymer Road Hassocks	Kerbside	529999	115488	NO <sub>2</sub>	No	26.0	1.1	No	2.4
MSAQ13	Lamp Post Keymer Road Hassocks	Kerbside	529995	115476	NO <sub>2</sub>	No	19.0	0.9	No	2.3
MSAQ14	Bus Stop London Road Hassocks	Kerbside	529911	115598	NO <sub>2</sub>	No	23.0	1.6	No	2.6
MSAQ15	Traffic Lights sign London Road Hassocks	Kerbside	529930	115600	NO <sub>2</sub>	No	6.5	1.6	No	2.4



Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSAQ17	Lamp Post Brighton Road Hassocks	Kerbside	529894	115340	NO <sub>2</sub>	No	10.0	1.3	No	2.2
MSAQ18	Bus Stop Brighton Road Hassocks	Kerbside	529907	115428	NO <sub>2</sub>	No	9.0	2.0	No	2.6
MSAQ19	Lamp Post Hurst Road Hassocks	Roadside	529779	115557	NO <sub>2</sub>	No	13.2	1.3	No	2.5
MSAQ21	London Road Burgess Hill	Roadside	530792	119821	NO <sub>2</sub>	No	2.5	1.9	No	2.0
MSAQ22	Leylands Road Burgess Hill	Roadside	532160	120069	NO <sub>2</sub>	No	3.0	1.5	No	2.0
MSAQ23	Over Court Eastern Façade Keymer Road Hassocks	Roadside	529935	115478	NO <sub>2</sub>	Yes, MSDC AQMA (No 1)	0.0	5.8	No	2.0
MSAQ24	Over Court Western Façade Keymer Road Hassocks	Roadside	529918	115476	NO <sub>2</sub>	Yes, MSDC AQMA (No 1)	0.0	7.5	No	1.8
MSAQ25a MSAQ25b MSAQ25c	Erica Way Copthorne	Kerbside	531176	138829	NO <sub>2</sub>	No	0.0	4.0	No	2.0
MSAQ26	High Street Hurstpierpoint	Suburban	528289	116395	NO <sub>2</sub>	No	0.8	2.1	No	2.5
MSAQ27	Telegraph Pole London Road Hickstead	Suburban	526870	120238	NO <sub>2</sub>	No	10.0	3.8	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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSAQ28	Lamp Post Rocky Lane Haywards Heath	Suburban	533342	122625	NO <sub>2</sub>	No	11.0	1.3	No	2.3
MSAQ29	184 London Road East Grinstead	Roadside	539040	138451	NO <sub>2</sub>	No	0.7	2.7	No	2.4
MSAQ31	Traffic sign outside entrance to Imberhorne School Imberhorne Lane East Grinstead	Roadside	537680	139009	NO <sub>2</sub>	No	47.0	3.8	No	2.2
MSAQ32	Lamp Post Woodcroft Burgess Hill	Roadside	530791	120295	NO <sub>2</sub>	No	5.5	1.5	No	2.2
MSAQ34	Lamp Post No 12 Queen Elizabeth Avenue Burgess Hill	Roadside	531144	118862	NO <sub>2</sub>	No	5.0	4.4	No	2.4
MSAQ35	New Way Lane Hustpierpoint	Rural	528904	114415	NO <sub>2</sub>	No	20.0	n/a	No	1.8
MSAQ36	Lamp Post adjacent Bridgeway London Road East Grinstead	Roadside	537609	139406	NO <sub>2</sub>	No	10.5	1.5	No	2.3
MSAQ37	Lamp Post adjacent 10 Station Road East Grinstead	Roadside	538932	138472	NO <sub>2</sub>	No	5.1	2.5	No	2.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSAQ38	Lamp Post adjacent to La Farola London Road East Grinstead	Roadside	539005	138480	NO <sub>2</sub>	No	0.4	2.1	No	4.2
MSAQ39	Highway sign adjacent to 1 to 45 White Lion Close East Grinstead	Roadside	539116	138384	NO <sub>2</sub>	No	1.1	2.8	No	2.3
MSAQ40	Telegraph Pole adjacent to Stroudley Drive Burgess Hill	Roadside	532895	118061	NO <sub>2</sub>	No	18.5	4.0	No	2.0
MSAQ41	Prospect House Junction Road Burgess Hill	Roadside	531745	118753	NO <sub>2</sub>	No	0.0	1.6	No	2.3
MSAQ42	20 High Street Ardingly	Roadside	534785	129560	NO <sub>2</sub>	No	0.0	0.8	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 NO<sub>2</sub> Monitoring Results: Automatic Monitoring (µg/m<sup>3</sup>)**

Mid Sussex have no automatic monitoring sites

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
MSAQ1	533342	123587	Roadside		98.6	20.8	20.1	19.3	12.7	14.8
MSAQ3	538690	138759	Kerbside		89.3	35.8	34.4	31.7	22.7	23.4
MSAQ5	541245	136996	Suburban		98.6	31.0	30.0	28.6	20.9	22.5
MSAQ9	525664	125035	Rural		98.6	9.0	9.0	8.5	6.1	6.1
MSAQ10	529911	115489	Roadside		98.6	38.8	<b>41.2</b>	39.4	28.4	31.3
MSAQ11a MSAQ11b MSAQ11c	529930	115481	Roadside		98.6	38.5	<b>40.1</b>	36.3	27.6	29.6
MSAQ12	529999	115488	Kerbside		98.6	33.7	33.5	33.9	23.9	25.2
MSAQ13	529995	115476	Kerbside		89.6	<b>43.8</b>	38.9	36.6	26.1	30.0
MSAQ14	529911	115598	Kerbside		98.6	32.5	34.0	33.5	26.0	26.1
MSAQ15	529930	115600	Kerbside		89.0	35.1	35.1	34.0	26.0	27.7
MSAQ17	529894	115340	Kerbside		98.6	25.7	28.7	24.3	20.6	22.0
MSAQ18	529907	115428	Kerbside		90.4	29.5	28.1	29.3	17.9	21.5
MSAQ19	529779	115557	Roadside		98.6	18.6	17.4	15.7	11.9	13.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
MSAQ21	530792	119821	Roadside		98.6	29.5	29.0	27.6	21.0	24.0
MSAQ22	532160	120069	Roadside		89.3	27.9	27.0	26.0	20.1	22.2
MSAQ23	529935	115478	Roadside		98.6	33.9	34.5	33.4	23.4	24.4
MSAQ24	529918	115476	Roadside		89.6	23.1	24.0	22.9	17.8	19.3
MSAQ25a MSAQ25b MSAQ25c	531176	138829	Kerbside		98.6	28.8	26.9	26.8	18.4	18.8
MSAQ26	528289	116395	Suburban		90.4	23.9	23.6	21.5	16.1	16.8
MSAQ27	526870	120238	Suburban		98.6	20.5	22.8	19.3	13.6	14.7
MSAQ28	533342	122625	Suburban		91.0		24.7	25.3	22.2	22.4
MSAQ29	539040	138451	Roadside		98.6			<b>44.1</b>	32.5	33.4
MSAQ31	537680	139009	Roadside		90.4			13.2	10.3	11.2
MSAQ32	530791	120295	Roadside		98.6			13.7	11.2	11.4
MSAQ34	531144	118862	Roadside		98.6			24.4	19.0	19.6
MSAQ35	528904	114415	Rural		90.4			7.2	6.6	6.7
MSAQ36	537609	139406	Roadside		98.6				31.6	32.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
MSAQ37	538932	138472	Roadside		98.6				29.8	31.9
MSAQ38	539005	138480	Roadside		98.6				20.4	20.6
MSAQ39	539116	138384	Roadside		98.6				23.6	25.0
MSAQ40	532895	118061	Roadside		92.1				11.5	13.1
MSAQ41	531745	118753	Roadside		98.6					18.6
MSAQ42	534785	129560	Roadside		98.6					21.4

☒ 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<sub>2</sub> annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

NO<sub>2</sub> annual means exceeding  $60\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

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

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

- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

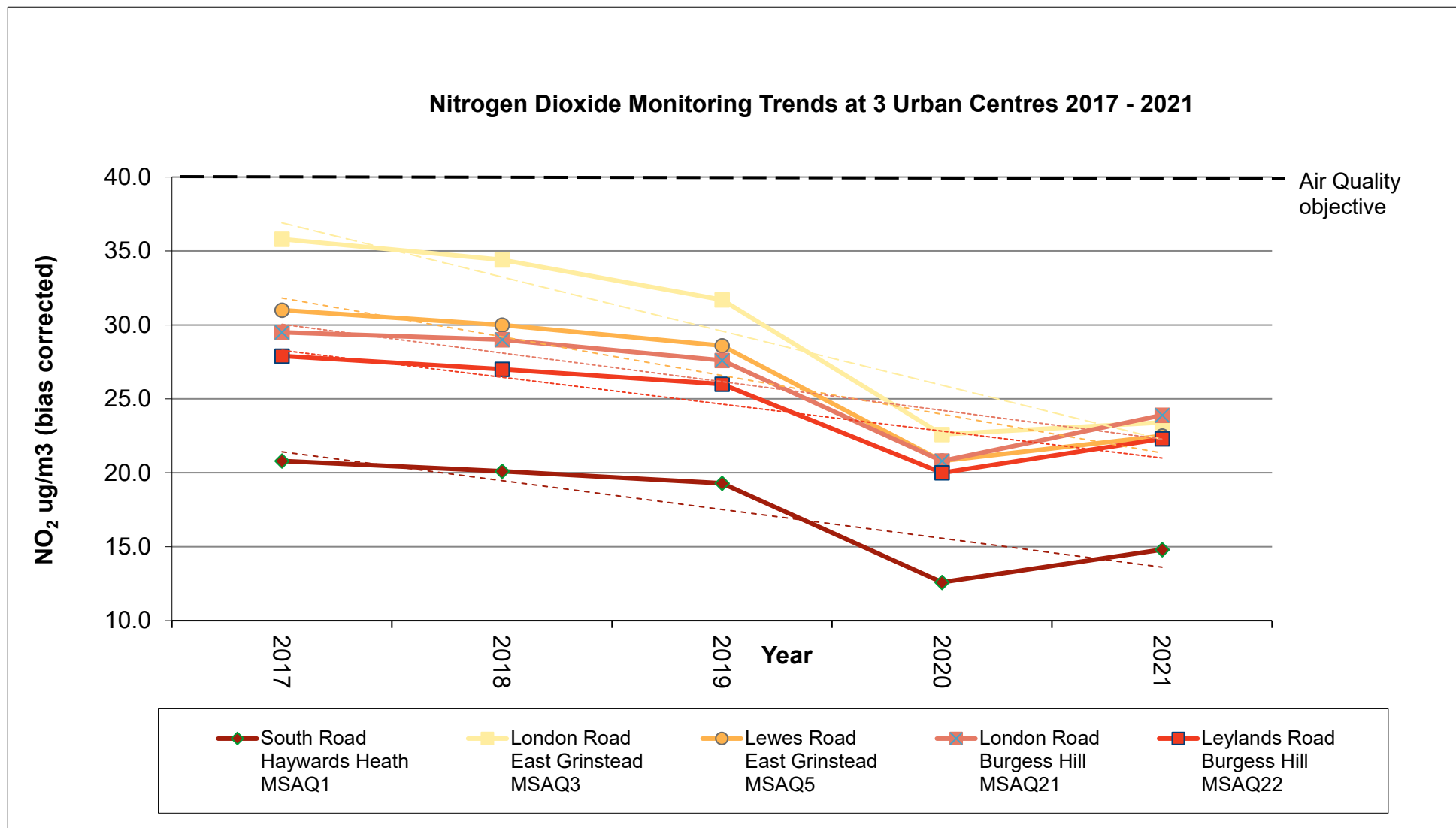


**Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

Annual mean concentrations (bias corrected) 2017 to 2021 of nitrogen dioxide diffusion tube measurements at 5 urban centre sites (3 towns).

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
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
2021	14.8	23.4	22.5	24.0	22.2

All sites have shown a reduction in recorded levels of NO<sub>2</sub> from 2017 and a slight increase in 2021

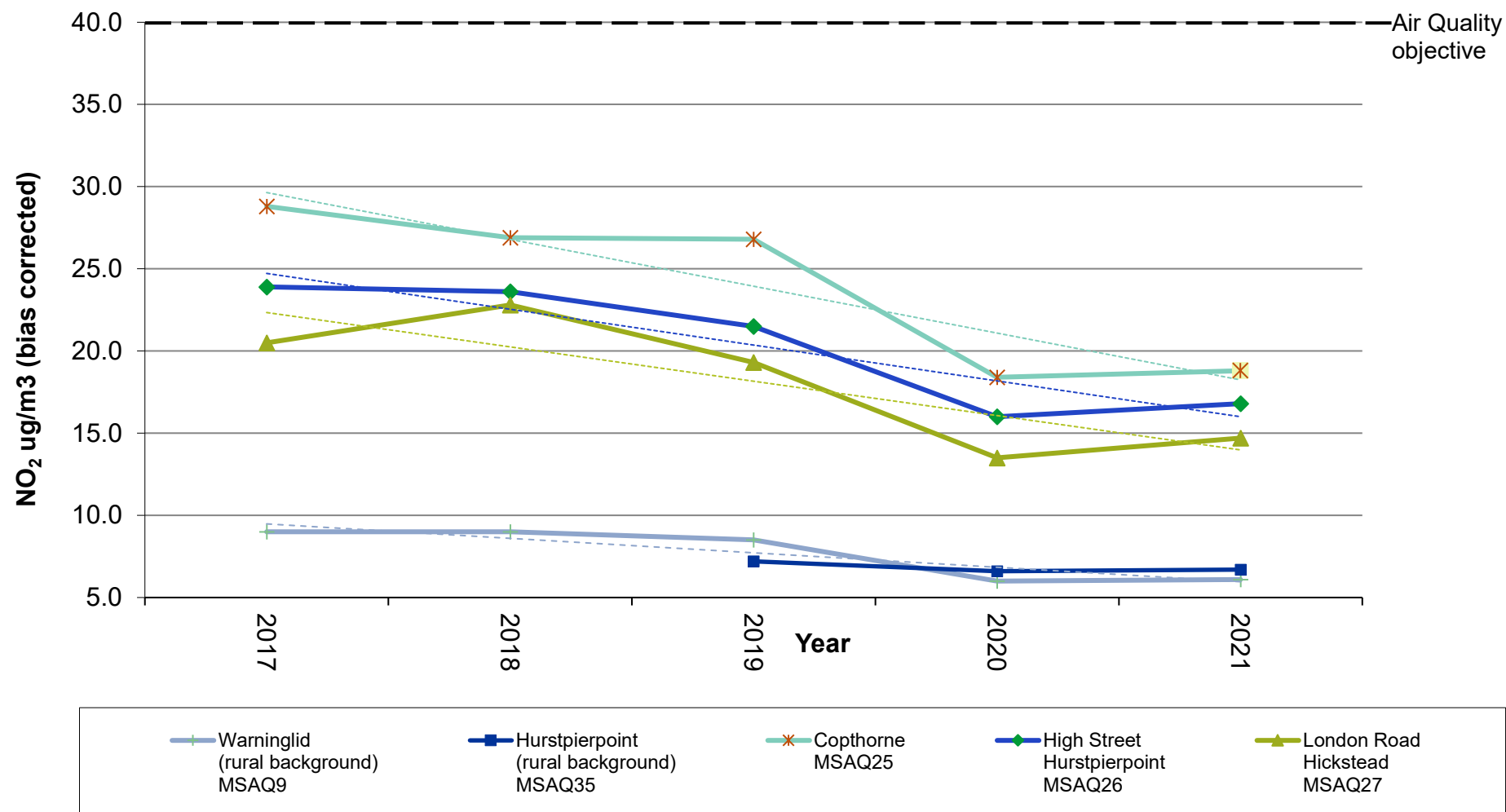


**Annual mean concentrations (bias corrected) 2017 to 2021 of nitrogen dioxide diffusion tube measurements at 3 villages and 2 rural background sites**

