



South Oxfordshire and Vale of White Horse District Councils

Draft Air Quality Action Plan

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

2023

DRAFT

South Oxfordshire and Vale of White Horse District Councils

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Date	

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in South Oxfordshire and Vale of White Horse between 2023-2027.

This action plan replaces the previous action plan which ran from 2014 for South Oxfordshire and 2015 for Vale of White Horse. Projects delivered through the past action plans include:

- electric vehicle charging infrastructure;
- taxi licensing incentives;
- parking permits and pricing incentives for green vehicles;
- improved use of traffic regulation orders;
- review of council and contractor's fleets;
- eco driver training;
- air quality planning guidance; and
- awareness, behavioural change and community projects.

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

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The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³. South Oxfordshire and Vale of White Horse District Councils are committed to reducing the exposure of people in our areas to poor air quality in order to improve health.

We have developed both area wide actions, as well as actions targeted at specific Air Quality Management Areas (AQMAs). The actions fall under eight broad topics:

- Freight and delivery management;
- Policy guidance and development control;
- Promoting low emission transport;
- Promoting travel alternatives;
- Public information;
- Transport planning and infrastructure;
- Traffic management; and
- Vehicle fleet efficiency.

Our priorities are to reduce traffic emissions within Botley, Henley and Marcham AQMAs, and to implement area wide measures to improve air quality across all AQMAs.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as vehicle emissions standards agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond South Oxfordshire and Vale of White Horse District Councils' direct influence.

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Responsibilities and Commitment

This AQAP was prepared by the Environmental Protection Department of South Oxfordshire and Vale of White Horse District Councils with the support and agreement of the following officers and departments:

- Environmental Health, South Oxfordshire and Vale of White Horse District Councils
- Public Health, Oxfordshire County Council
- Infrastructure Strategy Team, Oxfordshire County Council
- Air Quality Team, National Highways
- Communications and Consultation and Engagement Teams, South Oxfordshire and Vale of White Horse District Councils

This AQAP will be subject to an annual review and appraisal of progress. Progress each year will be reported in the Annual Status Reports (ASRs) produced by South Oxfordshire and Vale of White Horse District Councils, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP, please email them to the Environmental Protection Team at:

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1 Introduction

This report outlines the actions that South Oxfordshire and Vale of White Horse District Councils and our air quality partners (Oxfordshire County Council and National Highways) will deliver between 2023-2027 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to South Oxfordshire and Vale of White Horse.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within the air quality ASRs for South Oxfordshire and Vale of White Horse District Councils.

2 Summary of Current Air Quality in South Oxfordshire and Vale of White Horse District Councils

There are six Air Quality Management Areas (AQMAs) across South Oxfordshire, and the Vale of White Horse, three in each local authority area, all declared for exceedances of the national air quality objective for nitrogen dioxide (NO₂) measured as an annual average. The AQMAs are shown in Appendix C. The following sections detail the levels of exceedance and recent trends in concentrations. Please also refer to the latest ASRs from South Oxfordshire and Vale of White Horse District Councils (SODC 2022a, VOWHDC 2022).

2.1 South Oxfordshire District Council

Three AQMAs have been declared in South Oxfordshire, in Henley-on-Thames, Wallingford, and Watlington.

Table 2.1 and **Error! Reference source not found.** to Figure 2-3 provide information on the South Oxfordshire AQMAs as reported in the 2022 Air Quality ASR, supplemented by the most recent monitoring data for 2022.

Concentrations have decreased across all AQMAs since 2017. Annual mean NO₂ concentrations were below the 40 µg/m³ objective in 2020, 2021 and 2022 in all three AQMAs. Concentrations in 2020 and to a lesser extent, in 2021, are likely to have been unusually low due to Covid-19 lockdowns leading to restrictions in travel.

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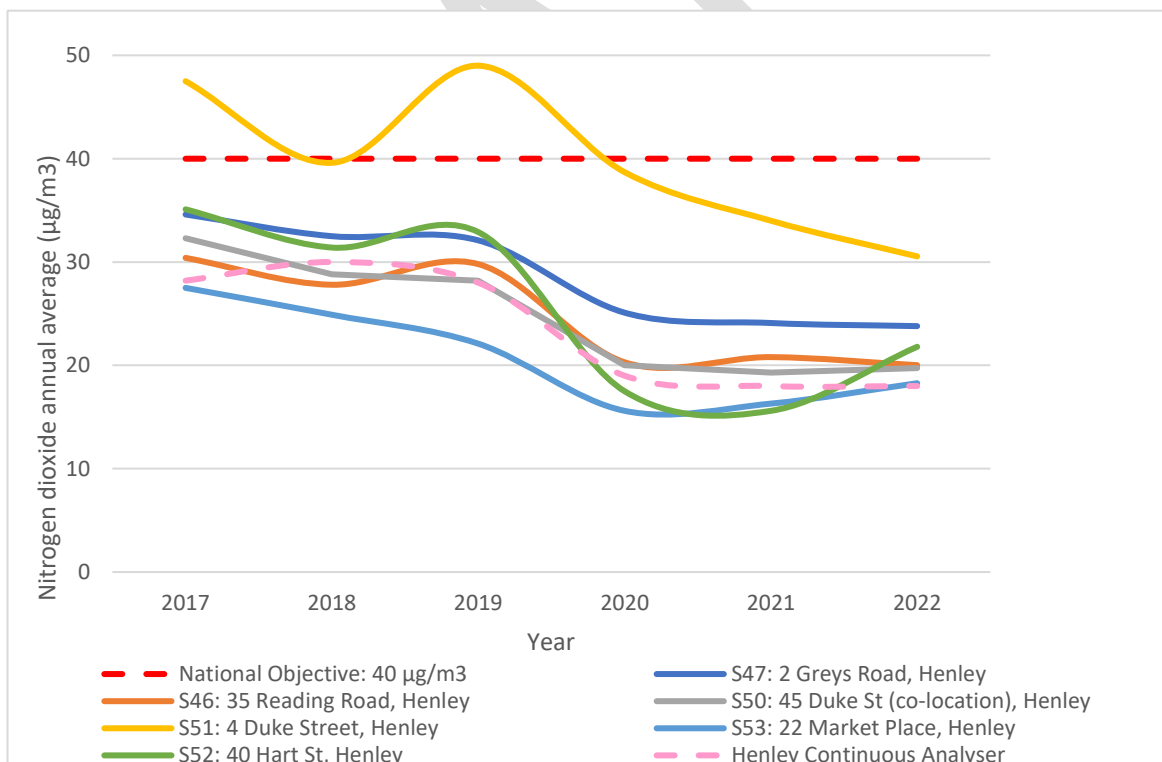
Table 2.1: South Oxfordshire AQMAs, declared for exceedances of NO₂ annual mean objective

AQMA Name	Date Declared	Description	Level of Exceedance: at time of declaration	Level of Exceedance: 2022 (Highest concentration recorded within the AQMA in 2022)
Henley	01/01/2003	Duke Street, Bell Street, the Market Place, Hart Street and Reading Road	45.1	30.5 (4 Duke Street, Site S51)
Wallingford	28/03/2006	High Street and part of Castle Street, St Marys Street and St Martins Street	48.3	28.5 (George Hotel, Site S19-21)
Watlington	31/03/2009	Shirburn Street, Couching Street and Brook Street	51.3	27.9 (41 Couching St., Site S33)

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For **Henley**, trends in annual mean NO₂ concentrations are shown in Figure 2.1. Only one site (4 Duke Street S51) has exceeded 40 µg/m³ as an annual mean since 2017. This is at a kerbside location, on a very narrow road, with shops and residential properties close to the kerbside. Since 2017, all of the six diffusion tube monitoring sites show a downward trend in concentrations, with the trend being significant at four of the sites, including at site S51. As concentrations have been below 40 µg/m³ since 2020, monitoring data from future years (unaffected by covid-19) may enable South Oxfordshire to consider revoking the AQMA. However, at this stage, it is appropriate to consider **further measures to reduce concentrations within the Henley AQMA**.

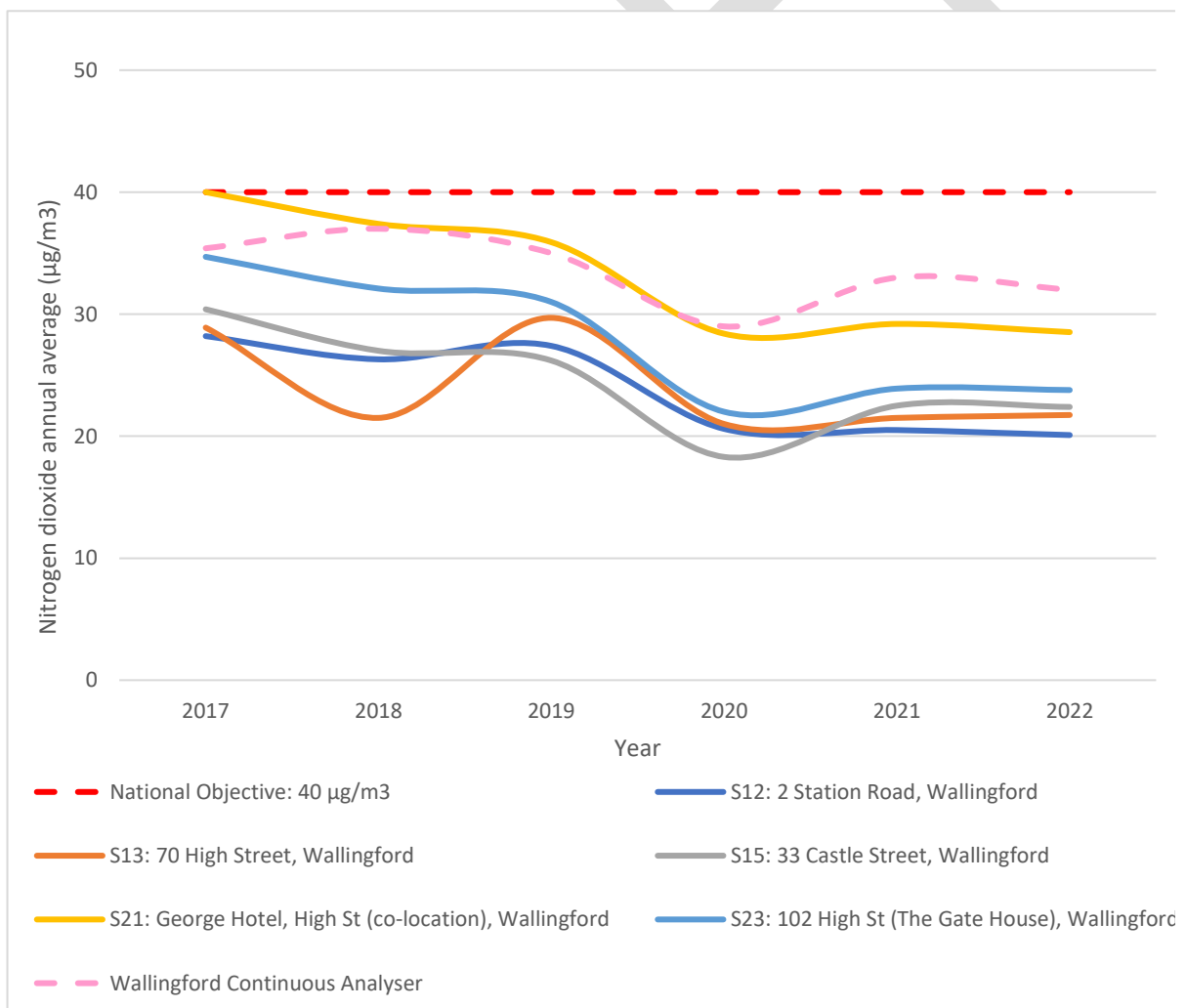
Figure 2-1: Trends in Annual Mean NO₂ concentrations in the Henley AQMA, 2017 - 2022



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In **Wallingford**, trends in annual mean NO₂ concentrations are shown in Figure 2.2. Concentrations have not exceeded 40 µg/m³ as an annual mean at all sites since 2017. There were therefore no exceedances of the national air quality objective for NO₂ as an annual mean in Wallingford AQMA over the past six years, and four out of the five diffusion tube monitoring sites show a significant downward trend over this period. **As such, no further measures are required, and South Oxfordshire District Council could consider revoking the Wallingford AQMA.**