Year	Warninglid (rural background) MSAQ9	Hurstpierpoint (rural background) MSAQ35	Copthorne MSAQ25	High Street Hurstpierpoint MSAQ26	London Road Hickstead MSAQ27
2017	9.0		28.8	23.9	20.5
2018	9.0		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
2021	6.1	6.7	18.8	16.8	14.7

All of the sites have shown a reduction in recorded levels from 2017 to 2020 and a slight increase in 2021

Nitrogen Dioxide Monitoring Trends at 3 Villages and 2 Rural Background Sites 2017 - 2021



## Annual mean concentrations (bias corrected) 2017 to 2021 of nitrogen dioxide diffusion tube measurements at Hassocks.

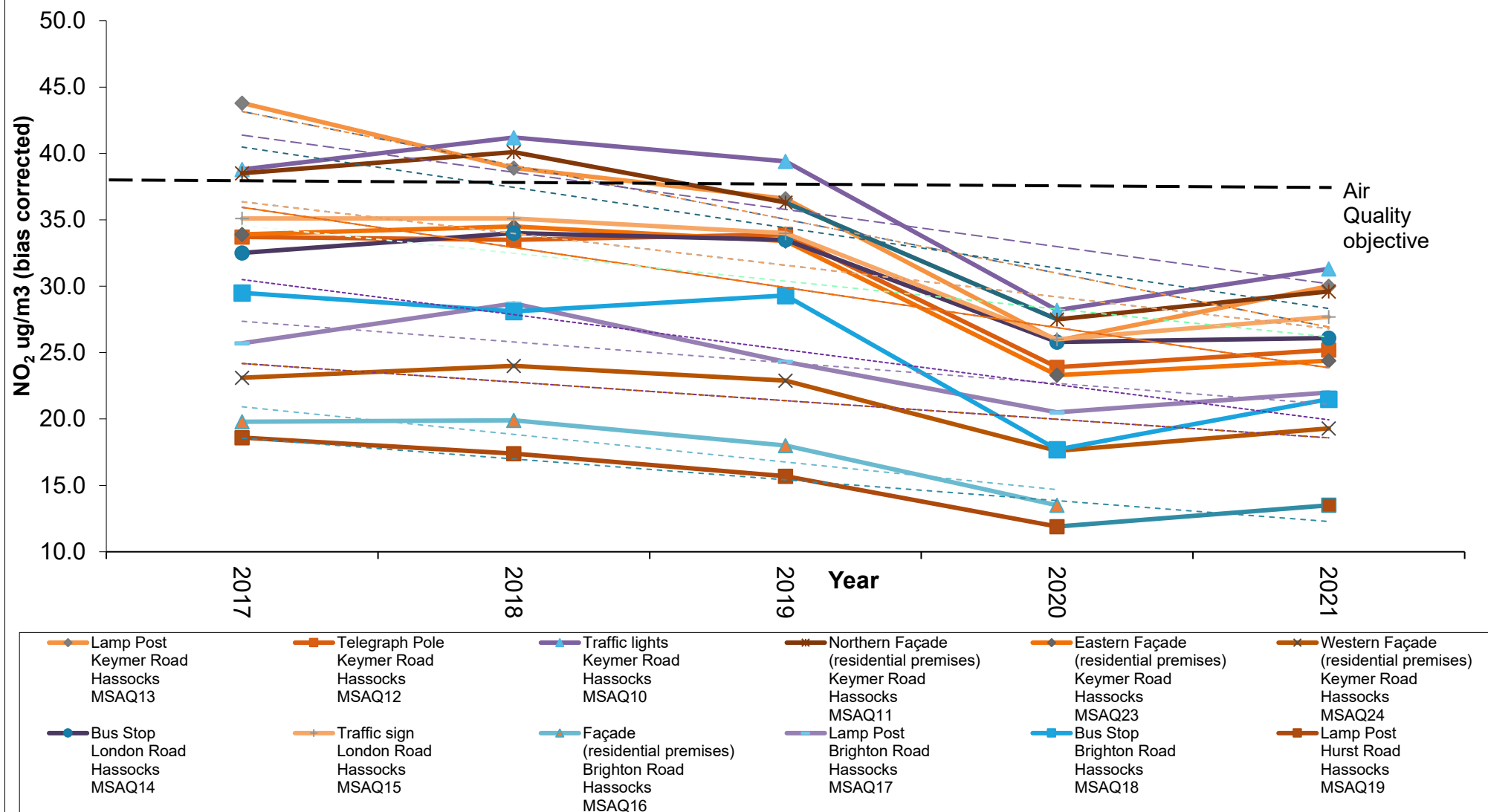
Year	Telegraph Pole Keymer Road Hassocks MSAQ12	Lamp Post Keymer Road Hassocks MSAQ13	Traffic lights Keymer Road Hassocks MSAQ10	Northern Façade (residential premises) Keymer Road Hassocks MSAQ11	Eastern Façade (residential premises) Keymer Road Hassocks MSAQ23	Western Façade (residential premises) Keymer 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
2017	33.7	<b>43.8</b>	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	<b>41.2</b>	<b>40.1</b>	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
2021	25.2	30.0	31.3	29.6	24.4	19.3	26.1	27.7	Site retired	22.0	21.5	13.5

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

All of the sites have shown a reduction in recorded levels from 2017 to 2020 and a slight increase in 2021

All are currently below the Air Quality Objective of 40µg/m<sup>3</sup>

Nitrogen Dioxide Monitoring Trends at Hassocks 2017 - 2021



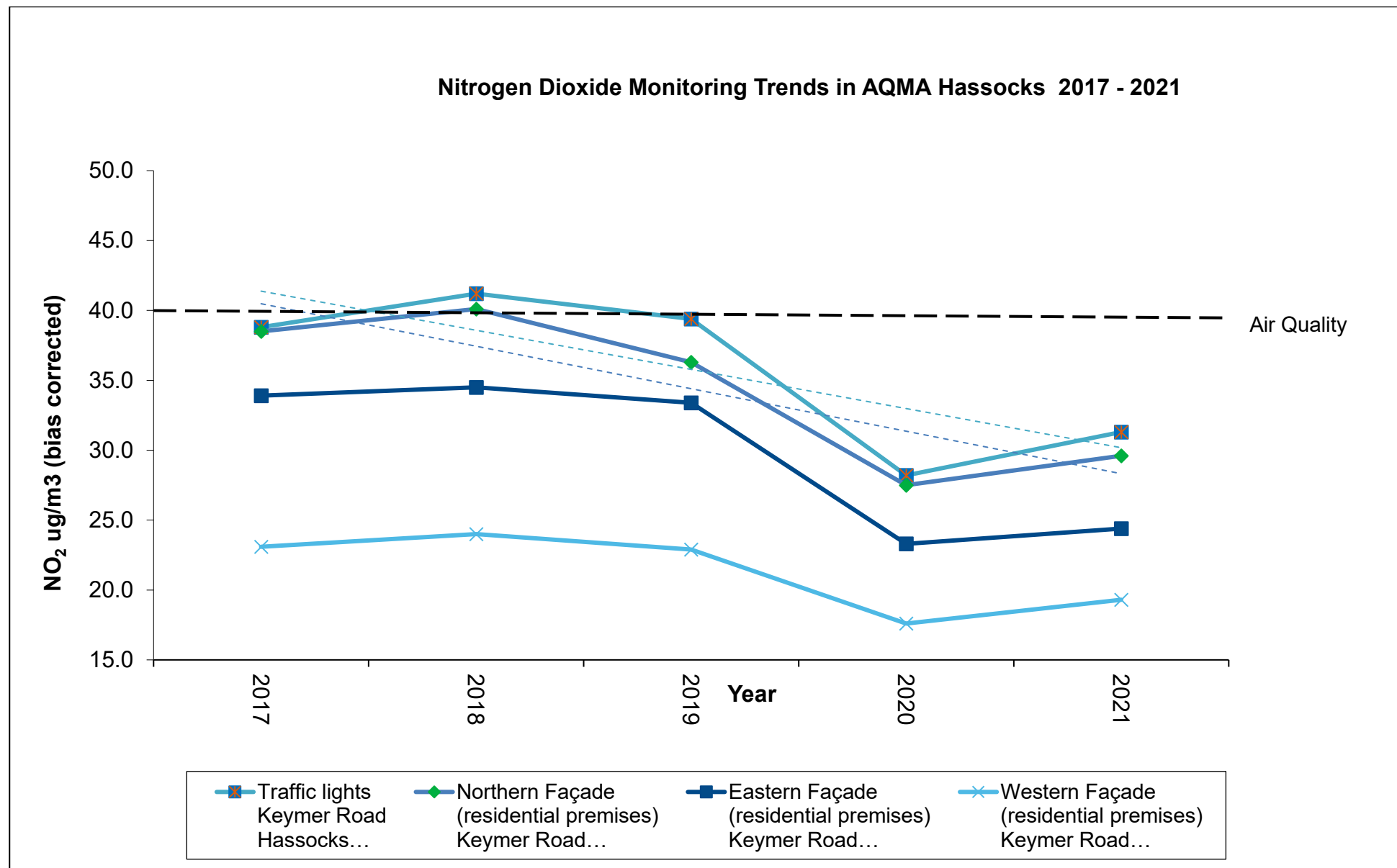
**Annual mean concentrations (bias corrected) 2017 to 2021 of nitrogen dioxide diffusion tube measurements within the AQMA at Stonepound Hassocks**

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
2017	38.8	38.5	33.9	23.1
2018	<b>41.2</b>	<b>40.1</b>	34.5	24.0
2019	39.4	36.3	33.4	22.9
2020	28.2	27.5	23.3	17.6
2021	31.3	29.6	24.4	19.3

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> 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 NO<sub>2</sub> levels above the Air Quality Objective.





**Table A.5 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Mid Sussex do not monitor for 1-Hour Mean NO<sub>2</sub>

**Table A.6 – Annual Mean PM<sub>10</sub> Monitoring Results (µg/m<sup>3</sup>)**

Mid Sussex do not monitor for PM<sub>10</sub>

**Table A.7 – 24-Hour Mean PM<sub>10</sub> Monitoring Results, Number of PM<sub>10</sub> 24-Hour Means > 50µg/m<sup>3</sup>**

Mid Sussex do not monitor for PM<sub>10</sub>

**Table A.8 – Annual Mean PM<sub>2.5</sub> Monitoring Results (µg/m<sup>3</sup>)**

Mid Sussex do not monitor for PM<sub>2.5</sub>

**Table A.9 – SO<sub>2</sub> 2021 Monitoring Results, Number of Relevant Instances**

Mid Sussex do not monitor for SO<sub>2</sub>

## Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO<sub>2</sub> 2021 Diffusion Tube Results (µg/m<sup>3</sup>)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MSAQ1	533342	123587	20.1	19.1	17.0	17.2	15.4	15.7	14.2	11.6	18.1	20.6	23.3	18.6	17.6	14.8	-	
MSAQ3	538690	138759	32.0	28.9	31.3	24.1	24.7	27.2	23.4	21.2	-	32.0	35.3	26.7	27.9	23.4	-	
MSAQ5	541245	136996	28.6	24.9	27.4	23.9	24.0	24.1	22.0	22.7	27.0	32.9	38.5	25.5	26.8	22.5	-	
MSAQ9	525664	125035	8.6	12.1	7.2	6.7	5.4	5.9	6.4	5.1	5.5	7.2	9.2	7.7	7.3	6.1	-	
MSAQ10	529911	115489	34.4	38.4	35.5	40.4	34.9	43.2	27.6	37.7	40.0	40.1	43.6	31.5	37.3	31.3	-	
MSAQ11a	529930	115481	33.9	30.8	34.7	34.2	36.0	39.1	29.5	34.2	40.4	39.4	36.2	33.6	-	-	-	Triplicate Site with MSAQ11a, MSAQ11b and MSAQ11c - Annual data provided for MSAQ11c only
MSAQ11b	529930	115481	33.2	30.2	34.5	38.5	36.3	39.6	30.5	34.7	38.1	38.7	39.8	32.3	-	-	-	Triplicate Site with MSAQ11a, MSAQ11b and MSAQ11c - Annual data provided for MSAQ11c only
MSAQ11c	529930	115481	33.0	29.2	34.9	38.4	35.3	38.9	29.9	32.5	40.0	38.8	38.2	31.7	35.3	29.6	-	Triplicate Site with MSAQ11a, MSAQ11b and MSAQ11c - Annual data provided for MSAQ11c only
MSAQ12	529999	115488	28.2	28.6	30.0	40.2	26.4	31.7	22.7	26.3	30.4	29.8	40.2	25.1	30.0	25.2	-	
MSAQ13	529995	115476	32.6	33.3	35.2	-	35.4	40.0	24.2	35.4	42.7	39.2	40.5	34.6	35.7	30.0	-	
MSAQ14	529911	115598	30.2	30.9	28.6	29.0	33.8	31.1	26.4	25.7	39.8	39.7	27.6	29.9	31.1	26.1	-	
MSAQ15	529930	115600	34.6	34.1	33.6	32.7	20.3	39.1	-	33.5	34.4	37.6	34.4	28.8	33.0	27.7	-	
MSAQ17	529894	115340	28.1	30.2	19.7	23.3	24.4	23.9	28.8	32.2	33.0	21.8	24.5	24.9	26.2	22.0	-	
MSAQ18	529907	115428	20.0	24.8	29.5	28.8	-	33.7	17.6	19.4	20.4	32.3	37.3	18.3	25.6	21.5	-	
MSAQ19	529779	115557	17.4	15.9	16.7	19.2	13.2	14.9	13.7	10.7	15.5	17.6	21.7	16.2	16.1	13.5	-	
MSAQ21	530792	119821	29.5	32.2	28.7	32.9	23.1	31.1	20.8	24.1	27.8	31.3	34.6	26.1	28.5	24.0	-	
MSAQ22	532160	120069	30.5	26.3	27.6	29.7	21.8	25.8	18.9	21.8	-	26.5	33.9	28.4	26.5	22.2	-	
MSAQ23	529935	115478	20.4	28.6	29.4	33.9	28.0	32.5	25.0	30.1	28.9	29.9	34.0	27.8	29.0	24.4	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MSAQ24	529918	115476	19.1	29.4	28.6	-	21.5	25.9	16.2	23.5	19.9	22.5	26.0	19.9	23.0	19.3	-	
MSAQ25a	531176	138829	22.3	23.1	23.0	19.7	20.5	18.0	18.6	18.3	26.6	23.8	26.0	25.5	-	-	-	Triplicate Site with MSAQ25a, MSAQ25b and MSAQ25c - Annual data provided for MSAQ25c only
MSAQ25b	531176	138829	25.5	23.2	23.3	20.2	22.5	18.3	19.3	18.1	26.5	24.9	25.6	24.9	-	-	-	Triplicate Site with MSAQ25a, MSAQ25b and MSAQ25c - Annual data provided for MSAQ25c only
MSAQ25c	531176	138829	26.0	23.2	22.2	19.0	20.6	18.8	19.9	17.5	25.5	28.0	26.0	23.4	22.4	18.8	-	Triplicate Site with MSAQ25a, MSAQ25b and MSAQ25c - Annual data provided for MSAQ25c only
MSAQ26	528289	116395	18.9	21.6	19.5	21.4	-	15.2	17.4	14.7	20.4	23.5	27.6	19.3	20.0	16.8	-	
MSAQ27	526870	120238	19.9	23.6	15.8	21.1	13.3	18.0	13.7	15.9	18.2	17.4	18.1	15.1	17.5	14.7	-	
MSAQ28	533342	122625	31.0	26.1	27.6	25.4	25.8	28.0	21.8	20.4	32.1	32.5	-	22.0	26.6	22.4	-	
MSAQ29	539040	138451	41.3	38.8	42.4	40.3	36.8	40.9	32.2	35.2	44.5	45.3	42.7	36.8	39.8	33.4	-	
MSAQ31	537680	139009	17.1	18.3	12.2	13.9	-	11.4	9.7	8.2	11.4	13.6	17.9	12.8	13.3	11.2	-	
MSAQ32	530791	120295	17.6	15.9	14.3	12.5	10.2	11.7	10.2	9.9	12.1	14.2	19.4	14.4	13.5	11.4	-	
MSAQ34	531144	118862	26.9	27.3	22.2	23.6	20.2	21.2	18.7	16.6	26.1	24.9	27.9	24.1	23.3	19.6	-	
MSAQ35	528904	114415	10.2	11.9	8.3	6.6	-	5.1	6.7	5.2	5.9	7.2	10.4	10.0	8.0	6.7	-	
MSAQ36	537609	139406	44.3	39.9	41.8	37.5	35.5	37.3	31.0	34.8	42.0	42.0	51.6	29.6	38.9	32.7	-	
MSAQ37	538932	138472	37.8	38.5	37.2	36.6	37.1	36.8	29.9	32.0	42.4	46.8	43.4	37.4	38.0	31.9	-	
MSAQ38	539005	138480	25.8	27.4	26.3	23.5	21.6	21.3	23.1	17.9	25.3	29.1	27.8	24.7	24.5	20.6	-	
MSAQ39	539116	138384	30.8	31.0	28.9	29.2	24.4	28.2	27.4	25.0	31.7	36.3	34.6	29.0	29.7	25.0	-	
MSAQ40	532895	118061	-	17.9	16.0	16.7	12.6	14.7	12.0	12.0	15.7	16.5	22.4	15.5	15.6	13.1	-	
MSAQ41	531745	118753	24.5	20.8	22.0	22.9	20.0	23.0	17.0	18.0	22.7	25.4	27.4	21.4	22.1	18.6	-	
MSAQ42	534785	129560	24.6	28.0	24.1	28.7	19.6	25.8	19.7	20.2	27.5	31.7	33.8	22.7	25.5	21.4	-	

☒ All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1.

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

- ☒ National bias adjustment factor used.
- ☒ Where applicable, data has been distance corrected for relevant exposure in the final column.
- ☒ Mid Sussex confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

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

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

See Appendix C for details on bias adjustment and annualisation.



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

### **3.3 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 2021.

### **3.4 Additional Air Quality Works Undertaken by Mid Sussex District Council During 2021**

Mid Sussex District Council has not completed any additional works within the reporting year of 2021.

### **3.5 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 [Precision and Accuracy | LAQM \(defra.gov.uk\)](#) show Gradko laboratory had good precision for 2021.

The 2021 Diffusion Tube Monitoring Calendar was not adhered to in January as the officer concerned was required to self-isolate due to possible exposure notified by NHS Test and Trace.

In September and October the tubes were not exposed on the required dates due to the fuel shortage.

#### **Diffusion Tube Annualisation**

All diffusion tube monitoring locations within Mid Sussex recorded data capture of 75% or more and, accordingly, the Diffusion Tube Data Processing Tool has not identified any sites as requiring annualisation. 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 2022 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 a 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<sub>x</sub>/NO<sub>2</sub> 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 0.84 taken from the National Bias Adjustment Factor spreadsheet (v03\_22) to the 2021 monitoring data reported in this 2022 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 previous five years is presented in Table C.1.

**Table C.1 – Bias Adjustment Factor**

ASR Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	v03_21	0.81
2020	National	v03_20	0.93
2019	National	v06_19	0.92
2018	National	V06_18	0.87
2017	National	v03.17	0.94