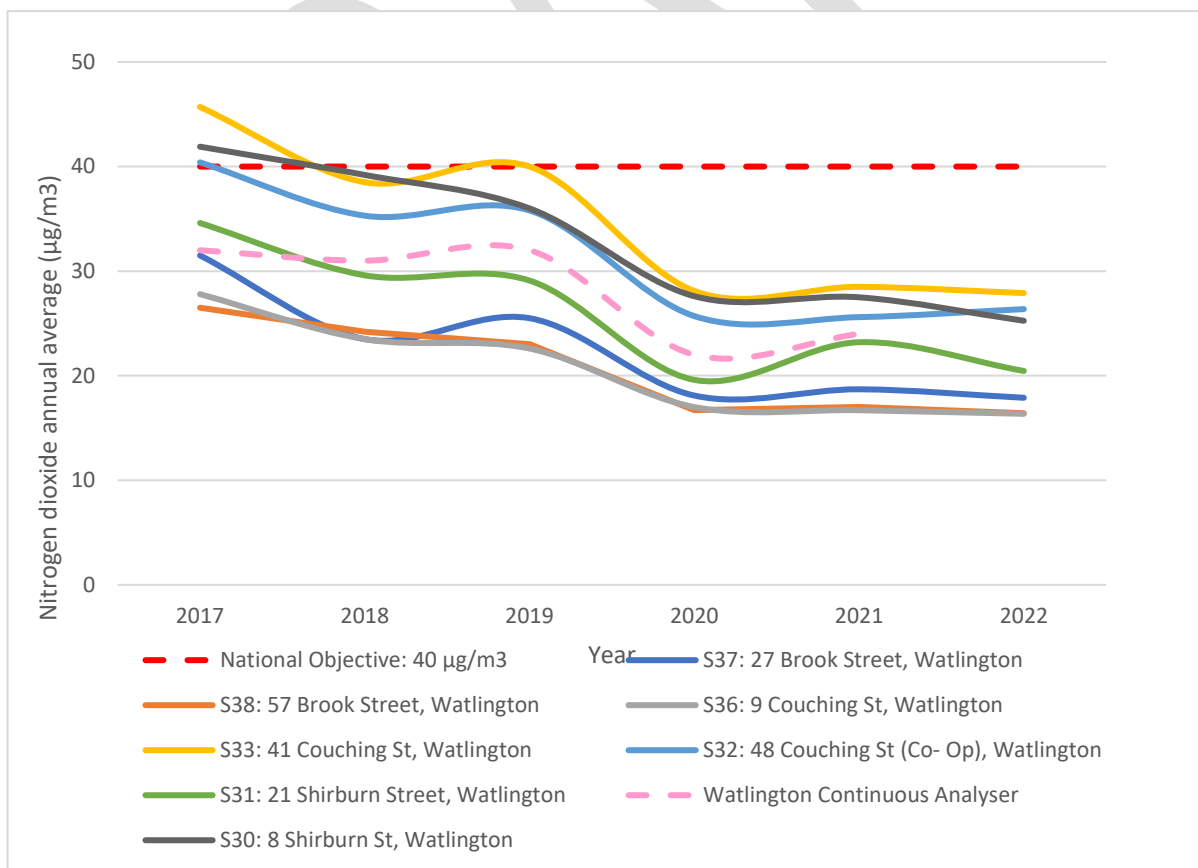
Figure 2-2: Trends in Annual Mean NO₂ concentrations in the Wallingford AQMA, 2017 - 2022



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In **Watlington**, trends in annual mean NO₂ concentrations are shown in Figure 2.3. Concentrations were above 40 µg/m³ as an annual mean in 2017 at 41 Couching Street (S33), 48 Couching Street (S32) and 8 Shirburn St (S30). All of these sites are kerbside locations, although they are along very narrow roads, with shops and residential properties close to the kerbside. Since 2017, the highest concentration was 40.0 µg/m³, recorded at 41 Couching Street (S33) in 2019. Whilst being equal to the national objective, it does not constitute an exceedance. As such, there have been no exceedances of the national air quality objective for NO₂ as an annual mean in Watlington AQMA between 2018-2021. All of the seven diffusion tube monitoring sites show a downward trend in concentrations since 2017, with the trend being significant at six of the seven sites. **South Oxfordshire District Council may also wish to consider revoking the Watlington AQMA.**

Figure 2-3: Trends in Annual Mean NO₂ concentrations in the Watlington AQMA, 2017 - 2022



2.2 Vale of White Horse District Council

Three AQMAs have been declared in the Vale of White Horse: Abingdon-on-Thames, Botley, and Marcham. The Botley AQMA is declared as a result of road traffic emissions on the A34, which is controlled by National Highways. Table 2.2 and the following text provide information on the Vale of White Horse AQMAs as reported in the 2022 ASR, supplemented by the most recent monitoring data for 2022.

Table 2.2: Vale of White Horse AQMAs, declared for exceedances of NO₂ annual mean objective

AQMA Name	Date Declared	Description	Level of Exceedance: at time of declaration	Level of Exceedance: 2022 (Highest concentration recorded within the AQMA in 2022)
Abingdon	23/08/2006	Major town centre roads	63.2	28.1 (Stratton Way, Site S06)
Marcham	15/06/2006	Residential properties near A415	53.9	30.4 (10 Packhorse Lane, Site S16)
Botley	29/04/2008	Residential properties close to the A34 (controlled by National Highways)	58.8	47.3 (63 Southern Bypass (fence), Site S30, distance corrected)

Concentrations have decreased across the three AQMAs since 2017. Annual mean NO₂ concentrations were below 40 µg/m³ in 2020, 2021, and 2022 in Abingdon and Marcham. Concentrations in 2020 and to a lesser extent, in 2021, are likely to have been unusually low due to Covid-19 lockdowns leading to restrictions in travel.

Trends in annual mean NO₂ concentrations in **Abingdon** are shown in Figure 2-4. Concentrations were above 40 µg/m³ as an annual mean in one or more years between 2017-2019 at three sites: High Street (S04), Stratton Way (S06), and Marcham Road LP5 (S11). The site at Marcham Road (S11), although located outside of the AQMA, has historically recorded higher concentrations so has been

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included in the analysis. These monitoring locations are all described as 'roadside'. The nearest locations of relevant exposure (locations of sensitive receptors) to these monitoring sites are 4 m (S04), 6.5 m (S06) and 3 m (S11) further away from the road. Concentrations of NO₂ drop very quickly with distance from the source. As such, the concentrations measured at the monitoring sites will be higher than those actually experienced at the nearest sensitive receptors. As shown in Table 2.3, the *distance corrected* concentrations (which provide an estimate of the concentration at the nearest sensitive receptor) were below 40 µg/m³ for all sites within the Abingdon AQMA during 2017-19 (VOWHDC, 2018, 2019a, 2020). There were therefore no exceedances of the national air quality objective for NO₂ as an annual mean in Abingdon AQMA between 2017-2022. **As such, no further measures are required, and Vale of White Horse District Council could consider revoking the Abingdon AQMA.**

Figure 2-4: Trends in Annual Mean NO₂ concentrations for sites in Abingdon AQMA, 2017 - 2022

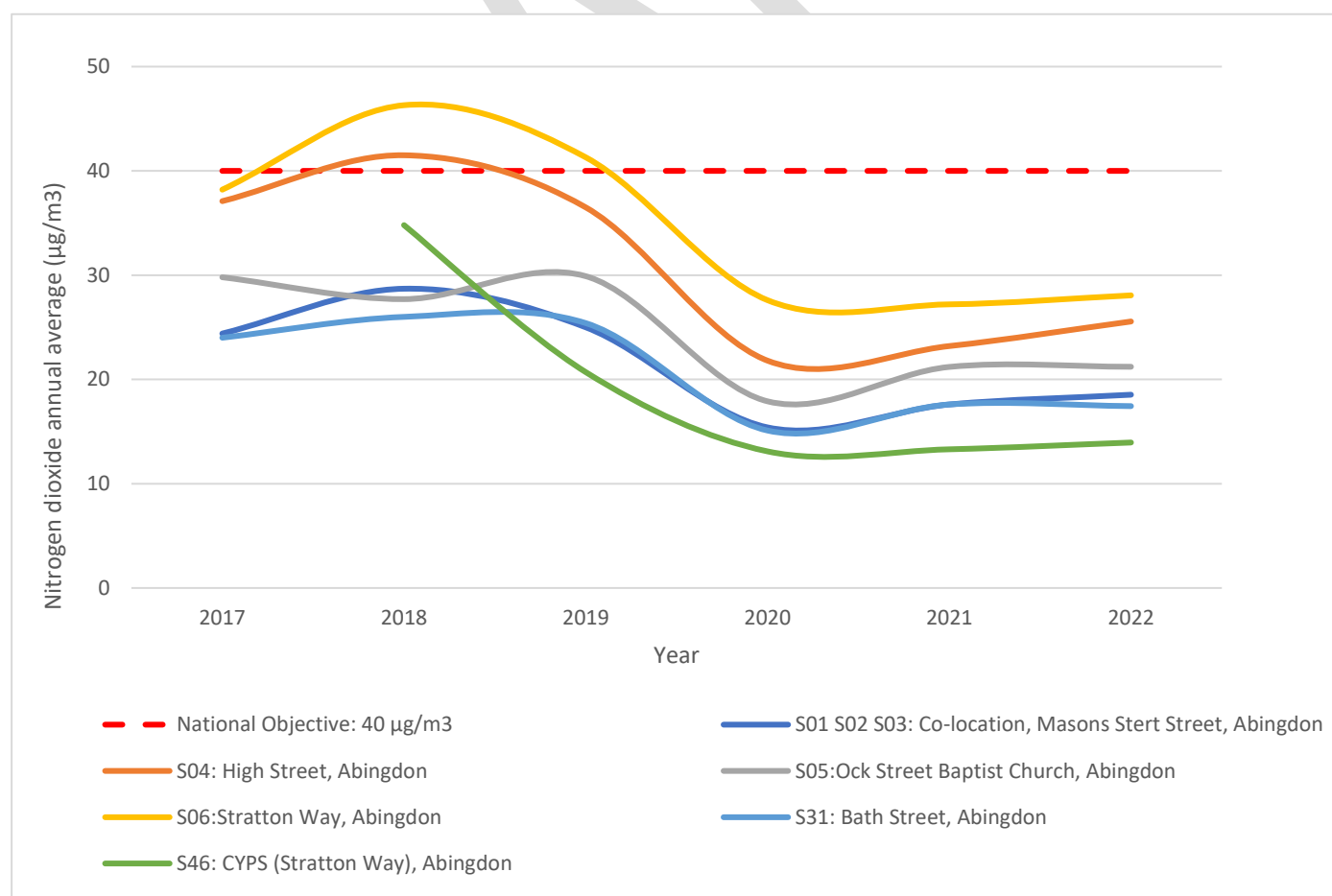


Table 2.3: Distance corrected concentrations at historically worst affected sites in Abingdon AQMA

Site ID	NO ₂ mean concentrations (µg/m ³) (bold denotes exceedance of annual mean objective)					
	2017		2018		2019	
	Concentration at monitoring site	Distance corrected to nearest exposure	Concentration at monitoring site	Distance corrected to nearest exposure	Concentration at monitoring site	Distance corrected to nearest exposure
S04 High Street	37.1	29.5	41.5	32.8	36.5	29.3
S06 Stratton Way	42.3	33.3	46.3	36.3	41.3	32.1
S11 Marcham Road LP5	40.1	34.5	40.9	35.3	38.9	33.6

Trends in annual mean NO₂ concentrations in **Marcham** are shown in Figure 2-5. Concentrations were above 40 µg/m³ as an annual mean in one or more years between 2017-2019 at three sites: 10 Packhorse Lane (S16), 4 Frilford Road (S17) and 13 Packhorse Lane (S19), although sites S17 and S19 were only marginally above the objective in 2018 only. These monitoring locations are described as ‘kerbside’ (S16) and ‘roadside’ (S17, S19). The nearest relevant exposure (location of sensitive receptors) to these monitoring sites are 0 m (S16), 1 m (S17) and 13 m (S19) further away from the road. As noted above, concentrations of NO₂ drop very quickly with distance from the source, such that the concentrations measured at the S17 and S19 monitoring sites will be higher than those experienced at the nearest sensitive receptors. As shown in Table 2.4, the *distance corrected* concentrations were below 40 µg/m³ for all sites within the Marcham AQMA, except S16 at 10 Packhorse Lane during 2017-19. As concentrations have been below 40 µg/m³ since 2020, monitoring data from future years (unaffected by covid-19) may enable Vale of White Horse to consider revoking the Marcham AQMA. However, at this stage, it is appropriate to consider **further measures to reduce concentrations on Packhorse Lane.**

Figure 2-5: Trends in Annual Mean NO₂ concentrations for sites in Marcham AQMA, 2017 - 2022

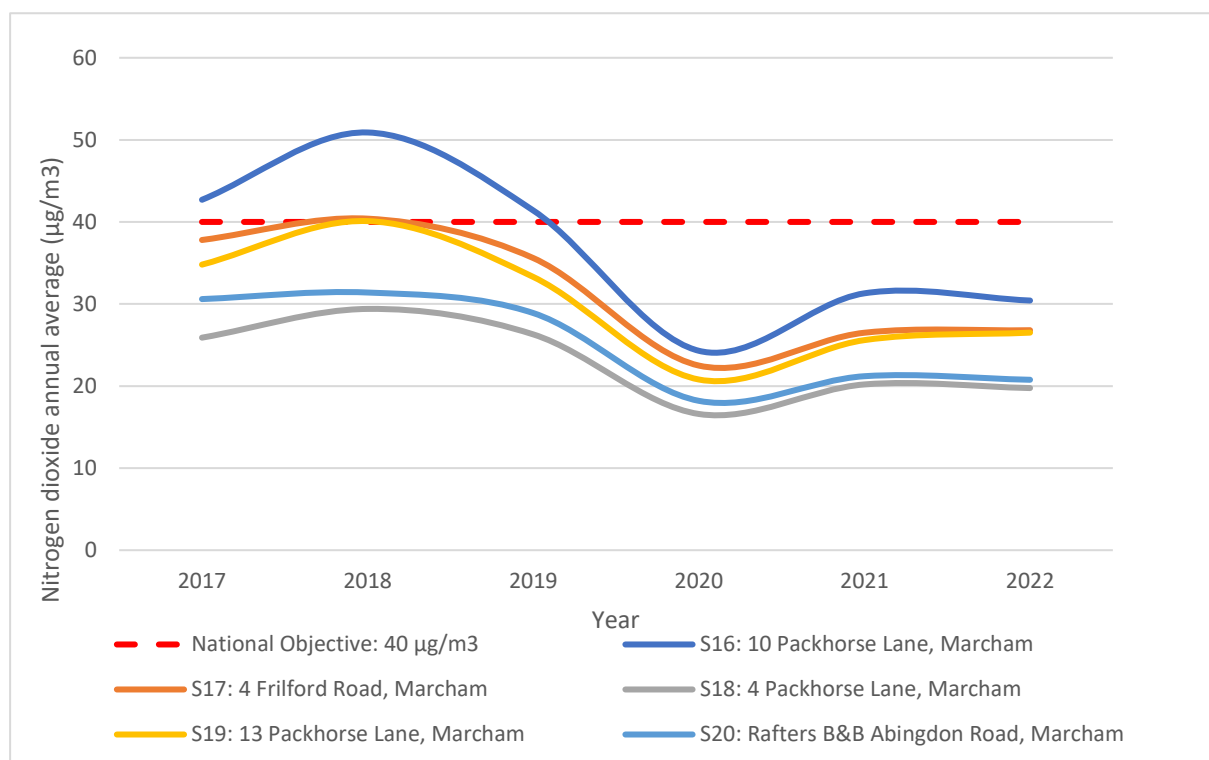


Table 2.4: Distance corrected concentrations at historically worst affected sites in Marcham AQMA

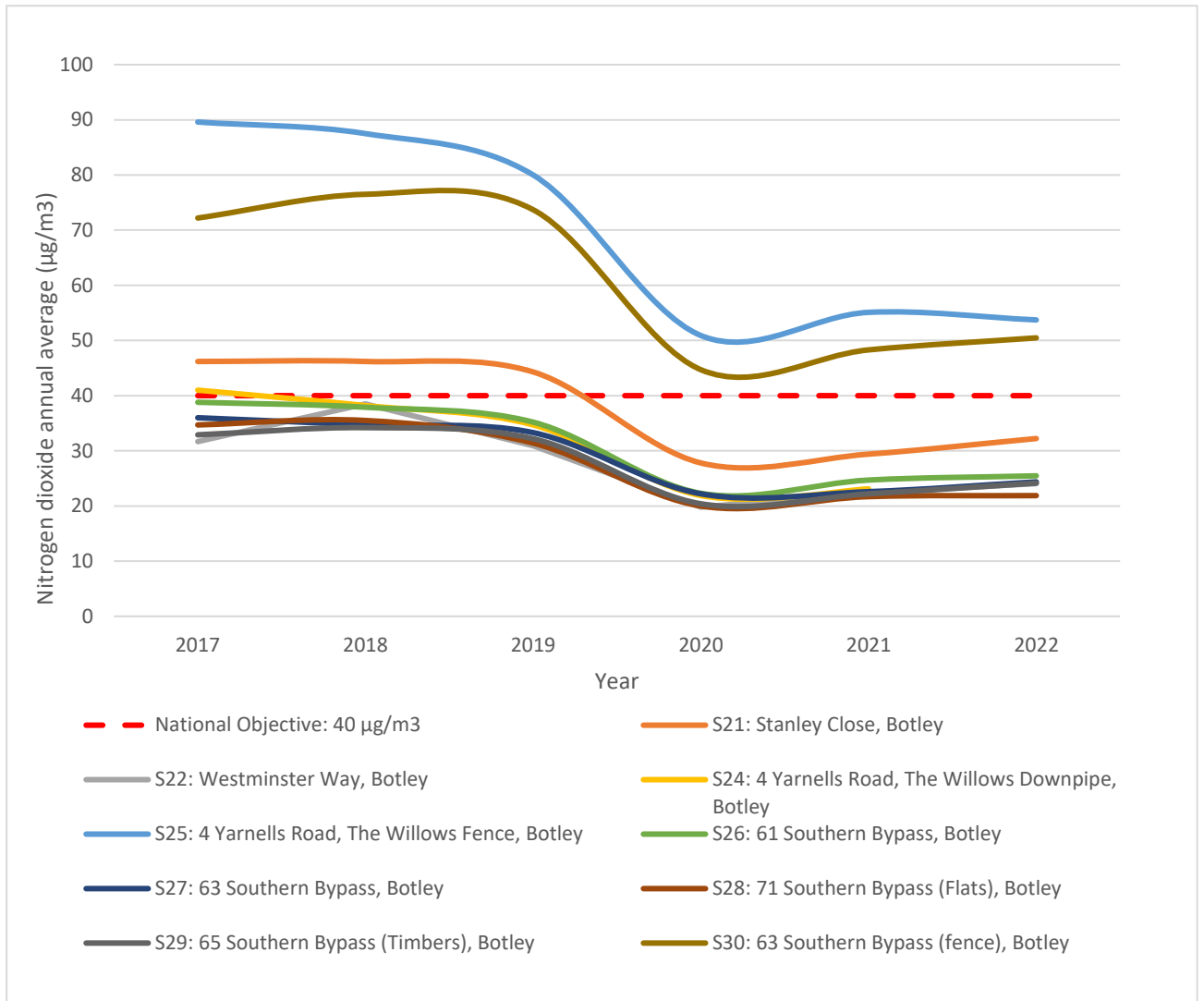
Site ID	NO ₂ mean concentrations (µg/m ³) (bold denotes exceedance of annual mean objective)					
	2017		2018		2019	
	Concentration at monitoring site	Distance corrected to nearest exposure	Concentration at monitoring site	Distance corrected to nearest exposure	Concentration at monitoring site	Distance corrected to nearest exposure
S16 10 Packhorse Lane	42.7	42.7	50.9	50.9	41.4	41.4
S17 4 Frilford Road	37.8	34.5	40.4	36.9	35.6	32.5
S19 13 Packhorse Lane	34.8	26.0	40.1	29.7	33.3	<33.3

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Trends in annual mean NO₂ concentrations in **Botley** AQMA are shown in Figure 2-6. Concentrations are heavily impacted by traffic emissions from the A34, a strategic road, controlled by National Highways. Four sites have exceeded the NO₂ annual mean objective over the last six years: Stanley Close (S21) between 2017 and 2019, 4 Yarnells Road downpipe (S24) in 2017 only, 4 Yarnells Road fence (S25) in all years between 2017 and 2022, and 63 Southern Bypass fence (S30), in all years between 2017 and 2022. The distance corrected concentrations are presented in Table 2.5, and show that once distance corrected, only one site (S30) was estimated to exceed the NO₂ annual mean objective in 2021, with an estimated concentration of 45.4 µg/m³ at the nearest relevant exposure. However, façade monitoring at the same property (63 Southern Bypass, S27) was below 30 µg/m³, as shown in the figure above, demonstrating that the measured concentrations were actually lower than those distance corrected.

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Figure 2-6: Trends in Annual Mean NO₂ concentrations for sites in Botley AQMA, 2017 - 2022



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Table 2.5: Distance corrected concentrations at historically worst affected sites in Botley AQMA

Site ID	NO ₂ mean concentrations (µg/m ³) (bold denotes exceedance of annual mean objective)											
	2017		2018		2019		2020		2021		2022	
	Conc. at site	Distance corrected to nearest exposure	Conc. at site	Distance corrected to nearest exposure	Conc. at site	Distance corrected to nearest exposure	Conc. at site	Distance corrected to nearest exposure	Conc. at site	Distance corrected to nearest exposure	Conc. at site	Distance corrected to nearest exposure
S21 Stanley Close	46.2	50.8	46.2	50.3	44.3	48.1	27.8	n/a	29.4	n/a	32.2	n/a
S24 4 Yarnells Road (downpipe)	41.0	41.0	38.2	38.2	34.7	34.7	21.9	n/a	23.1	n/a	No data	n/a
S25 4 Yarnells Road (Fence)	89.6	60.9	87.5	67.1	80.0	50.8	50.9	34.6	55.1	38.0	53.7	36.8
S30 63 Southern Bypass (fence)	72.2	49.7	76.5	53.8	73.7	51.0	44.7	42.9	48.3	45.4	50.5	47.3

Further measures are required to reduce concentrations within the Botley AQMA, in partnership with National Highways which controls the A34.

National Highways has undertaken a review of concentrations on the A34 road link, with air quality modelling estimating a concentration of 61 µg/m³ at the nearest area of public access in 2022, with exceedances of the NO₂ annual mean objective predicted to continue beyond 2030 (see Appendix D). However, it is important to note that under the Air Quality Plan for NO₂ in the UK (Defra, 2017), National Highways is required to reduce concentrations on the strategic road network where there are anticipated to be exceedances of the NO₂ annual mean at any location that the public may access for any length of time. As such, for the purposes of National Highways modelling, the nearest sensitive receptor is a footpath, 1 m from the kerb (see

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Appendix D). However, under LAQM, local authorities are required to address exceedances at locations that are representative of relevant exposure, i.e. if comparing against an annual mean, a location where a member of the public is likely to spend a significant portion of their time during one year, such as a residential property.

As noted in Defra's Local Air Quality Management Technical Guidance (TG22), the 1-hour mean applies to outdoor locations where members of the public might be reasonably expected to spend one hour or more, such as the pavement of a busy shopping street, but is considered unlikely to apply to this footpath, which is used by members of the public for a shorter period of time.

Whilst there are properties close to the A34, the facades are not 1 m from the kerb. As such, the National Highways modelling is not representative of concentrations likely to be experienced at the nearest residential properties, for the purposes of LAQM.

3 South Oxfordshire and Vale of White Horse District Councils' Air Quality Priorities

3.1 Public Health Context

3.1.1 Public Health Indicators

Public Health England reports health indicators by district, including air quality and active travel indicators (Office for Health Improvement & Disparities, 2023). Table 3.1 provides the most recently published data for air quality and travel indicators for the two local authority areas, compared with the regional and national averages.

Table 3.1: PHE air quality and active travel indicators

Indicator	South Oxfordshire	Vale of White Horse	South East	England	Notes
Air pollution: fine particulate matter (concentrations of total PM2.5, µg/m3) (2020)	7.6	7.6	8.1	7.5	Both South Oxfordshire and Vale of White Horse have lower background concentrations than South East average, although slightly above the national average.
Mortality of adults over 30 years, attributable to particulate air pollution (%) (2021)	5.4	5.4	5.4	5.5	Mortality attributable to particulate air pollution is in line with regional/national averages.
Adults cycling for travel at least three days per week (%) (2019-20)	2.4	3.9	2.4	2.3	Vale of White Horse has a higher proportion of adults cycling than regional or national averages. South Oxfordshire is in line with regional/national averages.
Adults walking for travel at least three days per week (%) (2019-20)	10.9	11.7	14.9	15.1	Both districts have lower proportions of adults walking than regional or national averages.

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In 2020, concentrations of PM_{2.5} in both South Oxfordshire and Vale of White Horse were lower than the South East regional average and slightly above the average for England. The mortality rate for adults over 30 attributed to particulate air pollution was 5.7% for both South Oxfordshire and Vale of White Horse, again, slightly lower than the average figure for the region, and higher than the national average.

Active travel indicators showed that Vale of White Horse has a relatively high proportion of adults cycling for travel, whereas both Vale of White Horse and South Oxfordshire have relatively low proportion of adults walking.

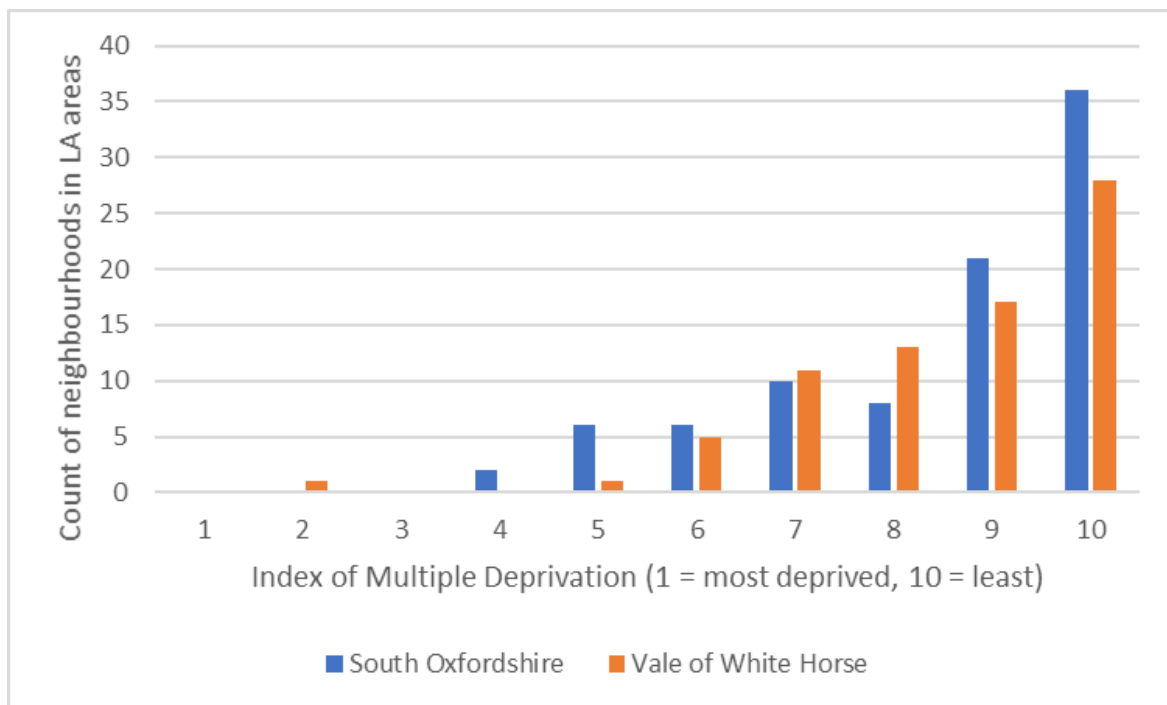
Although the AQMAs in South Oxfordshire and Vale of White Horse have been declared for NO₂ concentrations, any measures to reduce NO₂ concentrations would also help to reduce PM_{2.5} concentrations.