## NO<sub>2</sub> 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/m<sup>3</sup>.

## Appendix D: Maps of Monitoring Locations and AQMAs

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

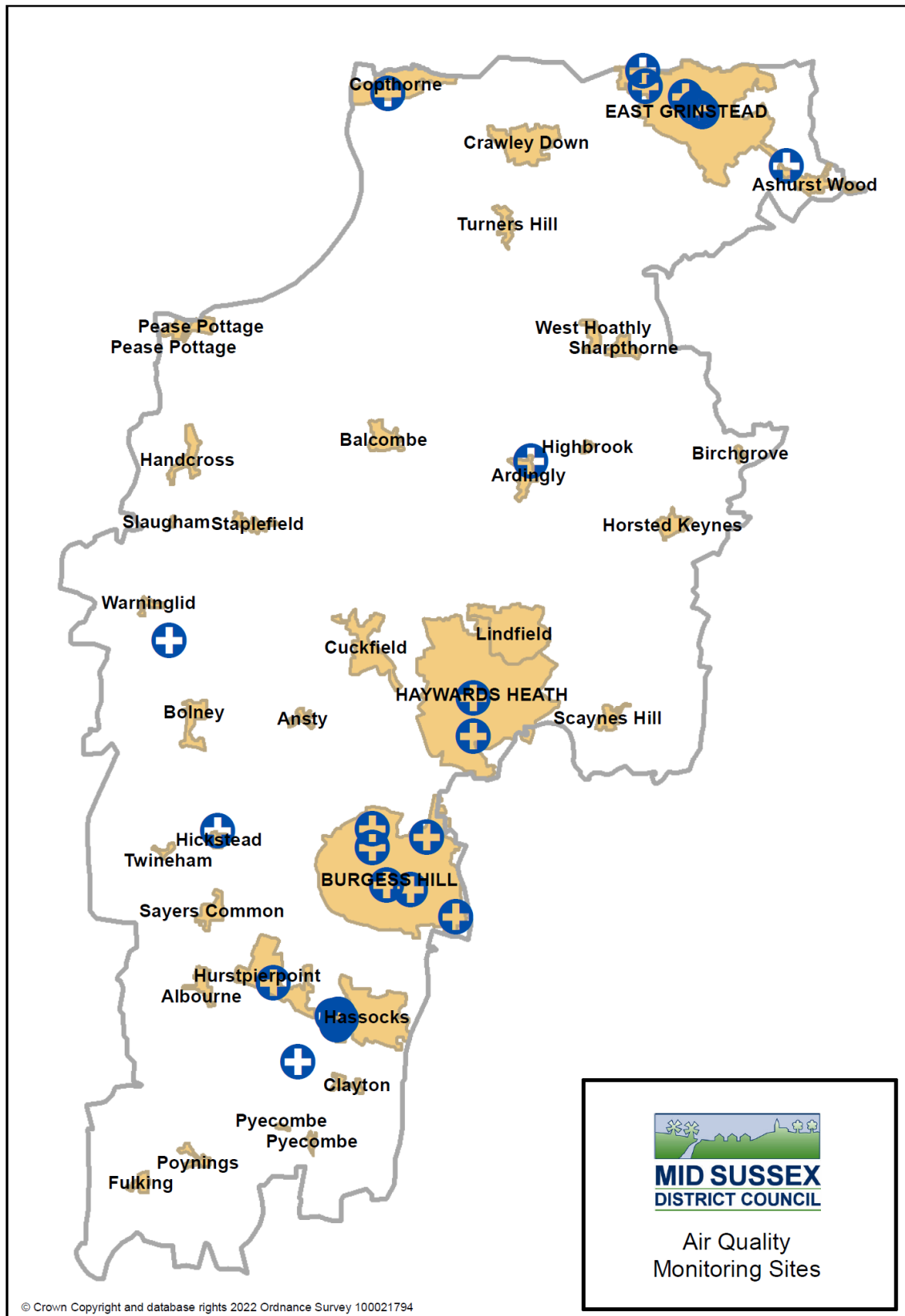


Figure D.2 – MSAQ1 South Road, Haywards Heath, adjacent to The Cook Shop

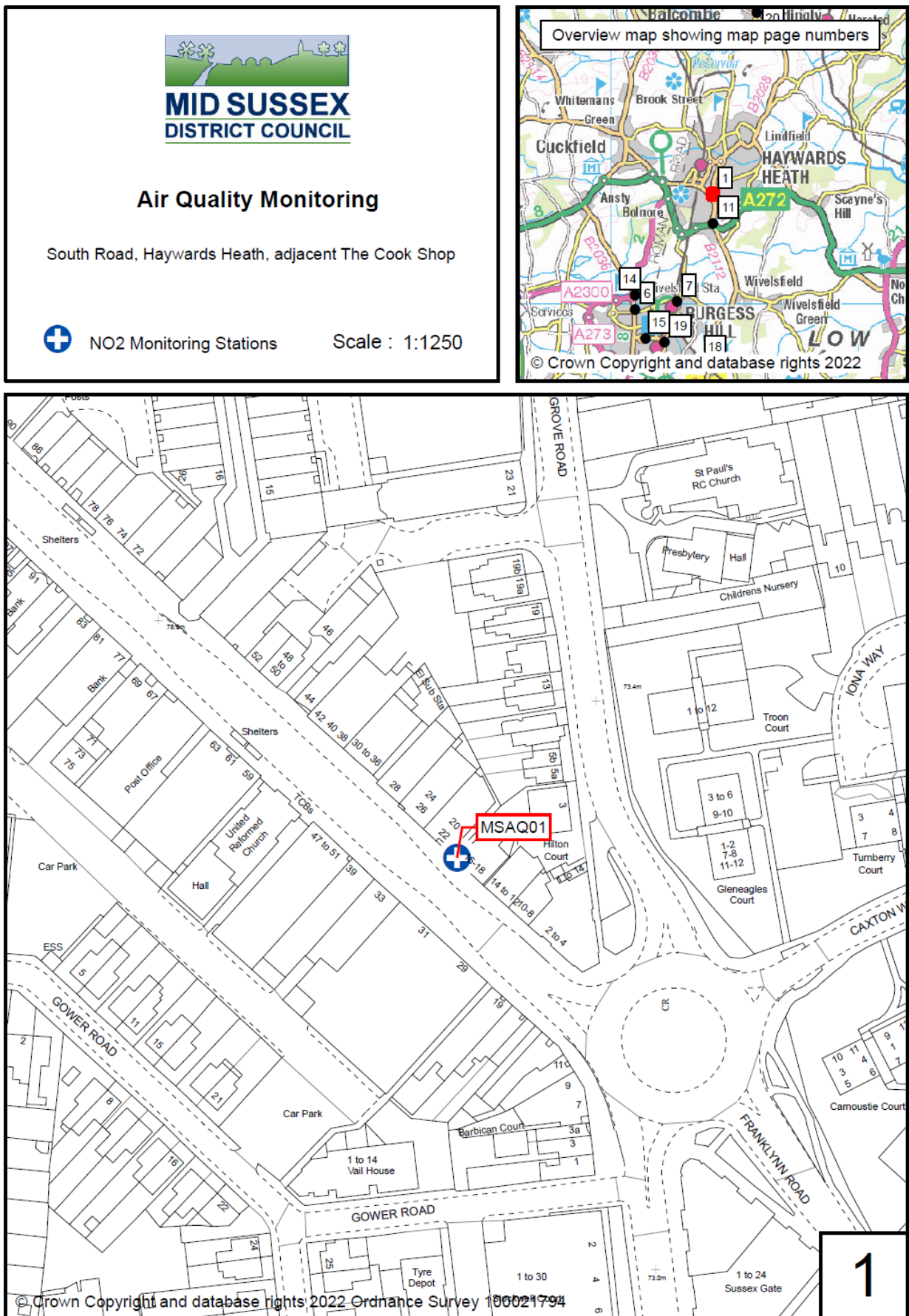




Figure D3 – MSAQ3 London Road, East Grinstead, adjacent to Southwick House

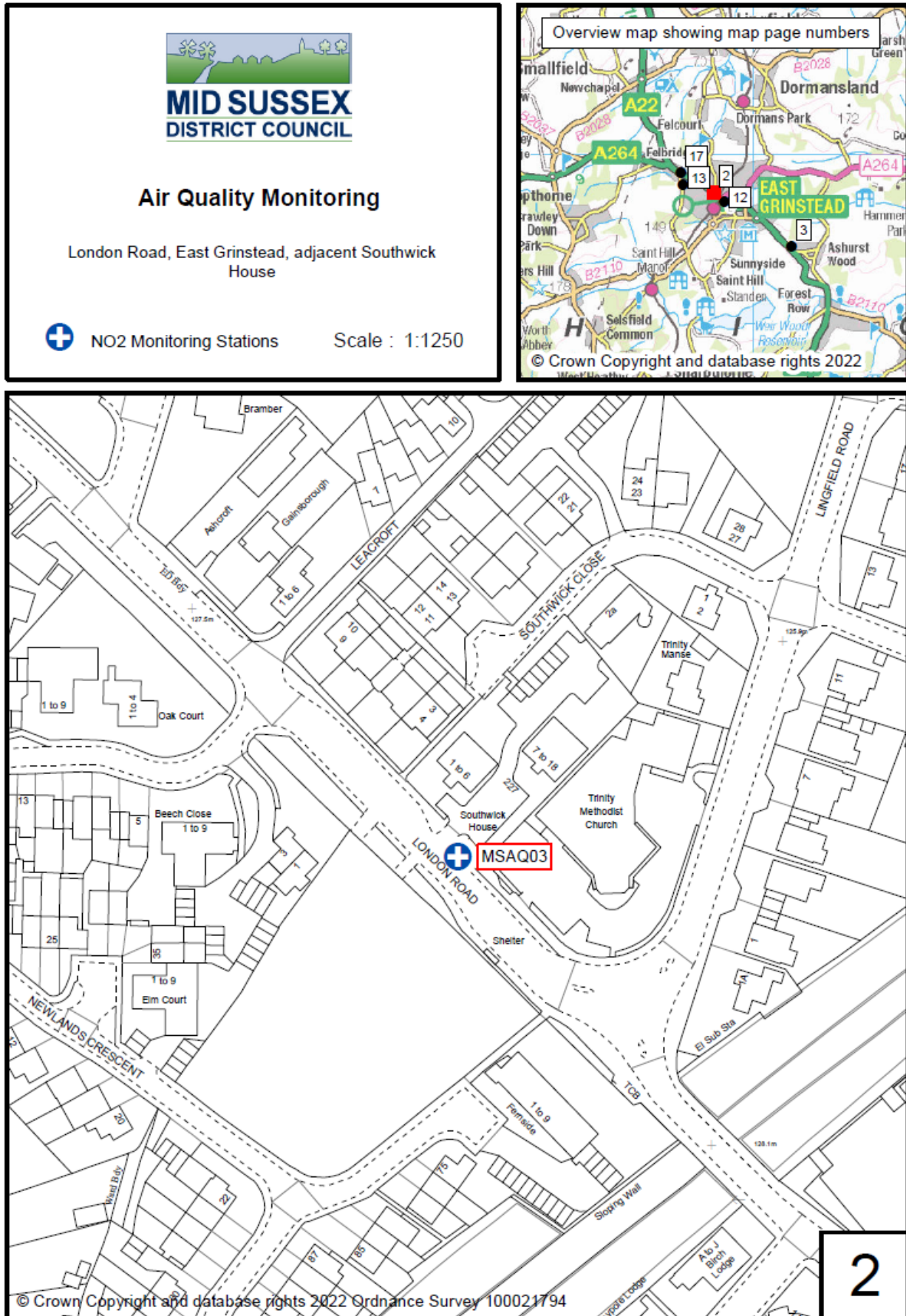


Figure D4 – MSAQ5 Lewes Road, East Grinstead

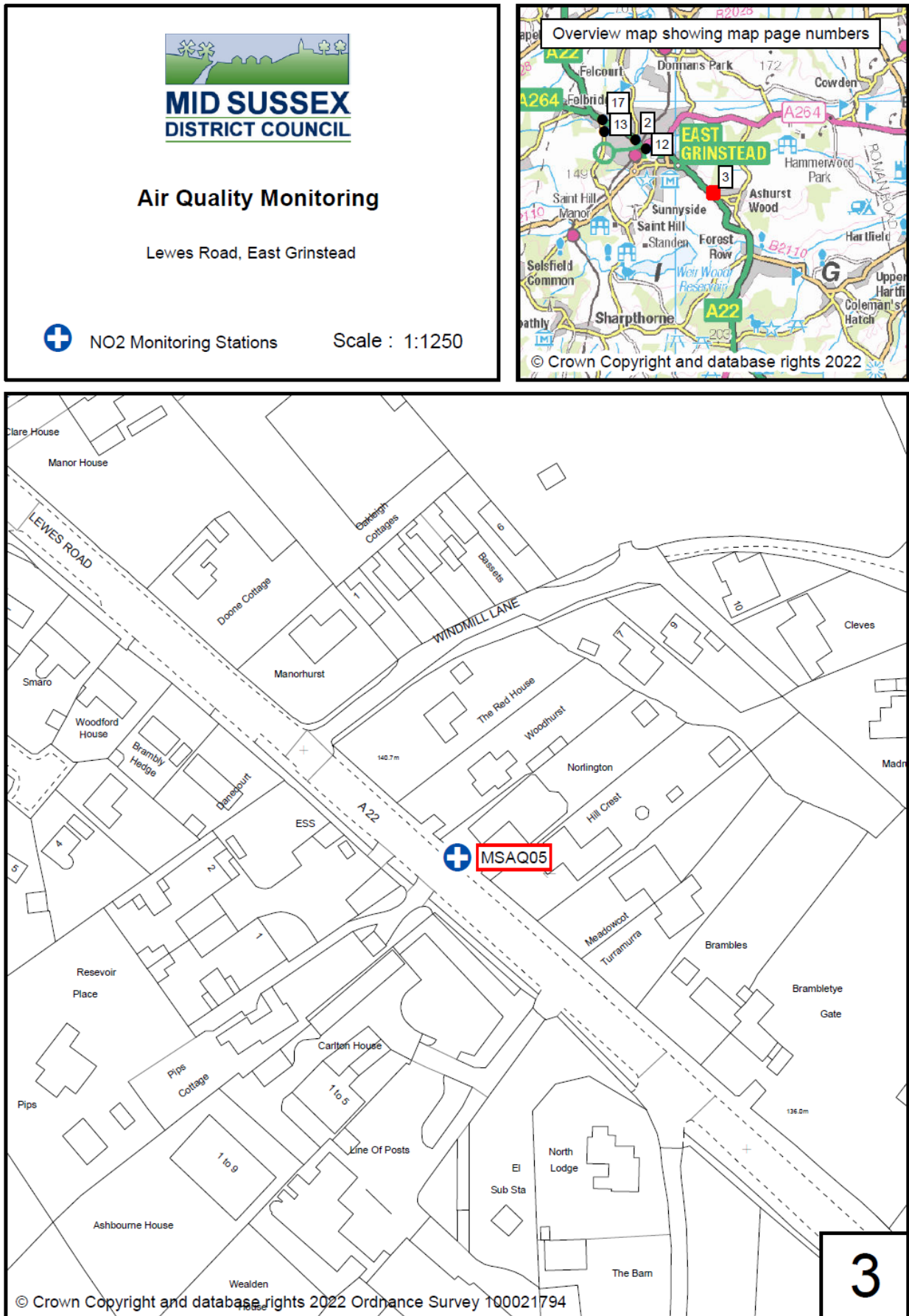
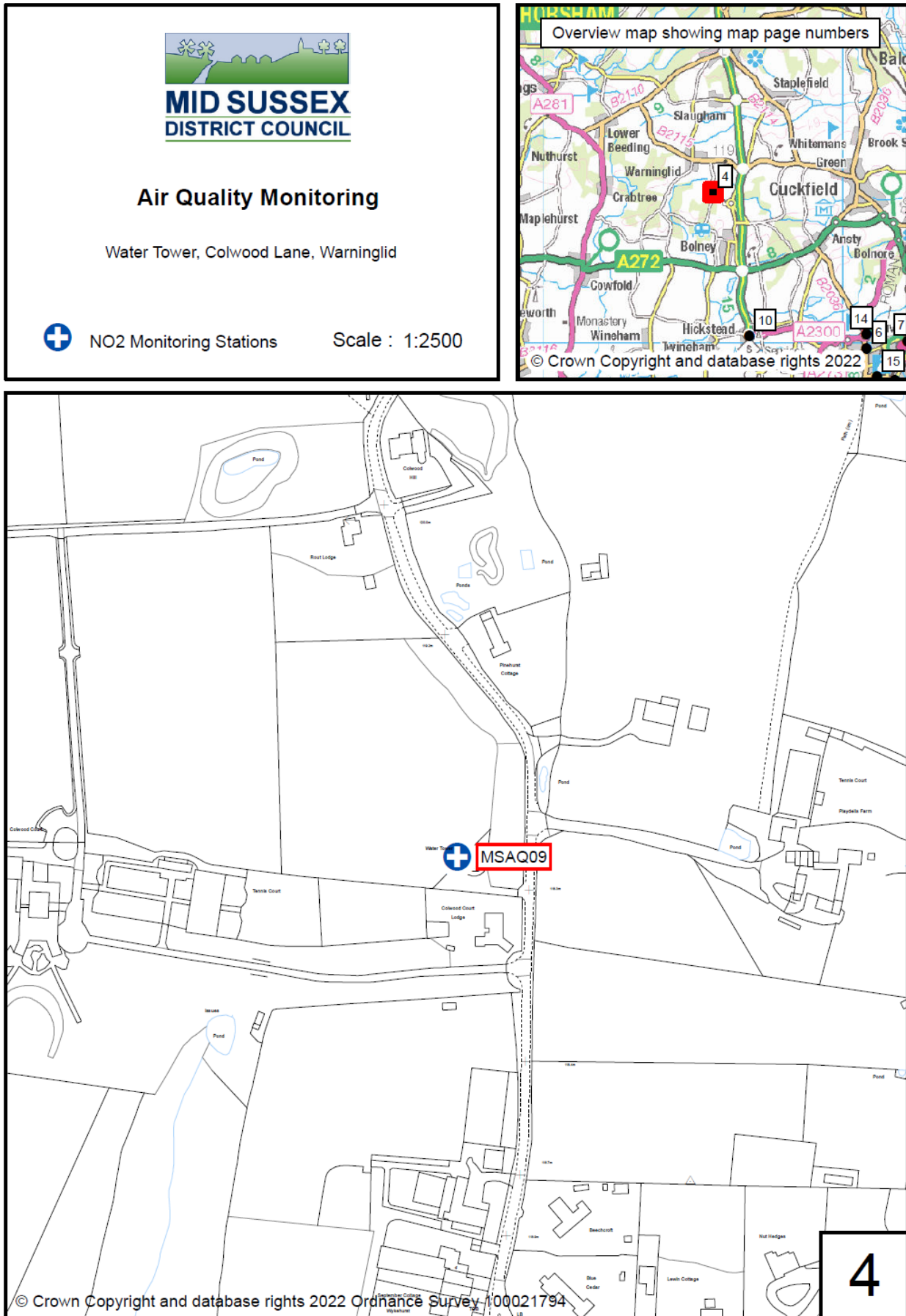