3.1.2 Inequalities

Overall, South Oxfordshire and Vale of White Horse District Councils are affluent areas. Figure 3-1 shows the majority of neighbourhoods in these local authority areas are in the least deprived 10% of the national neighbourhoods (Ministry of Housing, Communities and Local Government, 2019)). However, both districts contain pockets of higher deprivation as shown in Figure 3-2 (Department for Levelling Up, Housing and Communities and Ministry of Housing Communities & Local Government, 2019). The three most deprived areas are located in: Abingdon (Vale 008C), an area covering Saxton Road, Hogarth Place and Gainsborough Green; the west part of Didcot (South Oxfordshire 010A), located west of Wallingford; and an area covering Berinsfield and north Dorchester (South Oxfordshire 006B), to the north of Wallingford. Impacts on these areas will be considered in implementation of measures to improve air quality, although it should be noted that none of the most deprived areas are within an AQMA, hence area wide air quality measures would be most applicable.

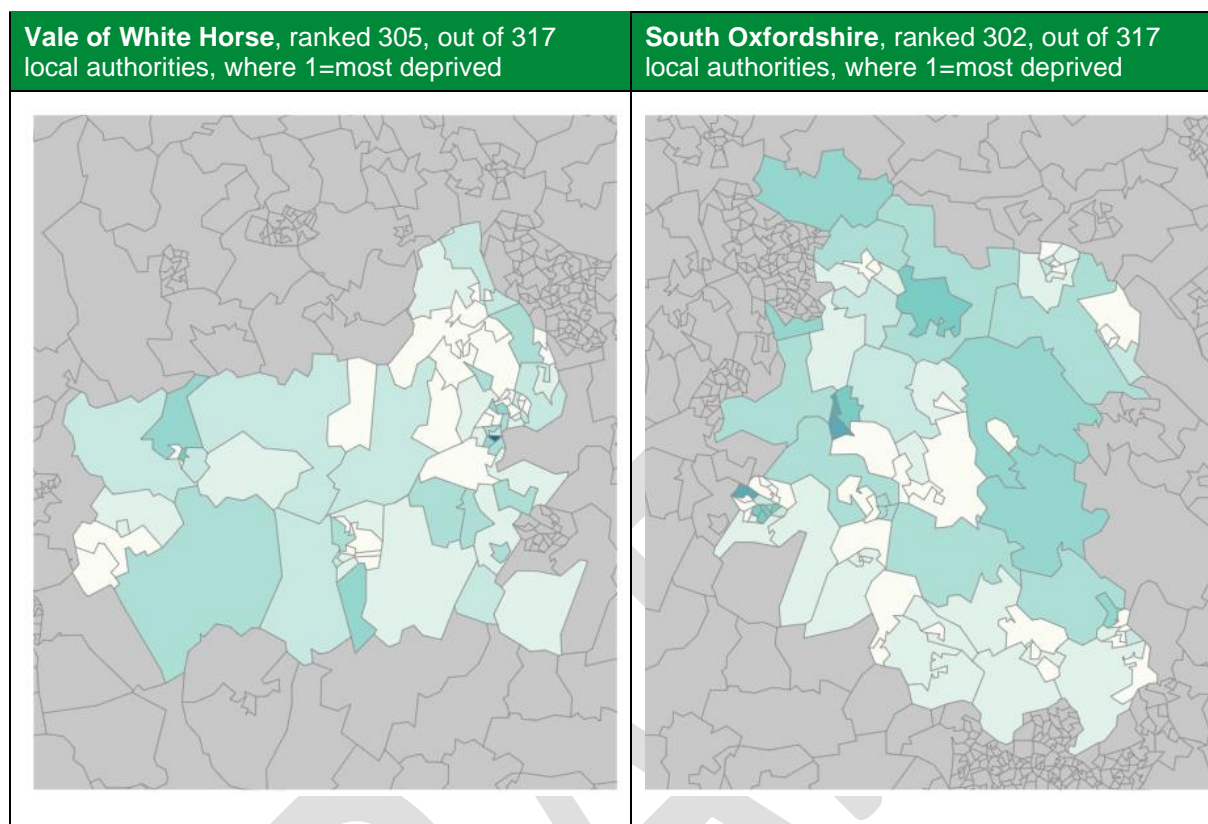
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Figure 3-1: Count of neighbourhoods in South Oxfordshire and Vale of White Horse by deciles of multiple deprivation, where 1 = most deprived 10% of neighbourhoods nationally, and 10 = least deprived 10%



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Figure 3-2: Deprivation maps of South Oxfordshire and the Vale of White Horse (more deprived neighbourhoods are darker in colour)



3.2 Planning and Policy Context

3.2.1 Measures common to both South Oxfordshire and Vale of White Horse

Under respective previous AQAPs, joint actions taken between South Oxfordshire and the Vale of White Horse have included:

- an anti-idling campaign, targeting pollution at schools (South Oxfordshire and Vale of White Horse District Councils, 2023b),
- a review of the joint taxi licensing policy, which introduced emission standards (at least Euro 4 by 2022 and at least Euro 6 by 2026) and required drivers not to allow their engines to idle at taxi ranks (SODC, 2021);
- a review of council and contractors fleets;

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- school travel plans developed through Modeshift Stars programme, run by Oxfordshire County Council (Modeshift, 2023);
- promotion of Street Tag, a digital app that promotes cycling or walking to primary school
- eco-driving workshop for council officers; and
- cycling and walking schemes.

Both councils have produced Air Quality Guidance for Developers (SODC 2019, VOWHDC 2019b), which sets out how air quality should be considered by new developments, and the requirements for mitigation, including EV infrastructure and travel plans.

In 2019, both councils declared a climate emergency and have set targets to become carbon neutral. Following this declaration, both councils' Climate and Ecological Emergencies Advisory Committee set targets to become carbon neutral within their own operations by 2025, and to become carbon neutral districts by 2030. The emission reduction measures and targets within the Corporate Plans for both councils reflect these priorities (SODC 2020, VOWHDC 2020).

Looking forwards, the two district councils are developing a joint Local Plan, partly as a means of developing joint actions to reduce carbon emissions (South Oxfordshire and Vale of White Horse District Councils, 2023a).

3.2.1 Measures targeted at South Oxfordshire

In 2015, South Oxfordshire published a Low Emission Strategy (SODC, 2015) to set an integrated approach to managing transport emissions associated with poor air quality and climate change. This included five core themes:

- promoting low emission behaviours;
- supporting the uptake of electric vehicles;
- a bus emission strategy;
- a freight emission strategy; and
- low emission planning and procurement.

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South Oxfordshire has updated parking charges to provide a 50% discount in parking charges for owners of low emission vehicles (classified as vehicles able to travel at least 20 miles with zero CO₂) when purchasing annual or three month permits (SODC, 2022b).

3.2.2 Measures targeted at Vale of White Horse

The Oxfordshire Local Transport and Connectivity Plan (LTCP) 2022-2050 (OCC, 2022e) makes provision for Area Travel Plans, focussed on specific geographic areas in Oxfordshire, one of which is Abingdon. The Local Cycling and Walking Infrastructure Plan (LCWIP) for Abingdon is due to be adopted in 2023 (OCC, 2022a), which will improve walking and cycling connectivity across the town, thus reducing the need to use private cars.

Vale of White Horse District Council notes that planned developments could increase traffic through Marcham and have a negative impact on air quality in the Marcham AQMA. The council is working with Oxfordshire County Council to review options for the A415 in the Marcham and Frilford area and to address traffic issues and air quality in the Marcham AQMA. A new 'low-cost automatic analyser was also installed in Marcham at the end of 2021, recording real-time data (Air Quality England website, 2023).

For Botley, National Highways undertook an audit of potential measures to reduce NO₂ concentrations on the A34. No viable measures were identified that would reduce concentrations to less than 40 µg/m³ at a distance of 1m from the kerb (see Appendix D). However, as highlighted above, National Highways models were based on achieving compliance at an adjacent footpath, rather than the nearest residential property. Vale of White Horse can therefore continue to review measures that would

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improve air quality for these properties. Any reduction in NO₂ concentrations would have positive health impacts⁴.

3.2.1 Oxfordshire-wide actions

Measures to reduce the attractiveness of driving to Oxford may help to reduce emissions on the A34, affecting the Botley AQMA.

- Oxfordshire County Council manages five park and ride sites around Oxford (OCC, 2023), the southernmost, Redbridge, could reduce car journeys on the A34.
- Oxfordshire County Council has proposed a Workplace Charging Levy (OCC, 2022g) for businesses with 11 or more staff parking spaces in Oxford City Council's administrative area, within the Oxford ring road.

Oxfordshire-wide actions include the following:

- An updated website providing information on air quality in Oxfordshire (Oxfordshire District Councils, 2023).
- Installation of EV charging points through Oxfordshire Park and Charge (Office for Zero Emission Vehicles, 2021).
- Oxfordshire's Bus Service Improvement Plan (OCC, 2022b) includes targets to improve journey times, reliability, passenger numbers and passenger satisfaction. It also aims to provide more frequent services, as well as integration with other modes, improvements in fares and ticketing (targeting

⁴ It is estimated that over the next 100 years, a 1 µg/m³ reduction in NO₂ across the UK, could save between 420,000-903,000 years of life across the population, with an increase in average life expectancy of around 2-5 days, as referenced in the Committee on the Medical Effects of Air Pollutants (COMEAP)'s report: Associations of long-term average concentrations of nitrogen dioxide with mortality.

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fare reductions for 16 and 17 year olds and low paid NHS employees), investments in bus priority measures⁵.

- Oxfordshire LTCP includes:
 - headline targets to:
 - reduce car journeys (by 2030 replace / remove 1 out of every 4 current car trips, and by 2040 replace / remove an additional 1 out of 3 car trips in Oxfordshire),
 - increase active travel (by 2030 increase cycle trips in Oxfordshire from 600,000 to 1 million trips per week); and
 - deliver a net zero transport network by 2040, and a transport network contributing to a climate positive future by 2050;
 - promotion of Healthy (Policy 9) and Safe (Policy 10) Streets;
 - working with schools, employers and businesses to promote travel choices (Policy 11);
 - developing the 20-minute neighbourhoods (Policy 13) and on integrated transport and land use planning (Policy 14);
 - improving public transport, including acceleration of zero emission buses across the region (Policy 18), and supporting multimodal travel (Policy 22), mobility hubs (Policy 23), micro mobility (e-scooters) (Policy 38), car clubs (Policy 39);
 - (a) continued implementation of the Zero Emission Zone (ZEZ) in Oxford and (b) investigation of Clean Air Zones and ZEZ schemes for other parts of Oxfordshire where traffic emissions are contributing significantly to air pollution problems (Policy 28);

⁵ Note, Oxfordshire County Council was awarded grand funding under the Zero Emission Bus Regional Areas (ZEBRA) scheme, which coupled with additional funding from the County Council and bus companies will fund a fleet of 159 buses to be used on routes within Oxford City.

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- Delivering infrastructure requirements for zero emission vehicles (Policy 29)
 - parking management, including reference to workplace parking levy (Policy 33)
 - promotion of rail freight for the long distance movement of goods (Policy 48), appropriate routes for HGVs (Policy 49); promotion of freight consolidation and last mile goods movement (Policy 50); and
 - collaborative regional working (Policy 51), transport corridor strategies, including for M40/A34 (Policy 53); tailored solutions for smaller market towns (Policy 54).
- Oxfordshire County Council adopted has adopted new requirements for Transport Assessments, based on 'Decide and Provide' (OCC, 2022d). This moves away from the traditional approach of 'Predict and Provide', which uses current or historical traffic patterns to determine the future need for infrastructure, but which tends to simply maintain the status quo and focus on provision of capacity for private car journeys. The 'decide and provide' approach enables Oxfordshire County Council to prioritise active travel and public transport and reduce reliance on private cars.
 - Oxfordshire County Council's updated Parking Standards for New Developments (OCC, 2022f) significantly reduce residential and commercial parking provision, and set maximum, rather than minimum standards.
 - Oxfordshire Freight and Logistics Strategy 2022-2050 includes 47 separate actions to reduce the impacts of freight (OCC, 2022c).
 - Oxfordshire Rail Corridor Study and strategy to identify potential requirements for Oxfordshire's future trains services in the medium (2028) and long-term (2033), (Network Rail, 2021).
 - There are several active car club operators in Oxfordshire, which are promoted through South Oxfordshire's website (SODC, 2023).
 - Oxfordshire LiftShare provides alternatives to single occupancy driving (Mobilityways Limited, 2023).

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- Oxfordshire's Cycling & Walking Activation Programme seeks to support behaviour change and encourage active travel, particularly for those residents who experience the greatest barriers to walking and cycling.

3.3 Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within South Oxfordshire and Vale of White Horse District Councils' areas.