Figure D5 – MSAQ9 Water Tower, Colwood Lane, Warninglid





**Figure D6 – MSAQ10 to MSAQ19 and MSAQ23 and MSAQ24**  
**Stonepound Crossroads, Keymer Road, Hassocks**

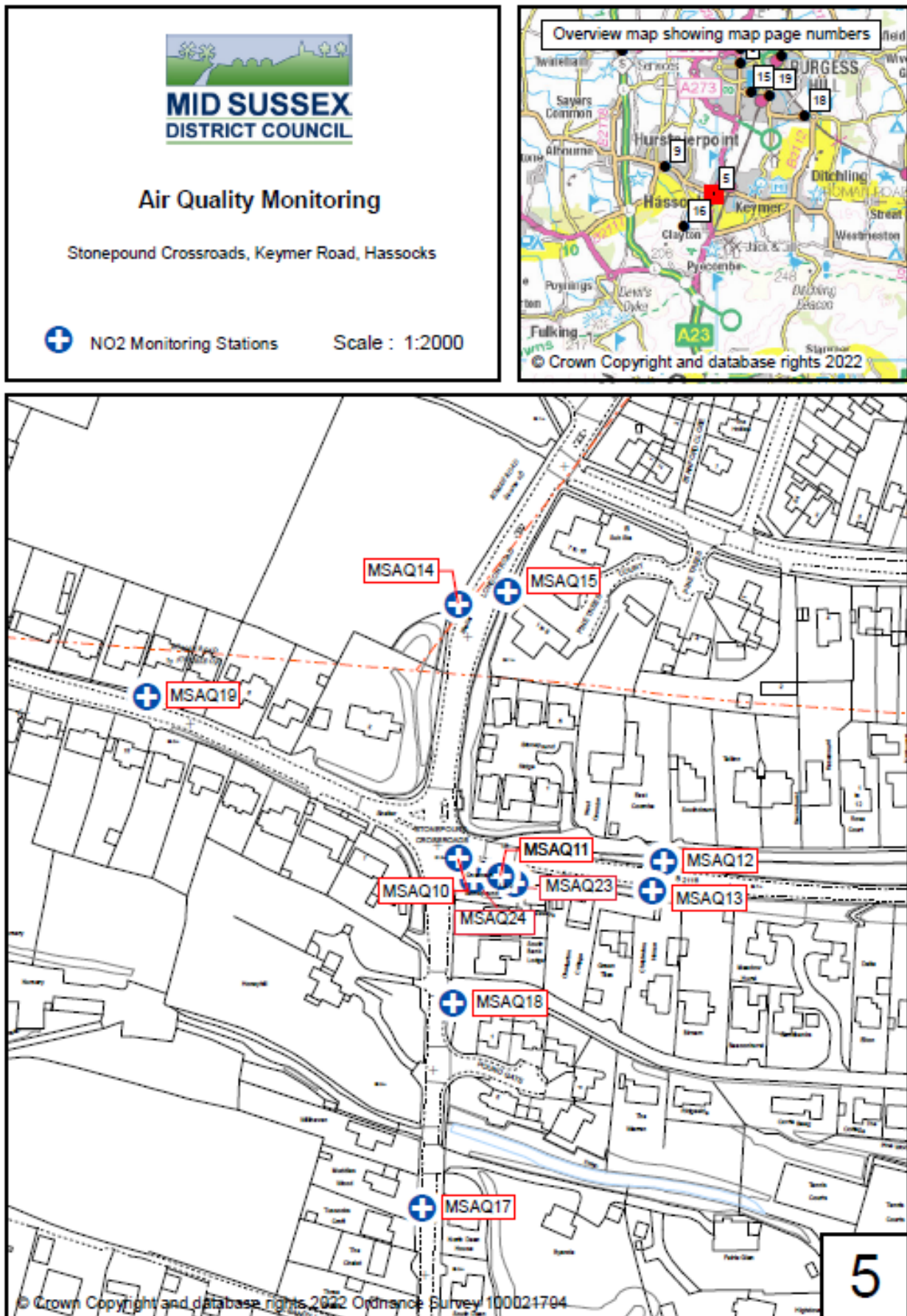




Figure D7 – MSAQ21 86-88 London Road, Burgess Hill

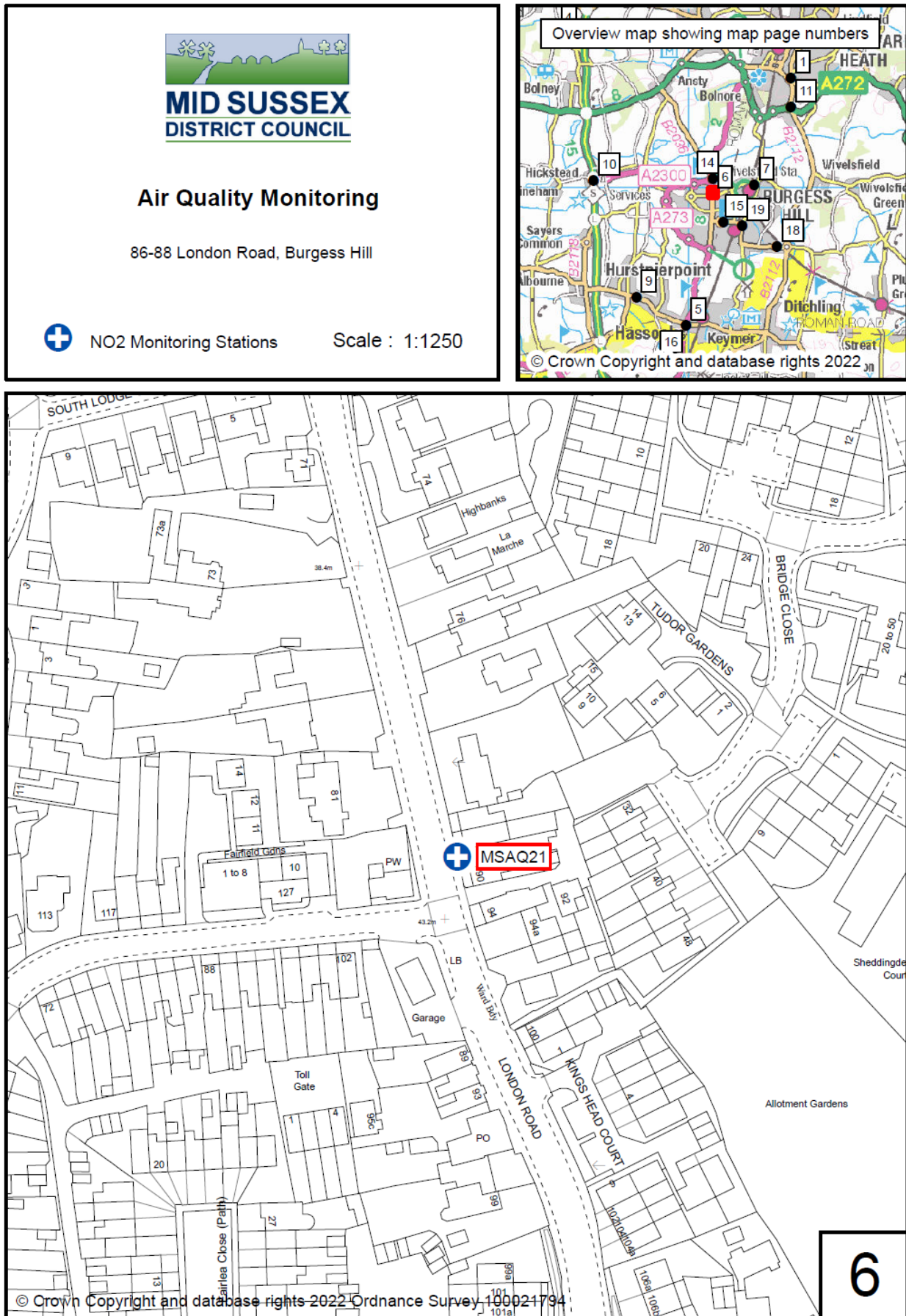


Figure D8 – MSAQ22 Leylands Road, Burgess Hill

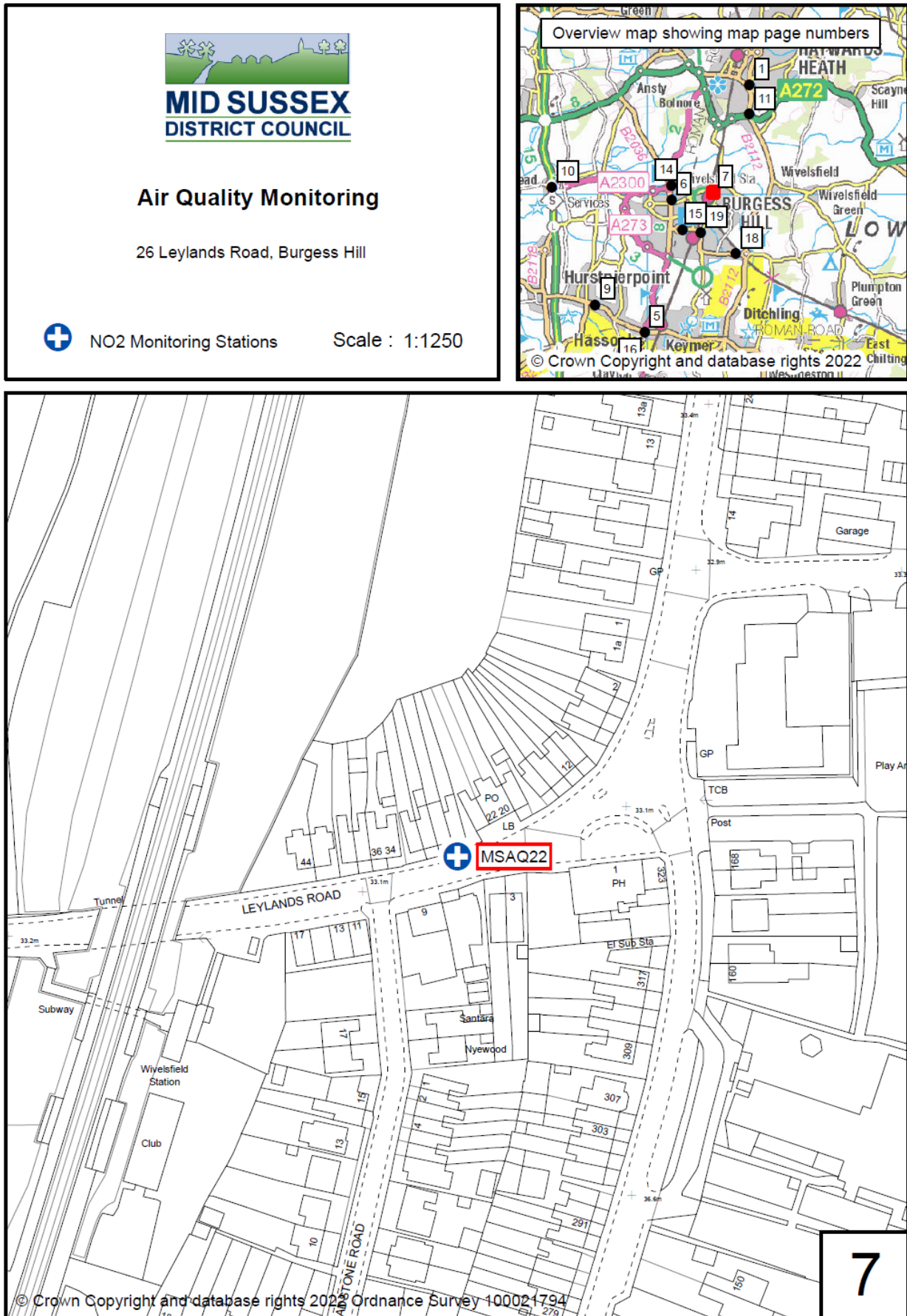


Figure D9 – MSAQ25 Erica Way, Copthorne

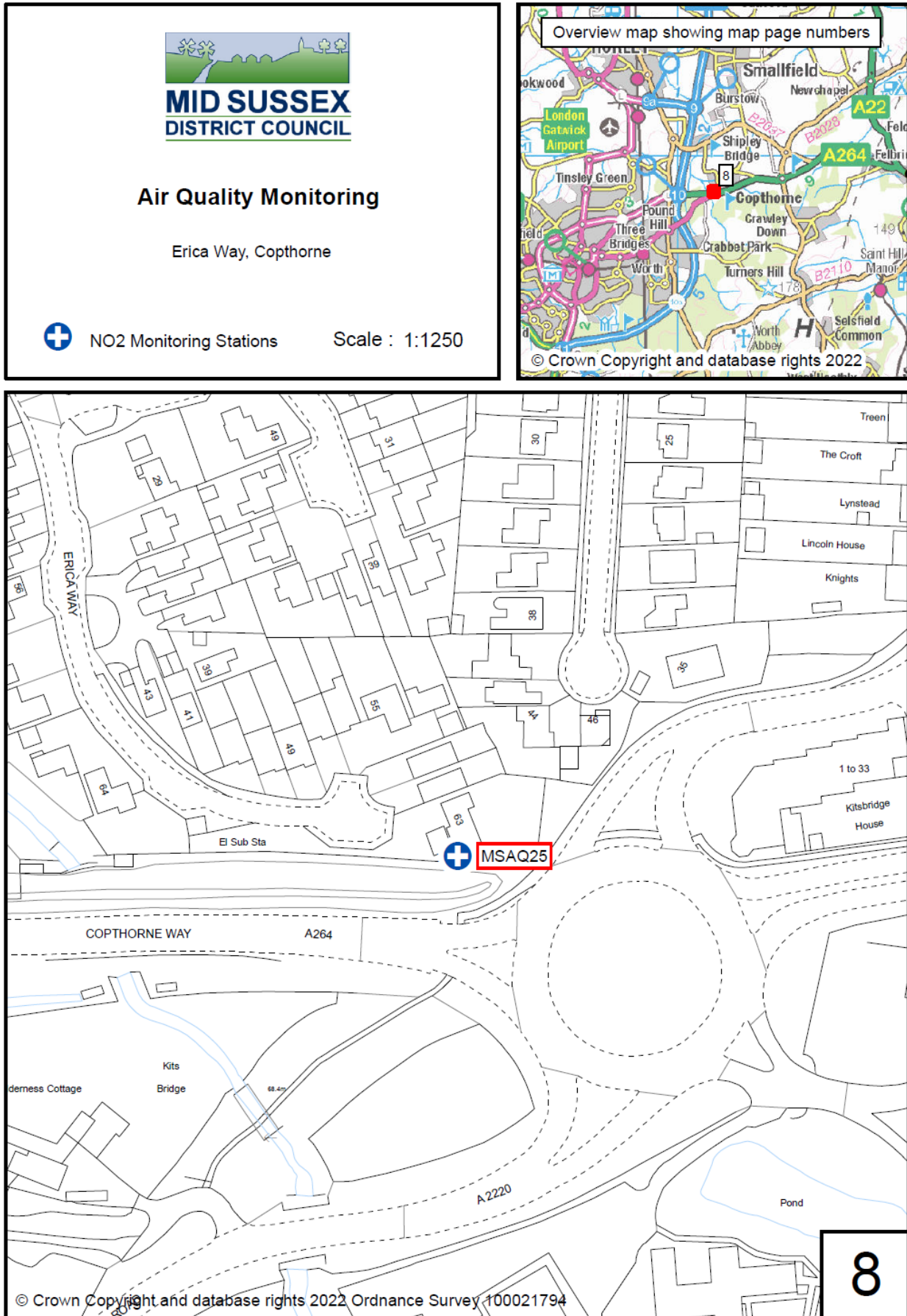




Figure D10 – MSAQ26 Lamp Post 14, High Street, Hurstpierpoint

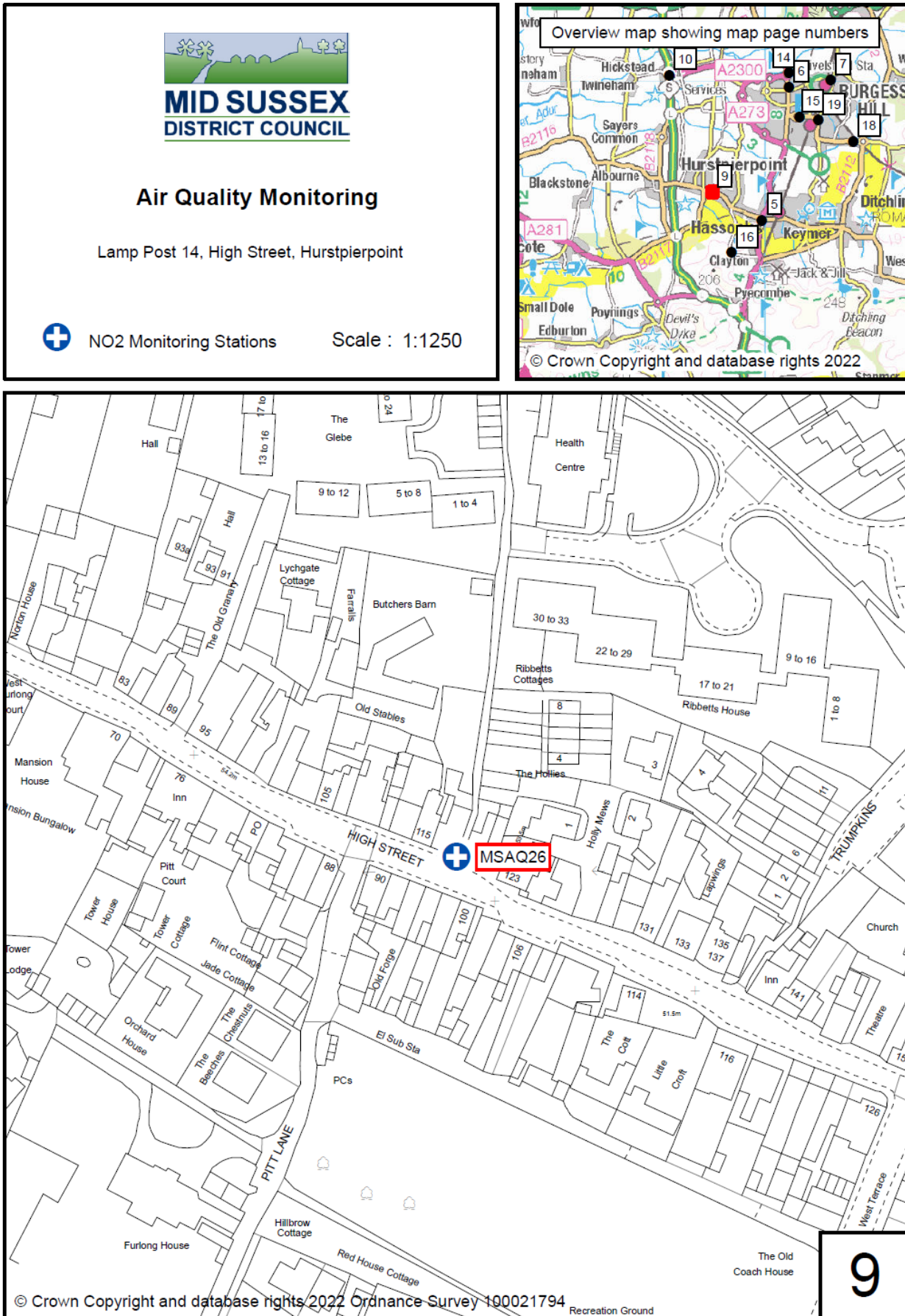


Figure D11 – MSAQ27 Telegraph pole, London Road, Hickstead

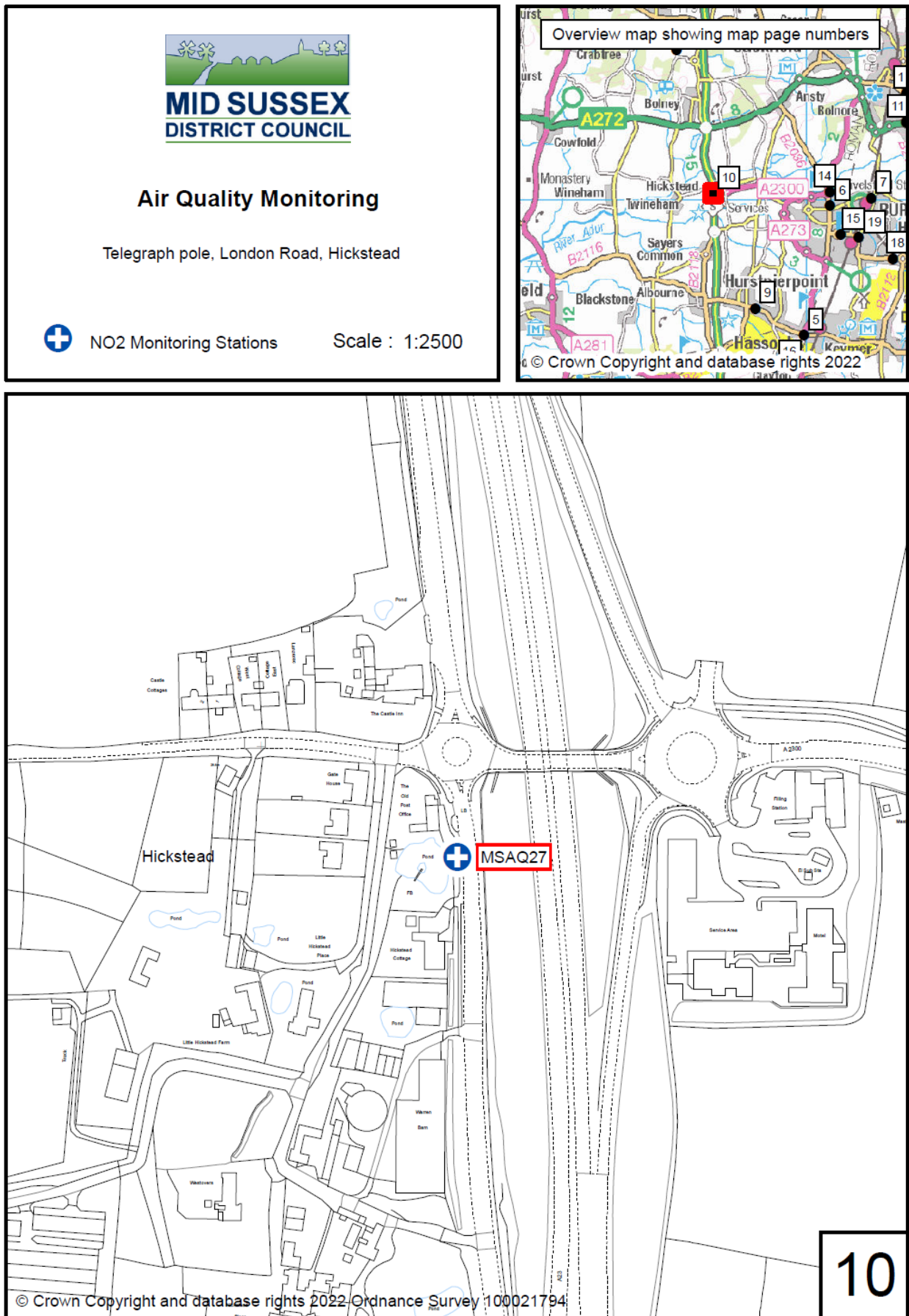
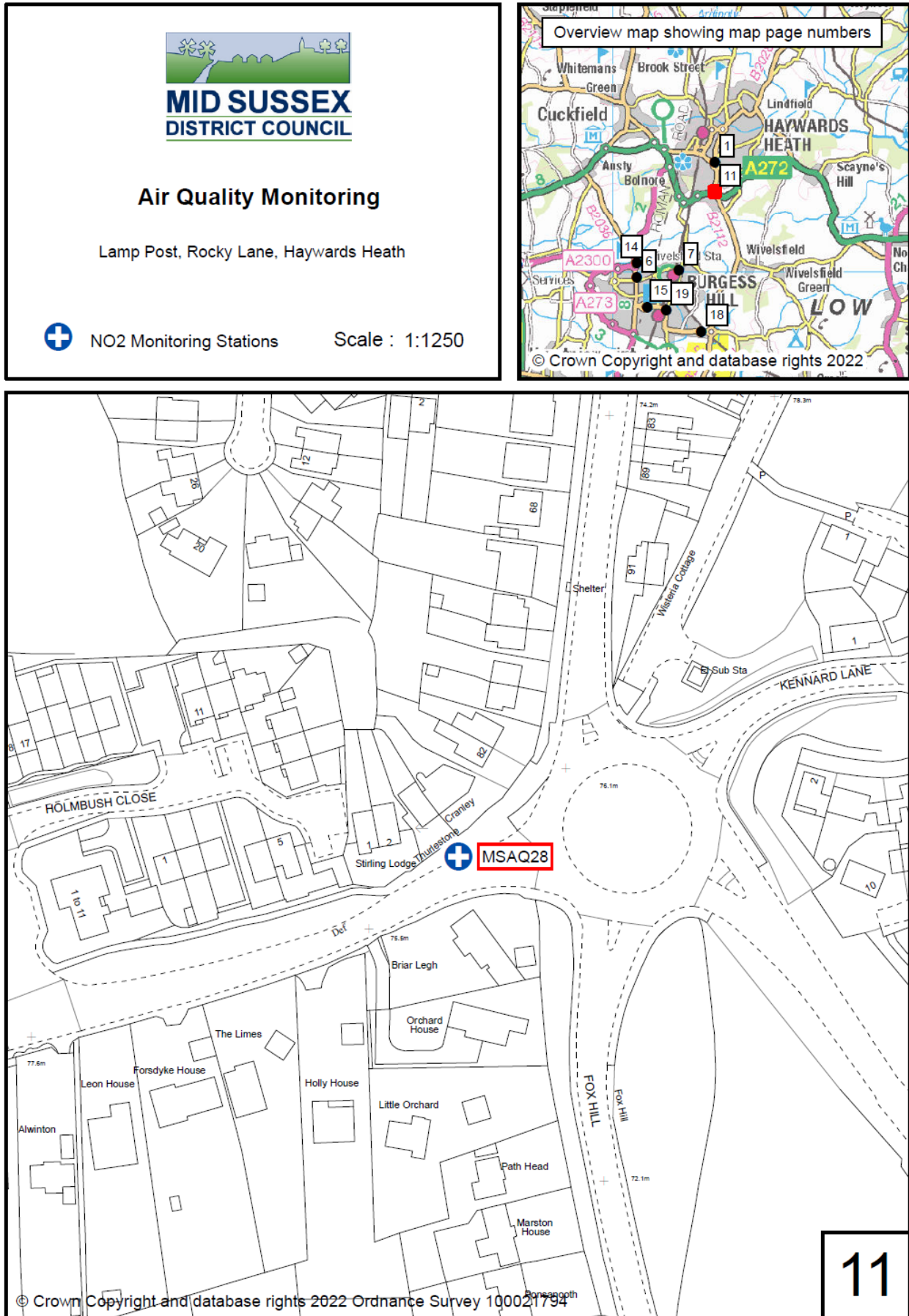
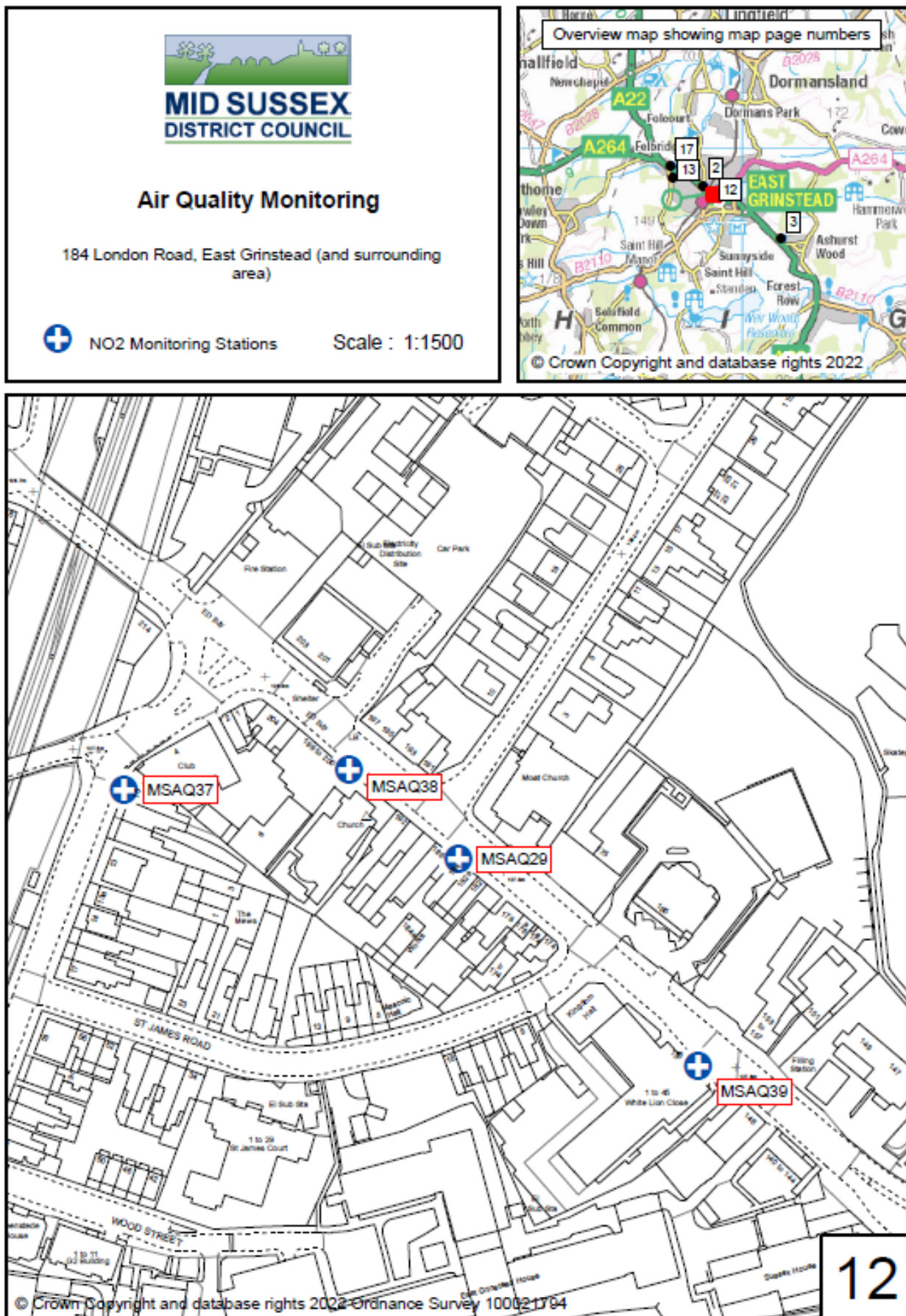