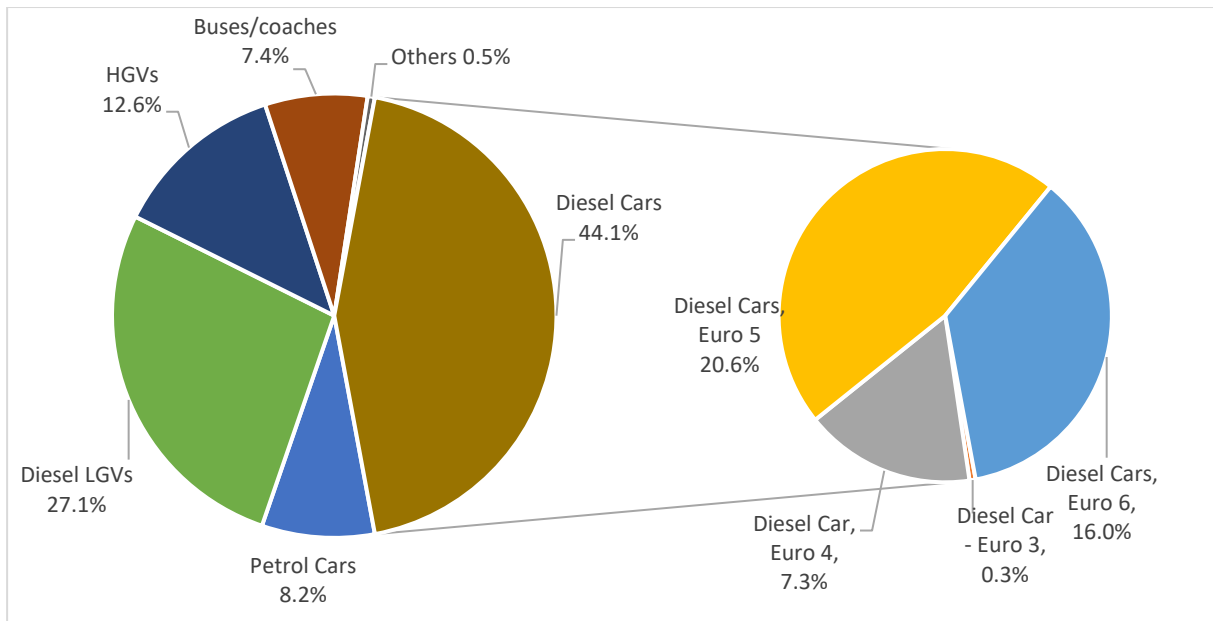
A source apportionment exercise was carried out by both councils in 2022, where traffic surveys were carried out within each AQMA with the exception of Botley. For Botley, traffic data were taken from Department for Transport traffic counts, and the default breakdown for vehicle categories and engine types was used.

The source apportionment identified that within all the AQMAs, the largest contribution to vehicle emissions of NO_x was from diesel cars and diesel vans. The breakdown is described below, with further detail on Euro classes provided for those AQMAs where more targeted measures may be required.

3.3.1 South Oxfordshire: Henley

The contribution to NO_x emissions from vehicles in Henley can be seen in Figure 3-3. The largest contribution is from diesel cars (44%), followed by diesel vans (27%), HGVs (13%), petrol cars (8%) and buses (7%). The smaller pie chart to the right shows the further breakdown of diesel cars into Euro categories, showing that the largest component is from Euro 5 engines (21%), followed by Euro 6 (16%), and Euro 4 (7%).

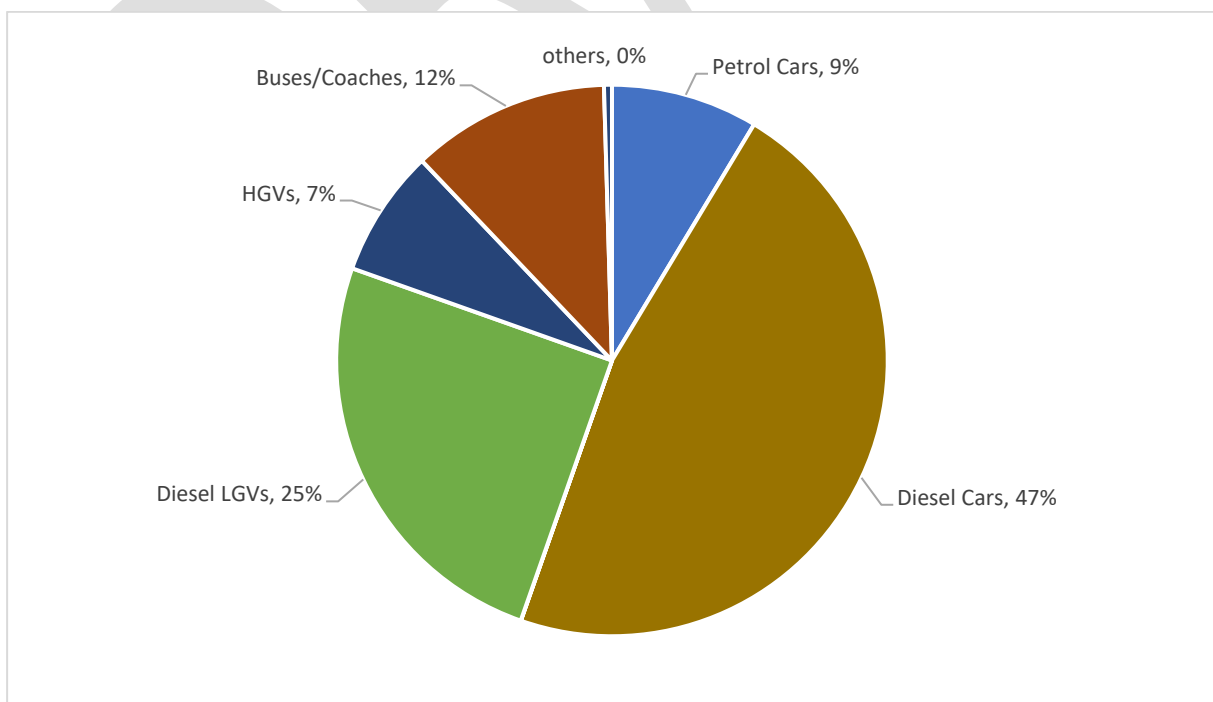
Figure 3-3: Source Apportionment of Vehicle Emissions, Henley



3.3.2 South Oxfordshire: Wallingford

The contribution to NO_x emissions from vehicles in Wallingford can be seen in Figure 3-4. The largest contribution is from diesel cars (47%), followed by diesel vans (25%), buses (12%), petrol cars (9%), and HGVs (7%).

Figure 3-4: Source Apportionment of Vehicle Emissions, Wallingford

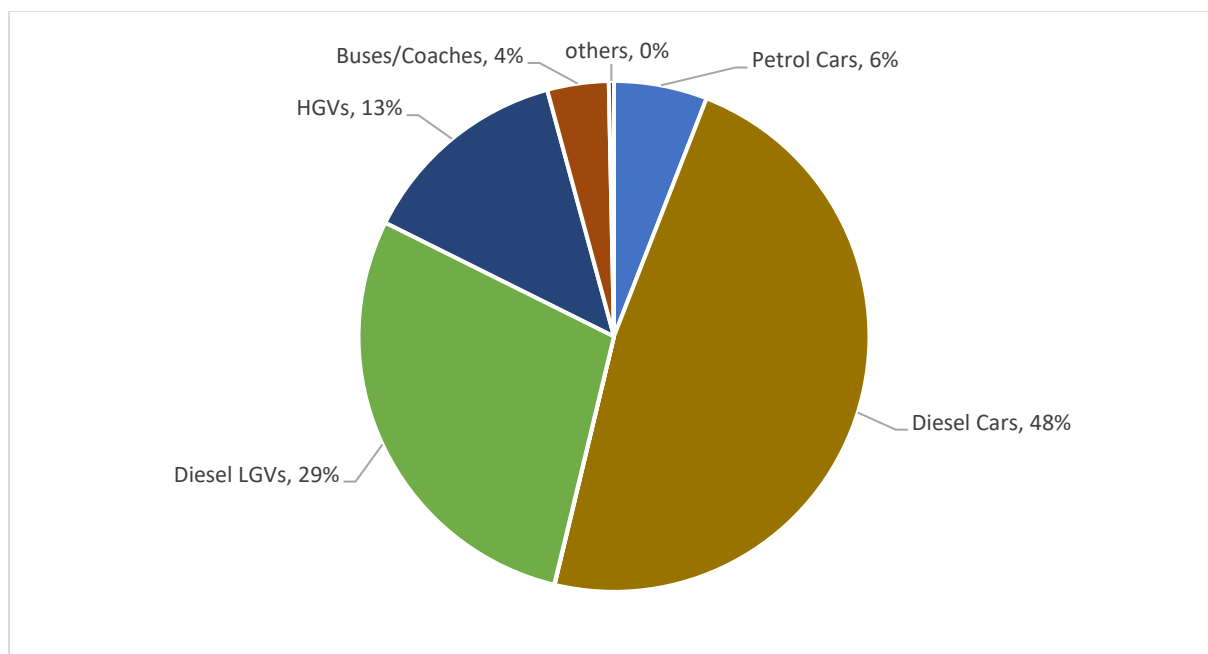


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3.3.3 South Oxfordshire: Watlington

The contribution to NO_x emissions from vehicles in Watlington can be seen in Figure 3-5. The largest contribution is from diesel cars (48%), followed by diesel vans (29%), HGVs (13%), petrol cars (6%), and buses (4%).

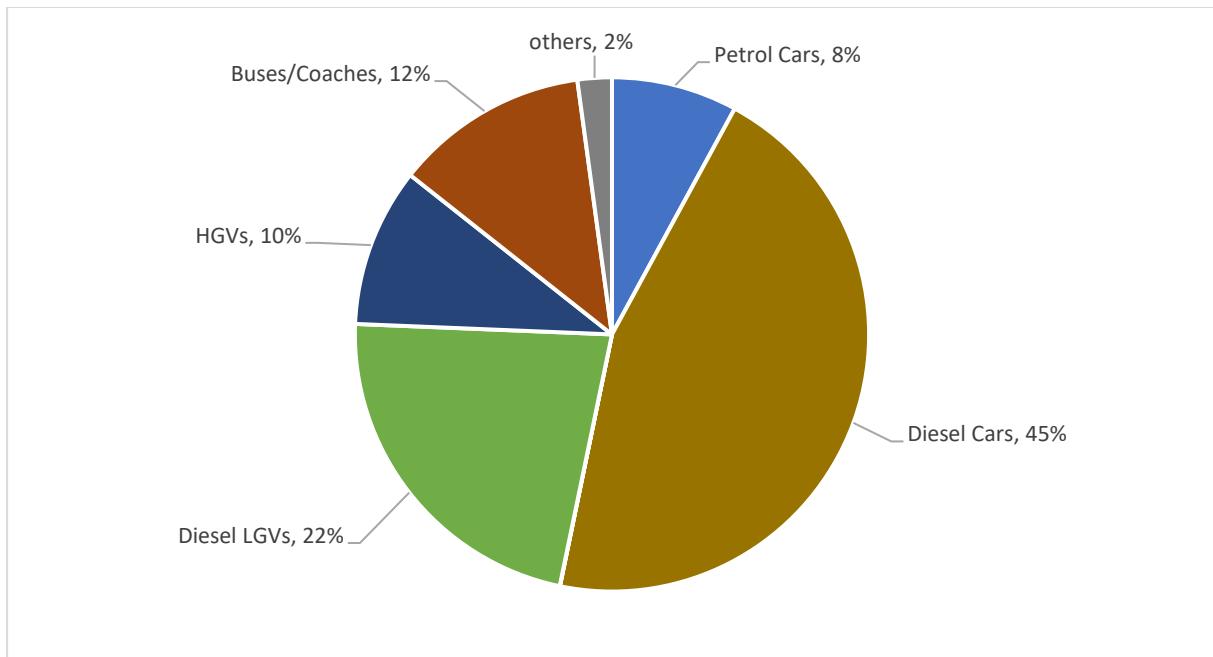
Figure 3-5: Source Apportionment of Vehicle Emissions, Watlington



3.3.4 Vale of White Horse: Abingdon

The contribution to NO_x emissions from vehicles in Abingdon can be seen in Figure 3-6. The largest contribution is from diesel cars (45%), followed by diesel vans (22%), buses (12%), HGVs (10%), and petrol cars (8%).