Figure D12 – MSAQ28 Lamp Post, Rocky Lane, Haywards Heath





**Figure D13 – MSAQ29, MSAQ37, MSAQ38 and MSAQ39 London Road, East Grinstead**



**Figure D14 – MSAQ31 Traffic sign outside Imberhorne School, Imberhorne Lane, East Grinstead**

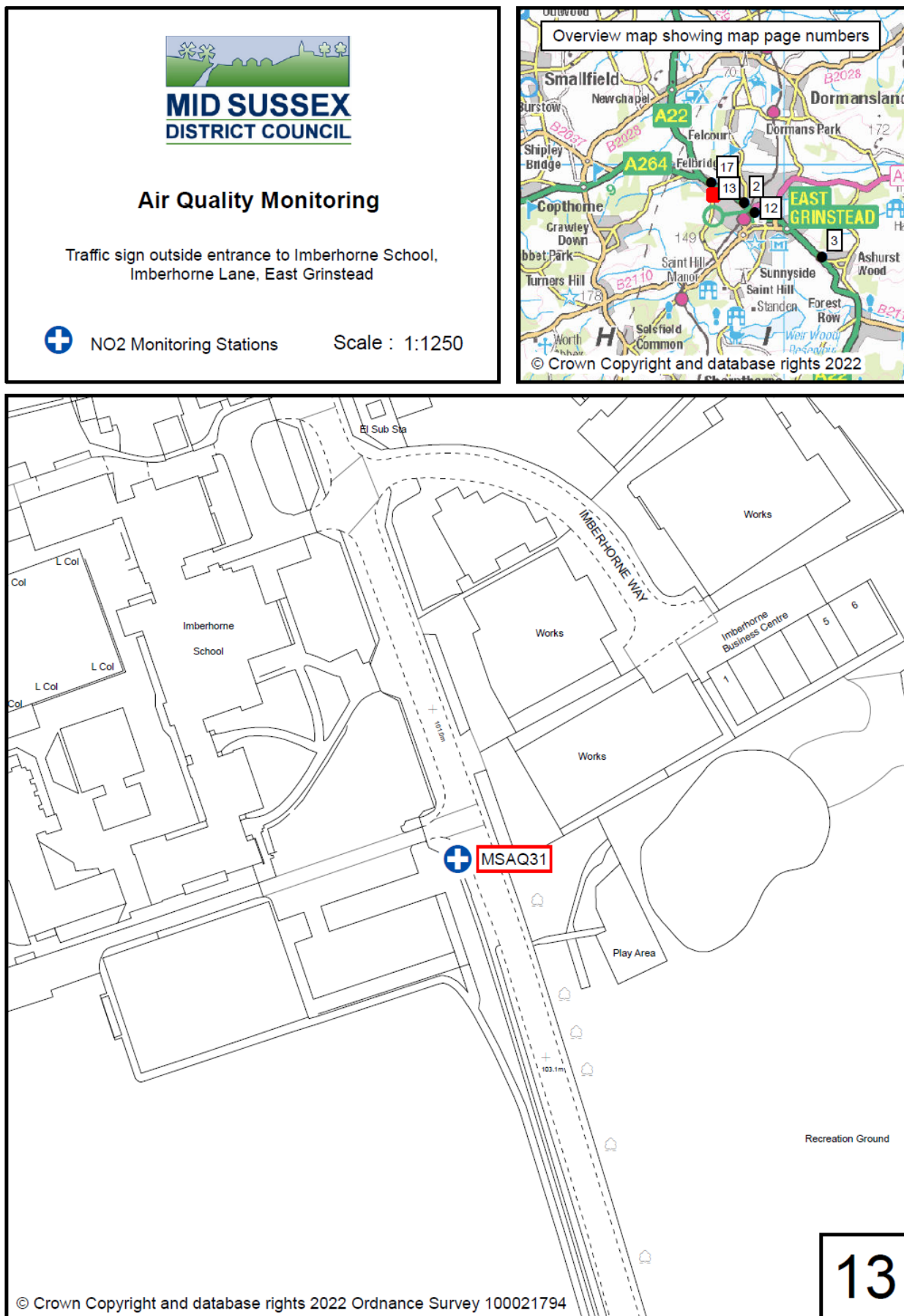




Figure D15 – MSAQ32 Lamp Post, Woodcroft, Burgess Hill

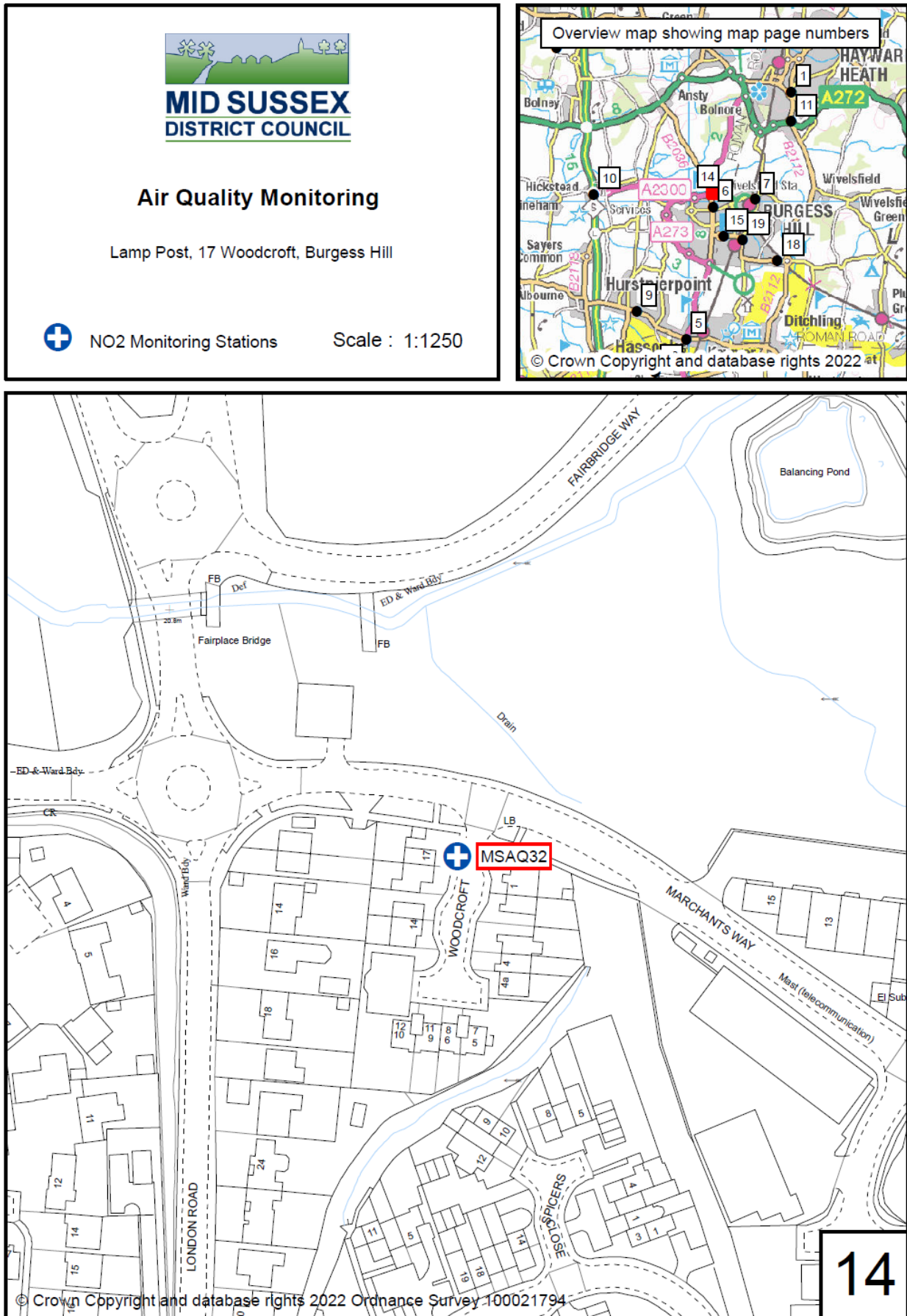


Figure D16 – MSAQ34 Lamp Post, 11 Queen Elizabeth Avenue, Burgess Hill

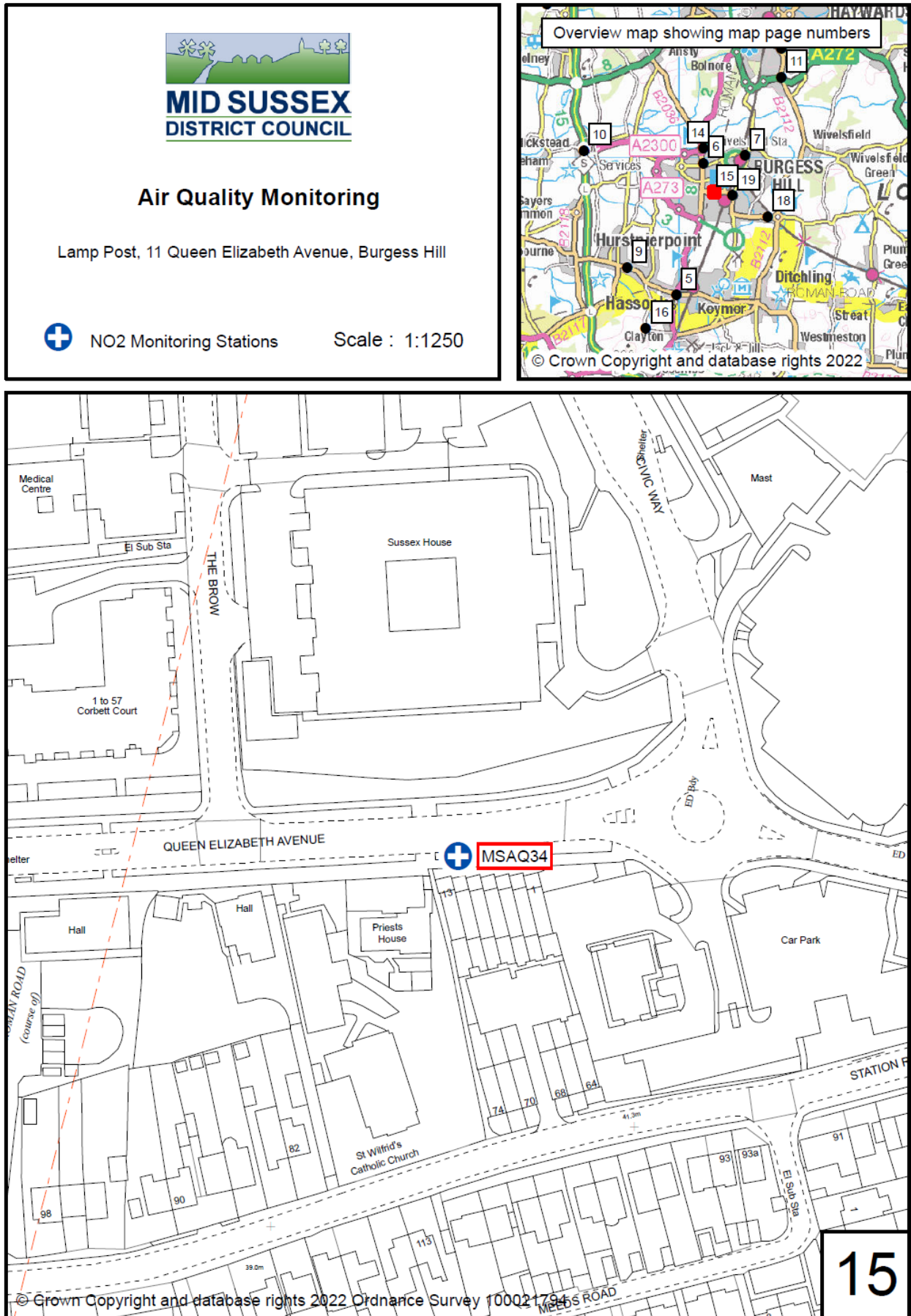


Figure D17 – MSAQ35 New Way Lane, Hurstpierpoint

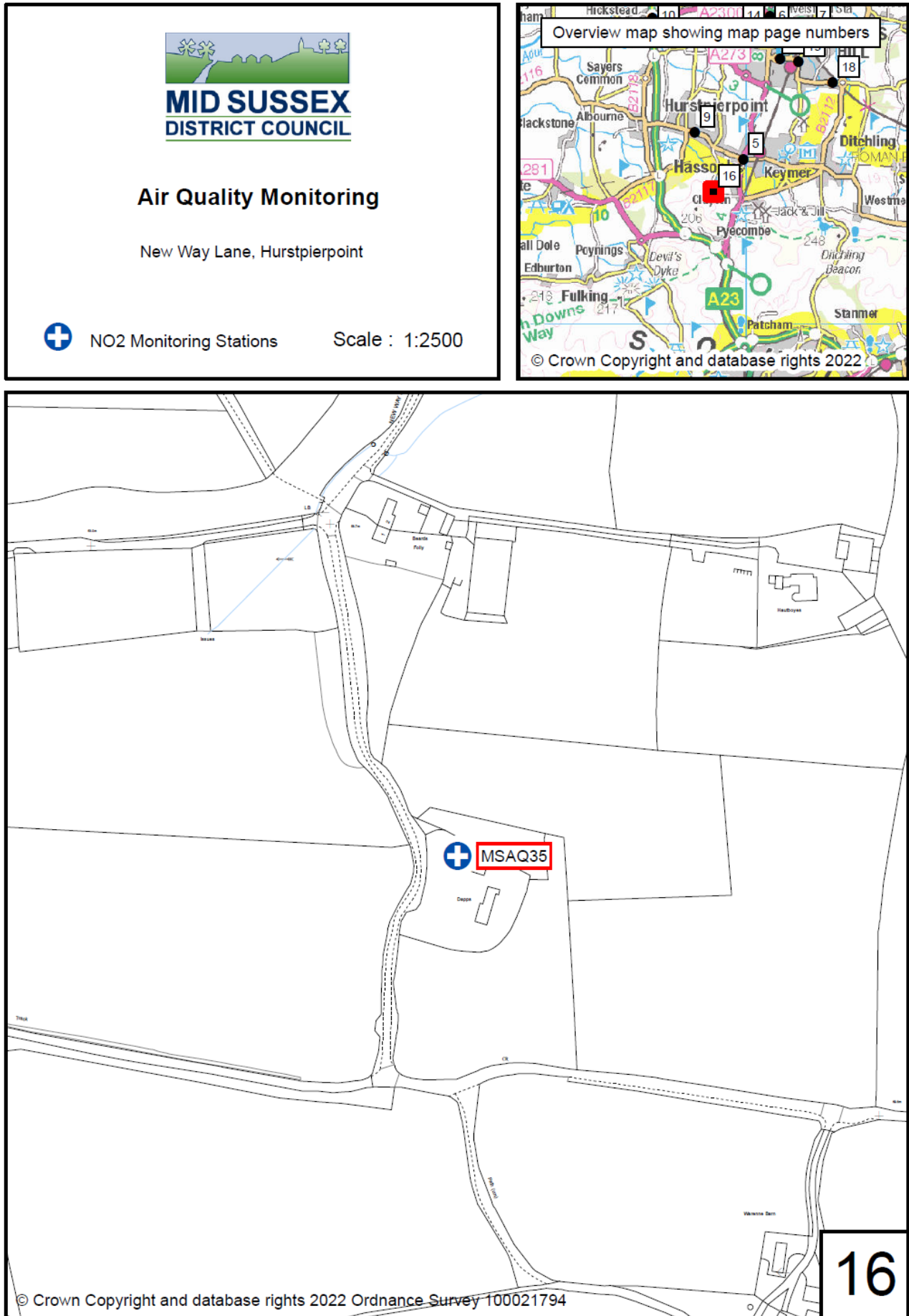




Figure D18 – MSAQ36 Lamp Post outside Bridgeway, London Road, East Grinstead

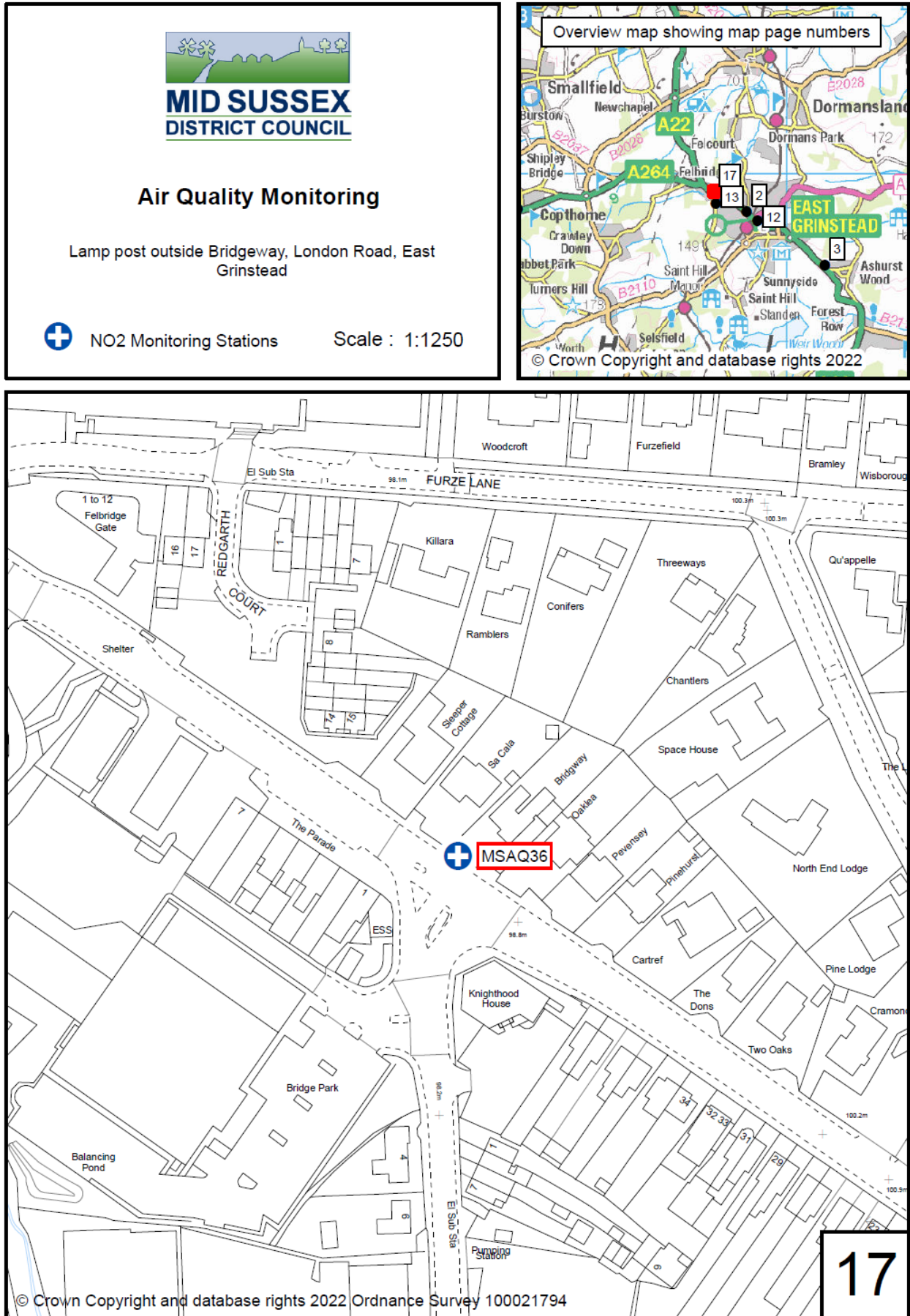


Figure D19 – MSAQ40 Telegraph pole, adjacent Stroudley Drive, Burgess Hill