Figure 3-6: Source Apportionment of Vehicle Emissions, Abingdon

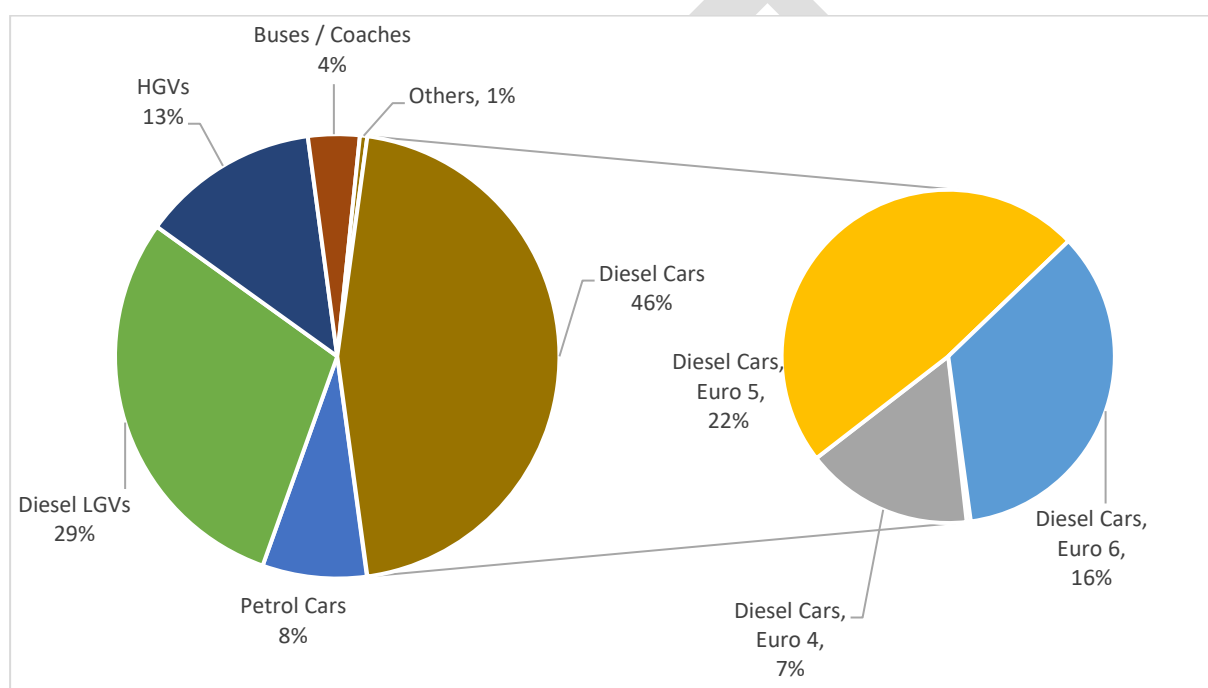


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3.3.5 Vale of White Horse: Marcham

The contribution to NO_x emissions from vehicles in Marcham can be seen in Figure 3-7. The largest contribution is from diesel cars (46%), followed by diesel vans (29%), HGVs (13%), petrol cars (8%) and buses (4%). The smaller pie chart to the right shows the further breakdown of diesel cars into Euro categories, showing that the largest component is from Euro 5 engines (22%), followed by Euro 6 (16%), and Euro 4 (7%).

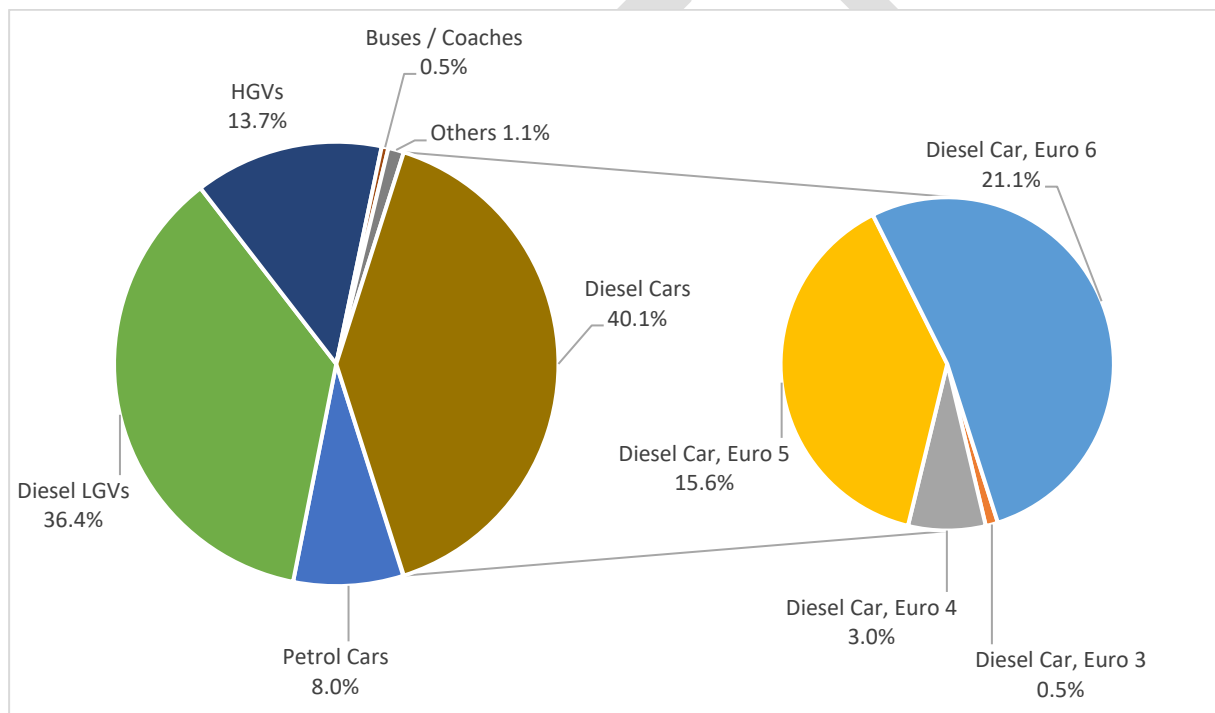
Figure 3-7: Source Apportionment of Vehicle Emissions, Marcham



3.3.6 Vale of White Horse: Botley

The contribution to NO_x emissions from vehicles in Botley can be seen in Figure 3-8. The largest contribution is from diesel cars (40%), followed by diesel vans (36%), HGVs (14%)⁶, petrol cars (8%) and buses (<1%). The smaller pie chart to the right shows the further breakdown of diesel cars into Euro categories, showing that the largest component is from Euro 6 engines (21%), followed by Euro 6 (16%), and Euro 4 (3%).

Figure 3-8: Source Apportionment of Vehicle Emissions, Botley



⁶ Although HGVs make up around 10% of the vehicle fleet in Botley, which is a higher proportion than at other locations such as Marcham (around 3%), they contribute a relatively lower proportion to overall NO_x emissions in Botley, due to a combination of higher average speeds, and a higher proportion of lower emitting Euro 6 engines.

3.4 Required Reduction in Emissions

With the exception of Botley, concentrations at all other AQMAs within South Oxfordshire and Vale of White Horse have not exceeded 40 µg/m³ since 2020. For Botley, the required reduction in emissions has been calculated for the site S30 using the distance corrected figure, in accordance with Defra Technical Guidance (LAQM.TG22), as shown in the table below. However, it should be noted that this is likely to be an overestimate, as concentrations measured at the façade of the nearest property to site S30 were below 40 µg/m³.

NO₂ concentrations at worst-case relevant exposure location [S30]:	47.3 µg/m³
Step 1: Local background concentrations of NO ₂ for 2022	10.4 µg/m ³
Step 2: Road NO _x concentrations equating to 47.3 µg/m ³	78.2 µg/m ³
Step 3: Road NO _x concentrations required to give total NO ₂ concentration of 40 µg/m ³	60.6 µg/m ³
Step 4: Road NO _x reduction required	17.6 µg/m ³
Percentage reduction in road NO_x required	23%

3.5 Key Priorities

- Priority 1 – Reduce traffic emissions within Botley AQMA (23% reduction in road NO_x required to achieve compliance with annual mean NO₂ objective at the worst case location). Main sources of NO_x emissions are cars (48%, of which 40% diesel, 8% petrol), LGVs (36%) and HGVs (14%). Buses/coaches account for less than 1% of NO_x emissions. Diesel cars are a particular issue, as even Euro 6 diesel cars are responsible for 20% of total NO_x emissions, compared with 8% for all petrol cars.
- Priority 2 – Reduce traffic emissions in Henley AQMA. Main sources of NO_x emissions are cars (52%, of which 44% diesel, 8% petrol), LGVs (27%), HGVs

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(13%) and buses/coaches (7%). Again, diesel cars are a key issue, with Euro 6 diesel cars responsible for 16% of total NO_x emissions, compared with 8% for all petrol cars.

- Priority 3 – Reduce traffic emissions in Marcham AQMA. Main sources of NO_x emissions are cars (54%, of which 46% diesel, 8% petrol), LGVs (29%), HGVs (13%) and buses/coaches (4%). Euro 6 diesel cars are responsible for 16% of total NO_x emissions, compared with 8% for all petrol cars.
- Priority 4 – Area wide measures to improve air quality across all AQMAs.

4 AQAP Measures

Table 4.1 shows the AQAP measures for South Oxfordshire and Vale of White Horse District Councils. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- estimated cost of implementing each action (overall cost and cost to the local authority)
- expected benefit in terms of pollutant emission and/or concentration reduction
- the timescale for implementation
- how progress will be monitored

NB: Please see future ASRs for regular annual updates on implementation of these measures

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Table 4.1 – Area-wide Air Quality Action Plan Measures, addressing concentrations in all AQMAs (in order of effectiveness, with the most effective measure first)

Responsibility for implementation: SODC/VOWHDC (blue) / Oxfordshire County Council (red) / Joint measures (purple)

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Lead Organisation	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
AW1	Promotion of public transport uptake	Promoting Travel Alternatives	Other	Ongoing	Ongoing	Oxfordshire County Council	Bus Service Improvement Plan funded via the National Bus Strategy, additional aspirational currently unfunded (investigating developer contributions and DfT bid opportunities)	No	Partially funded	>£10 M	Planning / implementation	Reduced vehicle emissions	Public transport uptake and private cars as proportion of total journeys	Specific measures included within BSIP Delivery Plan build on previous progress under LTCP.	BSIP Measures include bus priority infrastructure, real time information, support for youth fares, ticketing reform, support for bus services, marketing/journey planning

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Lead Organisation	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
AW2	Promotion of cycling	Promoting Travel Alternatives	Promotion of cycling	Ongoing	Ongoing	Oxfordshire County Council	Future funding sources not yet determined, will continue to investigate developer contributions and DfT grant opportunities.	No	Partially funded	£1 million - £10 million	Planning / implementation	Reduced vehicle emissions	Number of cycling trips per week and percentage of residents cycling by purpose	Some funding secured. Work being progressed includes development of strategic active travel network and LCWIPs. There is also ongoing delivery of supporting measures to promote cycling such as 20mph zones, a range of measures to promote active travel to school and specific initiatives in more deprived areas to reduce barriers to cycling	Long timescale to deliver comprehensive improvements across the county
AW3	Review options to	Freight and Delivery	Other	2023	2025	Oxfordshire County Council	Not yet determined, will investigate	No	Not funded	£1 million - £10 million	Planning	Reduced HGV emission	Completion of review and plan	Countywide area weight restriction	Area wide review, including a particular focus on

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Lead Organisation	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
	reduce freight emission, including weight limits and enforcement	Management					the future DfT bid opportunities					within AQMAs	to implement rec's	study underway	potential options for Marcham, Watlington and Henley to reduce emissions at the AQMAs.
AW4	Upgrading council owned vehicle fleet	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2023	2025	SODC, VOWHDC	Not yet determined, although will investigate future Defra AQ Grant Bid	No	Not funded	£500k - £1 million	Implementation	Reduced vehicle emissions	% of fleet that is zero (tailpipe) emission	Planning phase, following review of options in 2022	Zero emissions fleet by 2025, incl. staff training, and collaboration with Biffa to review / upgrade refuse fleet.
AW5	Low Emission & Air	Policy Guidance and Development	Air Quality Planning and	2024	2025	SODC, VOWHDC (Oxfordshire)	Not yet determined, although	No	Not funded	£10k - £50k	Planning	Reduced vehicle emissions (NO ₂).	AQ & Emissions	Both Local Authorities have already published	Joint AQ & Emissions Strategy, incl. EV

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Lead Organisation	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
	Quality Policy and Guidance	Control	Policy Guidance			County Council partner)	will investigate future Defra AQ Grant Bid					Addressing other key sources (PM _{2.5})	Strategy adopted	planning guidance, which can be adopted as part of the Local Plan. OCC is developing a county-wide Air Quality Strategy	infra, procurement guidance and wider area strategy for particulates (incl. solid fuel burning). Will require joint working with OCC and other local partners. Adoption of existing planning guidance as part of the Local Plan.
AW6	Public info, linked to AQ monitoring results	Public Information	Via leaflets/posters, radio, television, internet/social	Ongoing	Ongoing	SODC, VOWHDC (Oxfordshire County Council and other Oxfordsh	Not yet determined, although will investigate future Defra AQ Grant	No	Not funded	£10k - £50k	Implementation	Reduced vehicle emissions Reduced personal exposure	Completion of Comms Strategy, and plan to implement rec's	Recently updated Oxfordshire website providing air quality monitoring and	To include mass media campaigns, as well as targeted communications, e.g. information from

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Lead Organisation	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
			media, other			ire LAs partners)	Bid. Some Public health funding is available to promote new Air Quality website for Oxfordshire							health information. Developing partnership with Integrated Care System	projects with local schools using mobile sensors.
AW7	Feasibility study on use of green infrastructure	Transport Planning and Infrastructure	Green Infrastructure	2024	2025	SODC, VOWHDC	Not yet determined, although will investigate future Defra AQ Grant Bid	No	Not funded	<£10k	Planning	Reduced personal exposure	Completion of feasibility study and plan to implement rec's	Planning phase, new work area	Review potential mitigation from green infrastructure, focussed on AQMAs (incl. selection of tree species)

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Table 4.2 – Action Plan Measures specific to Henley (in order of effectiveness, with the most effective measure first)

Responsibility for implementation: SODC/VOWHDC (blue) / Oxfordshire County Council (red)