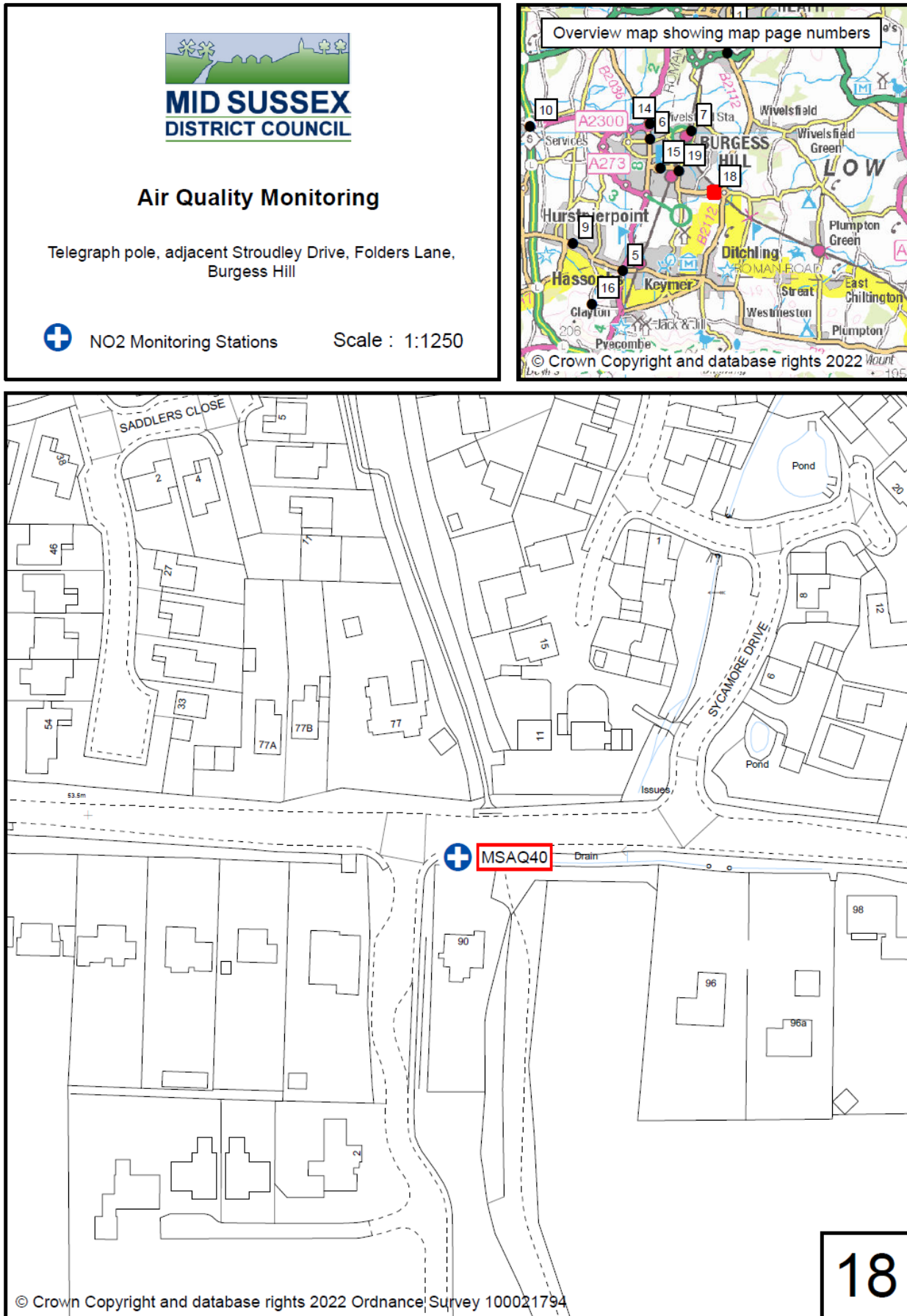


Figure D20 – MSAQ41 Prospect House, Junction Road, Burgess Hill

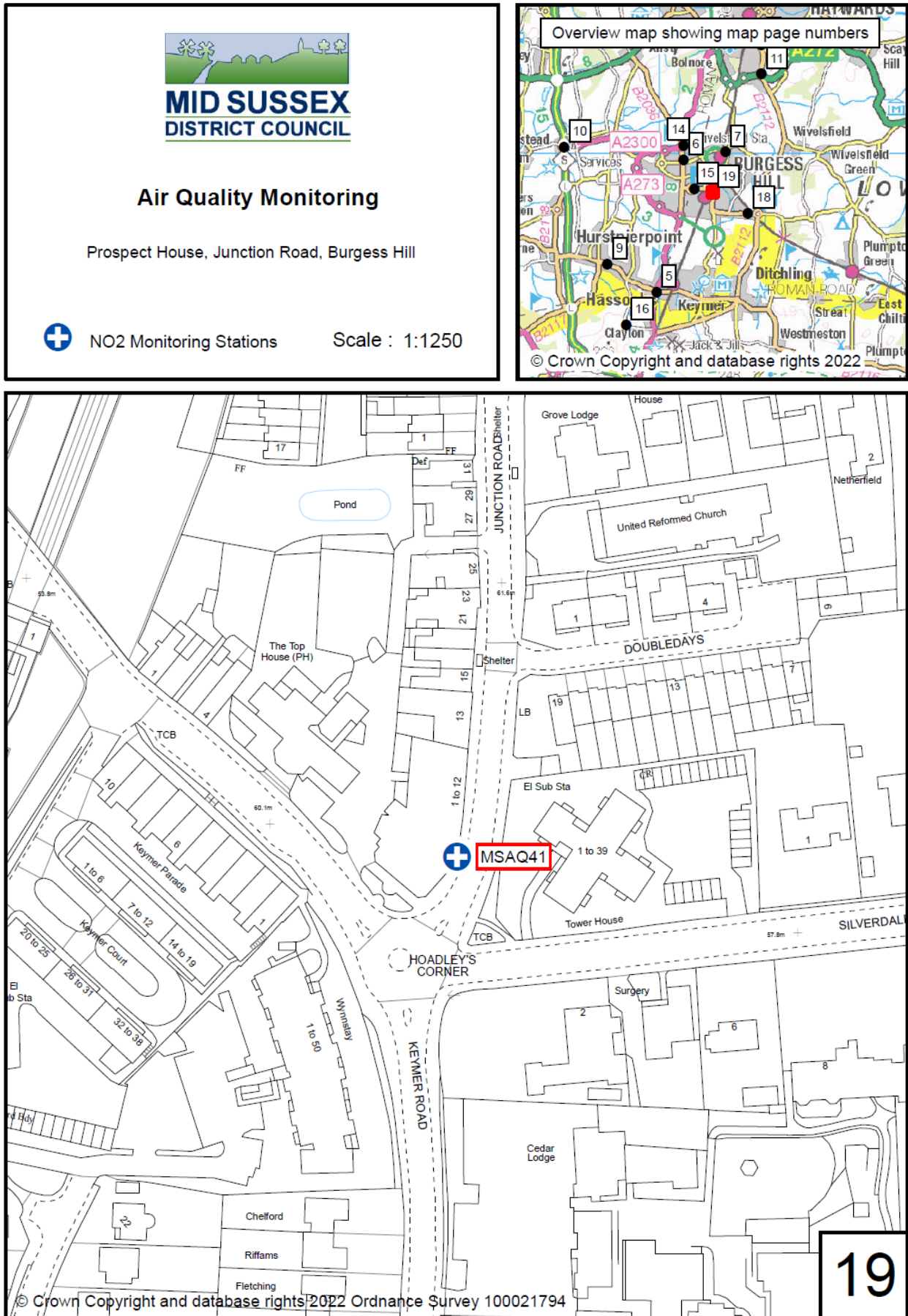
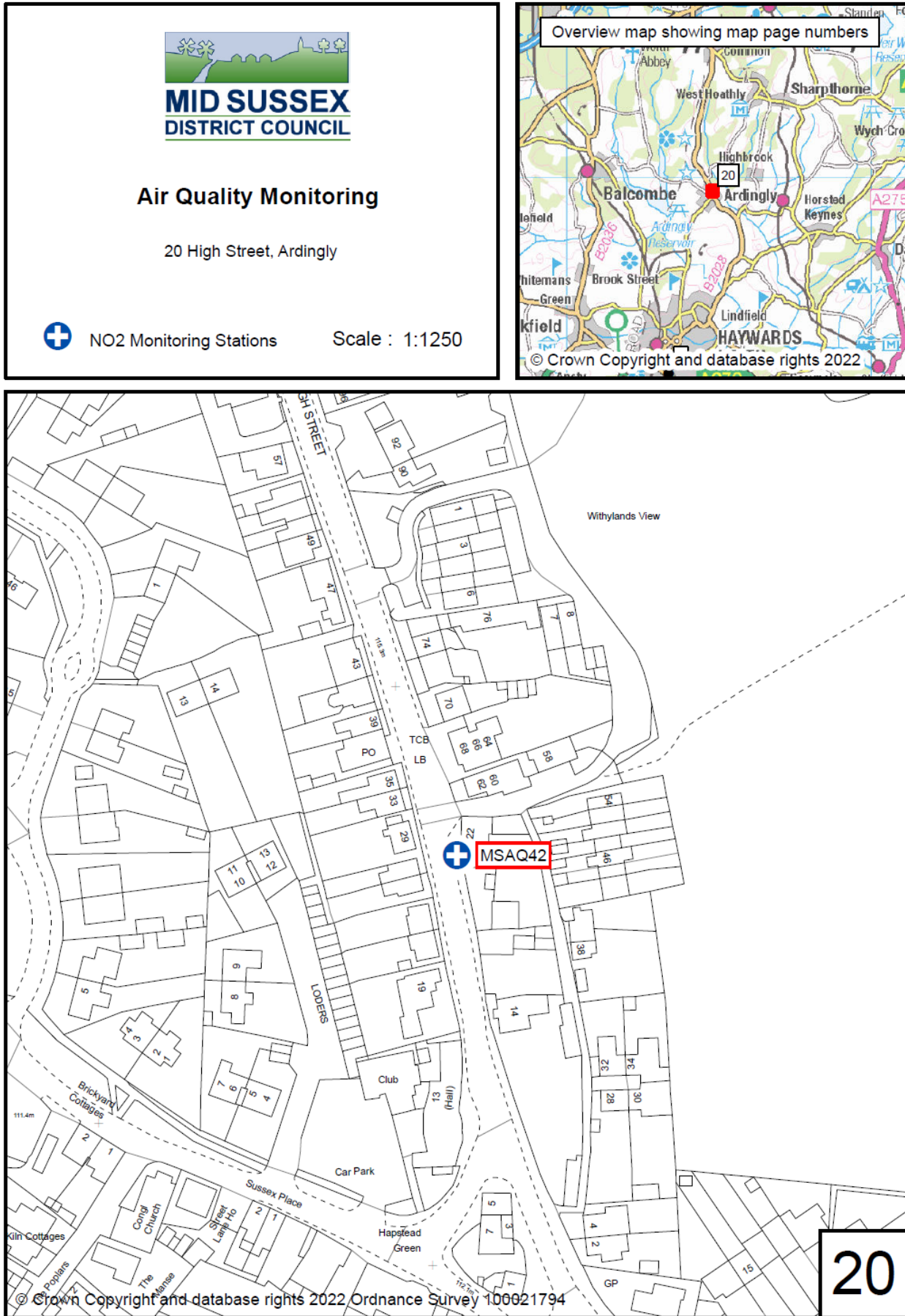
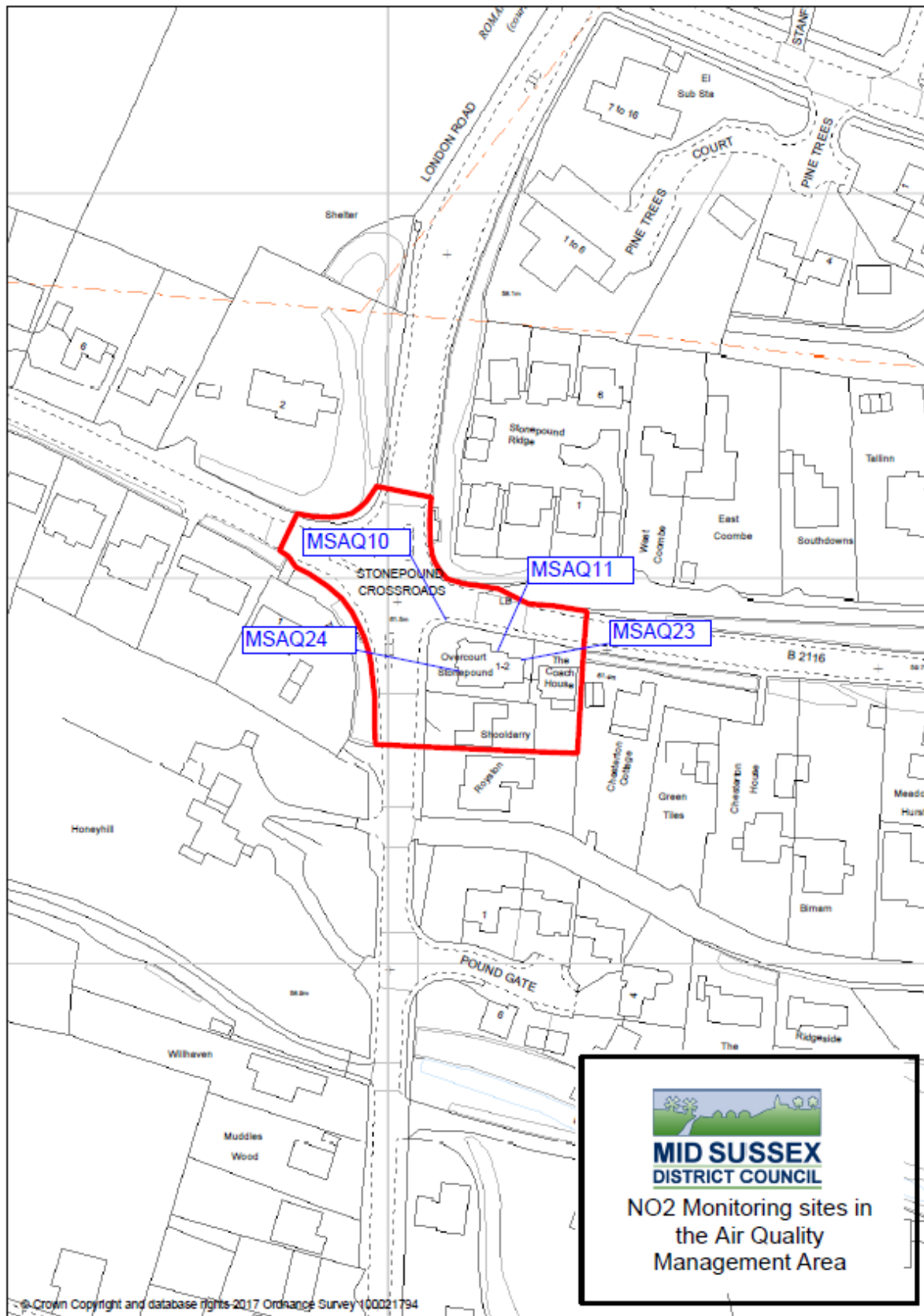




Figure D21 – MSAQ42 20 High Street, Ardingly



**Figure D22 – NO<sub>2</sub> Monitoring sites within AQMA Stonepound Crossroads, Hassocks**





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

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

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

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

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

- Local Air Quality Management Technical Guidance LAQM.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.