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
H1	Henley Low Emission Neighbourhood, incl. promotion of cycling and walking	Transport Planning and Infrastructure	Other	2023	2025	Oxfordshire County Council (SODC partners)	Not yet determined, will investigate developer contributions and bid opportunities.	No	Partially funded	£100k - £500k	Planning	Reduced vehicle emissions (private cars)	Annual average concentration of NO ₂ within Henley AQMA	Park and charge and EV car club underway in Henley	Area based package of measures, incl. promoting walking / improved walking infrastructure, improving cycle network, EV infrastructure, targeted behaviour change and travel planning
H2	Strategic highway improvements to relieve	Traffic Management	Strategic highway improvements	Not yet determined	Not yet determined	Oxfordshire County Council	Not yet determined	No	Not funded	Not yet determined	Planning	Reduced vehicle emissions within Henley AQMA	Annual average concentration of NO ₂ within Henley AQMA	Strategic highway reviews by OCC	Review to consider all options to reduce vehicle emissions within Henley AQMA,

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
	pressure on traffic in Henley														including redirecting traffic, junction and road improvement schemes, traffic calming.
H3	Parking review, including implementation of park and ride / stride, and emission based parking incentives	Promoting Low Emission Transport	Other	2023	2025	SODC, (Oxfordshire County Council partner)	Not yet determined, although will investigate future Defra AQ Grant Bid	No	Not funded	£100k - £500k	Planning	Reduced vehicle emissions (private cars)	Annual average concentration of NO ₂ within Henley AQMA	Building on review of parking charges	Incl. Park and Stride, rail based Park and Ride, priority parking for EVs, review of emission based parking charges., workplace parking levy

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
H4	Henley HGV Emission Management Plan	Freight and Delivery Management	Other	2023	2025	Oxfordshire County Council	Not yet determined	No	Not funded	£100k - £500k	Planning	Reduced vehicle emissions (HGVs) within Henley AQMA	Annual average concentration of NO ₂ within Henley AQMA	Linked to area wide measure (AW3)	Incl. review of Henley Freight Partnership, Strategic Routing Strategy, weight restriction zone enforcement
H5	Develop a Low Emission Taxi Strategy	Promoting Low Emission Transport	Taxi emission incentives	2023	2024	SODC	Not yet determined, although will investigate future Defra AQ Grant Bid	No	Not funded	£10k - £50k	Planning	Reduced vehicle emissions (taxis)	Adoption of Strategy with plan to implement recommendations	Planning phase – building on taxi licensing review	Incl. review of LEV priority space in Henley Taxi Ranks (Hart St. and Railway Station), review of financial incentives / grants / subsidies available
H6	Low emission school	Promoting Travel	Other	2023	2027 (ongoing)	Oxfordshire County Council	Future funding sources not yet	No	Not funded	£100k - £500k	Planning	Reduced vehicle emission	Annual average concentration of	Building on ongoing work with schools and colleges	Integrated programmes with Henley

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
	ols and colleges	Alternatives				(SODC partners)	determined					s (private cars)	NO ₂ within Henley AQMA	across the county	schools and colleges, linking active travel engagement to air quality monitoring projects. Plus review of options for promoting active travel to school, including School Streets, wayfinding, park and stride.
H7	Anti-idling enforcement	Traffic Management	Anti-idling awareness and enforcement	Ongoing	Ongoing	SODC	Not yet determined, although will investigate future Defra AQ Grant Bid	No	Not funded	£50k - £100k	Planning	Reduced vehicle emissions within Henley AQMA	Annual average concentration of NO ₂ within Henley AQMA	Building on anti-idling awareness campaigns across both District Councils	Anti-idling awareness and enforcement, increased enforcement from traffic wardens, following recent anti-

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation	
																idling campaign

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Table 4.3 – Action Plan Measures specific to Marcham (in order of effectiveness, with the most effective measure first)

Responsibility for implementation: SODC/VOWHDC (blue) / Oxfordshire County Council (red)

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
M1	Strategic highway improvements to relieve pressure on through traffic in Marcham (incl. potential bypass)	Traffic Management	Strategic highway improvements	Not yet determined	Not yet determined	Oxfordshire County Council	Not yet determined	No	Not funded	Not yet determined	Planning	Reduced vehicle emissions within Marcham AQMA	Annual average concentration of NO ₂ within Marcham AQMA	Strategic highway review by OCC	Review to consider all options to reduce vehicle emissions within Marcham AQMA, including redirecting traffic (incl. potential route for bypass), junction and road improvement schemes, traffic calming.

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
M2	Marcham HGV Emission Management Plan	Freight and Delivery Management	Other	2023	2025	Oxfordshire County Council	Not yet determined	No	Not funded	£100k - £500k	Planning	Reduced vehicle emissions (HGVs) within Henley AQMA	Annual average concentration of NO ₂ within Henley AQMA	Linked to area wide measure (AW3)	Incl. Strategic Routing Strategy and enforcement of weight restriction zone

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Table 4.4 – Action Plan Measure specific to Botley. Responsibility for implementation: Oxfordshire County Council (red) / National Highways (orange) /

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
B1	Feasibility study to improve air quality on the A34	Transport Planning and Infrastructure	Other	2023	2024	National Highways (two measures to highlight joint ownership), although requires significant collaboration between NH, OCC and VOWHD C)	Not yet determined	No	Not funded	£50k - £100k	Planning	Improved air quality within Botley AQMA	Completion of feasibility study and plan to implement recommendations	Review work completed by National Highways under the UK NO ₂ Plan (Appendix D).	Focus on actions to reduce traffic and improve air quality, based on 2022 monitoring. Incl. traffic and behaviour surveys, reviews of freight road user charging, compulsory purchase, footpath relocation (noting that the footpath is not a receptor under LAQM but relocation

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Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
															would provide a positive wellbeing impact).
B2	Feasibility study to reduce traffic emissions within Botley	Transport Planning and Infrastructure	Other	2023	2024	Oxfordshire County Council (two measures to highlight joint ownership, although requires significant collaboration between NH, OCC and VOWHDC)	Not yet determined	No	Not funded	£50k - £100k	Planning	Reduced vehicle emissions within Botley AQMA	Completion of feasibility study and plan to implement recommendations	Building on existing body of knowledge through development of LTCP and Central Oxfordshire Plan	To be included within work to develop and deliver the Central Oxfordshire Plan. Focusing on potential actions to reduce traffic travelling to and from Oxford city centre.

Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Alternatives to Private Vehicle Use	Bus based park and ride	Schemes already in existence. Unlikely to result in significant additional emissions reductions.
	Car and lift sharing schemes	
	Car clubs	
Environmental Permits	All actions	AQMAs are declared as a result of traffic emissions. Actions regarding environmental permits would not reduce NO ₂ concentrations in the AQMAs.
Freight and Delivery Management	Delivery and service plans	Delivery and service plans and freight consolidation to be addressed through Oxfordshire County Council's LTCP, Freight and Logistics Strategy.
	Freight consolidation centre	
	Quiet and out of hours delivery	No existing night-time HGV curfews that could be removed in Henley, Marcham or Botley. Targeted measures are not required for Wallingford, Watlington or Abingdon.
	Other (virtual loading bays)	Not applicable to Marcham or Botley. Unlikely to be effective / implementable in Henley due to small geographic scale. Targeted measures are not required for Wallingford, Watlington or Abingdon.

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Action category	Action description	Reason action is not being pursued (including Stakeholder views)
	Other (freight clearway)	Not applicable to Marcham, Botley or Henley. Targeted measures are not required for Wallingford, Watlington or Abingdon.
Policy Guidance and Development Control	Other (Policy on Green Infrastructure)	Unlikely to have significant impact on concentrations in AQMAs. More beneficial to investigate feasibility of implementation.
	Other (Policy on Low Emission Farming)	Farming emissions do not contribute to concentrations in AQMAs.
	Other (land use planning)	Land use planning and 20 minute neighbourhoods already part of Oxfordshire County Council's LTCP
	Regional Groups	Already exist and function effectively in Oxfordshire
Promoting Low Emission Plant	All actions	AQMAs are declared as a result of traffic emissions. Actions regarding low emission plant would not reduce NO ₂ concentrations in the AQMAs.
Promoting Low Emission Transport	Company vehicle procurement	Difficult for councils to influence external company procurement decisions directly (council fleets covered separately). More targeted measures are required.
	Low Emission Zones	Too stringent a measure for most AQMAs where annual average NO ₂ concentrations are already less than 40 µg/m ³ . Difficult for Botley as a strategic highway. Low emission options to be considered separately as part of Botley Feasibility Study
	Taxi Licensing Conditions	Taxi licensing has very recently been amended for both councils, to include emission requirements.

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Action category	Action description	Reason action is not being pursued (including Stakeholder views)
	Other (scrappage schemes)	Usually require national funding. Too broad a measure for the specific AQMAs.
Promoting Travel Alternatives	Encourage and facilitate home working	Significant uptake of home working already as a result of covid-19
	Intensive active travel campaign and infrastructure	Active travel campaigns already ongoing via Oxfordshire County Council.
	Personalised travel planning	Personalised travel planning is currently limited to new developments. Unlikely to result in significant emission reductions compared to intensive effort (and funding) required to implement.
	Promote use of rail and inland waterways	Likely to be more effective as a national policy. Unlikely to have a significant impact in the AQMAs. Included as part of Botley Feasibility Study.
	Workplace travel planning	Already ongoing via Oxfordshire County Council.
Traffic Management	Reduction of speed limits, 20 mph zones	Henley already has 20 mph speed limit. Marcham speed limit is 30 mph, but due to the narrow road, effective speeds are already below 20 mph. A34 (Botley) speed limit is 50mph – reducing this further may cause congestion and therefore exacerbate the problem.
	Testing vehicle emissions	Unlikely to result in significant emission reductions compared to intensive effort (and funding) required to implement.
	Urban Traffic Control (UTC), congestion management, traffic reduction	Henley already has UTC in place. Not suitable for Marcham or Botley. Targeted measures are not required for Wallingford, Watlington or Abingdon.

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Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Transport Planning and Infrastructure	Bus route improvements (incl. routes and frequency)	Already being implemented through Oxfordshire County Council
	Public cycle hire scheme (incl. e-bikes, e-scooters)	Not applicable to AQMAs
	Public transport improvements, interchanges stations and services	Already being implemented through Oxfordshire County Council
	Other (Car park infrastructure / relocation)	Not applicable to AQMAs
	Other (Air Quality Barriers)	Not physically possible to implement due to proximity of receptors to kerbs.
	Other (Tunnels to take traffic away from receptors)	Too costly for the AQ benefits
	Other (Bridges to take traffic away from receptors)	
Vehicle Fleet Efficiency	Driver training and ECO driving aids	Already implemented by South and Vale Councils
	Low Emission Public Transport	Zero emission buses (ZEBRA) implemented in Oxford City Centre by OCC, which will have some benefit for SODC and VOWHDC, as some older vehicles may be replaced by more

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Action category	Action description	Reason action is not being pursued (including Stakeholder views)
		modern buses no longer needed in Oxford. OCC has no further plans or funding for EV buses elsewhere in the county.
	Fleet efficiency and recognition schemes	Potential for district wide scheme, although likely limited impact for the costs required.
	Testing Vehicle Emissions	Unlikely to result in significant emission reductions compared to intensive effort (and funding) required to implement
	Vehicle retrofitting programmes	

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Appendix C: Maps of AQMAs

Figure C-1: Henley AQMA

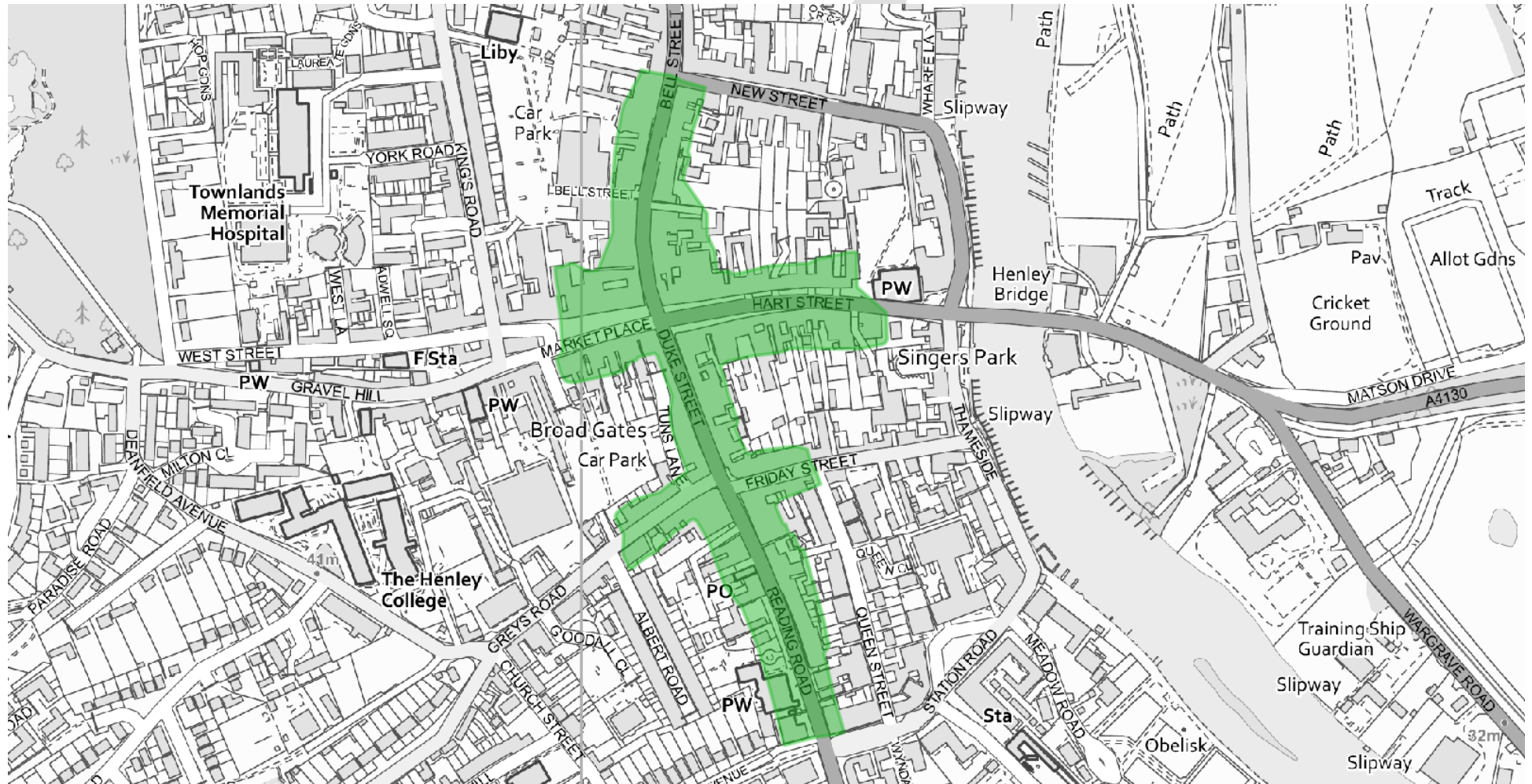


Figure C-2: Wallingford AQMA

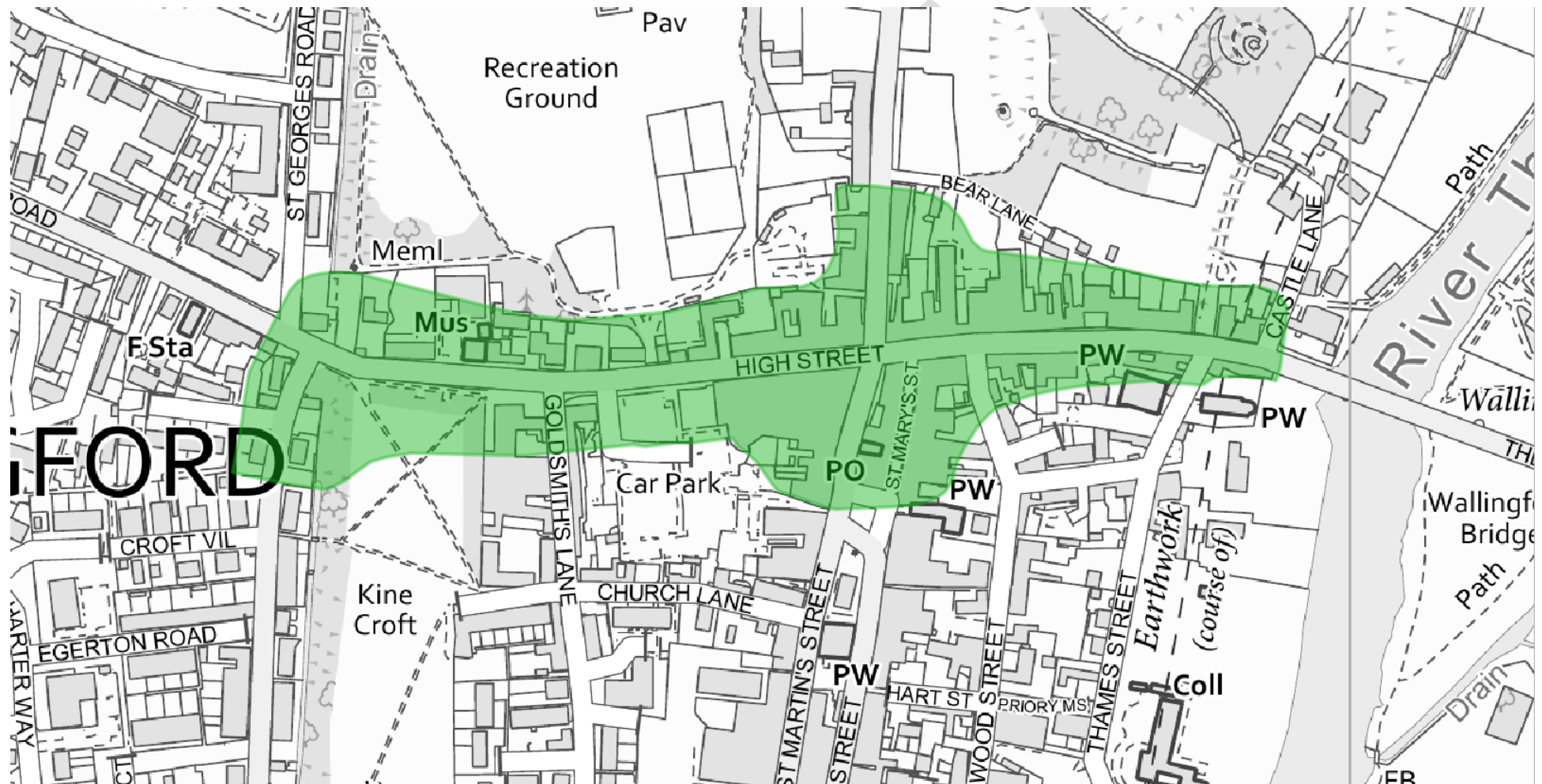


Figure C-3: Watlington AQMA



Figure C-4: Abingdon AQMA



Figure C-5: Marcham AQMA

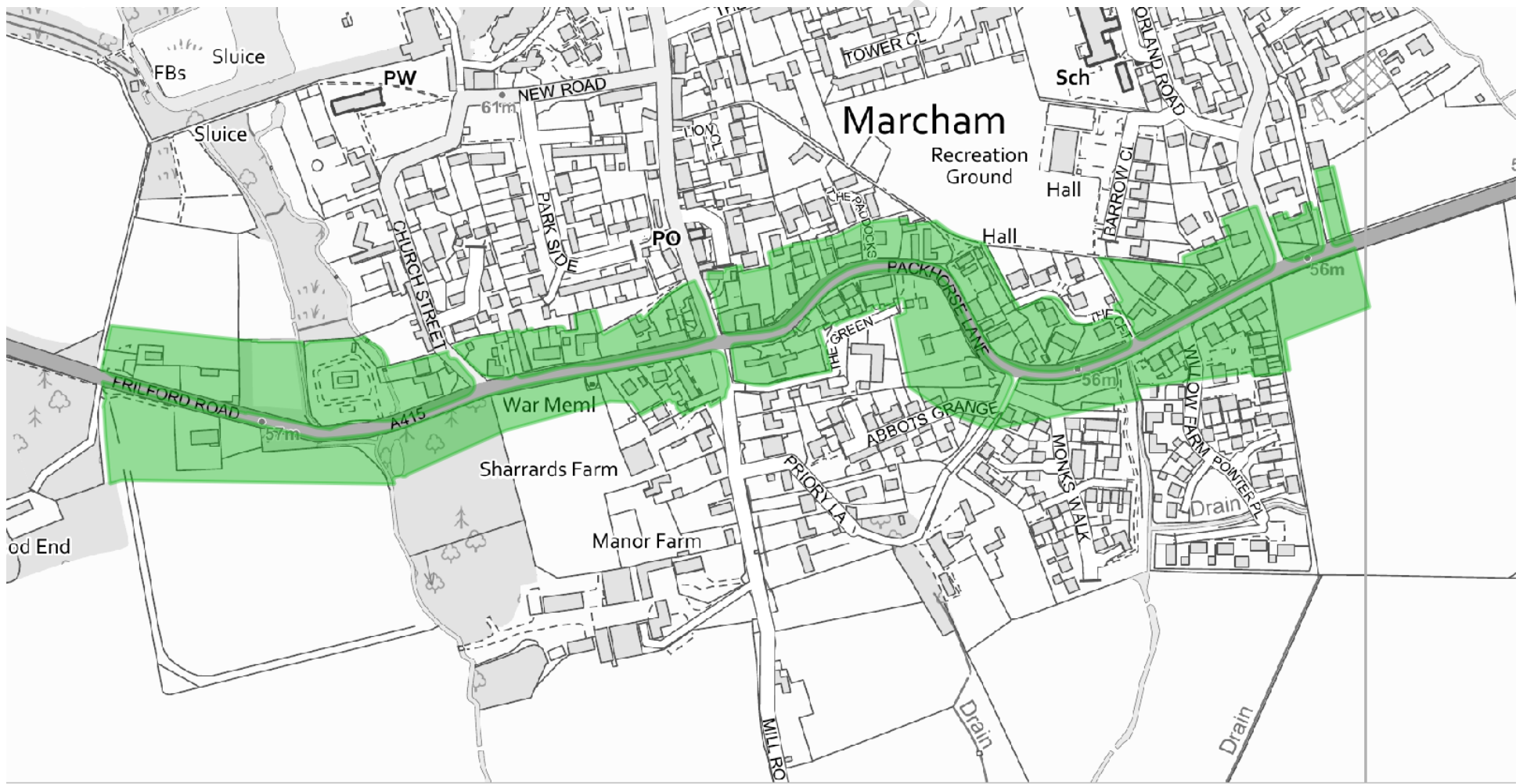
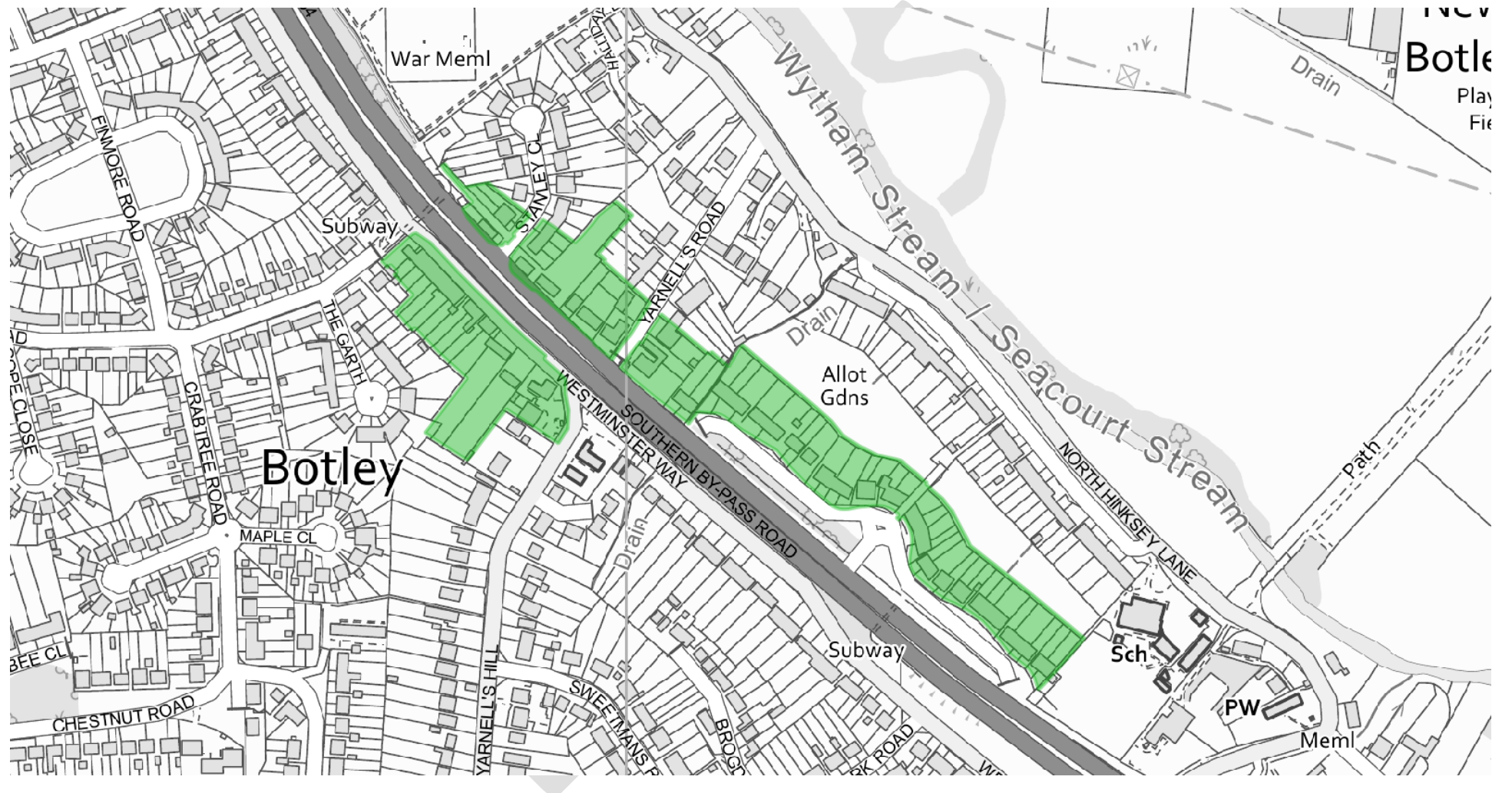


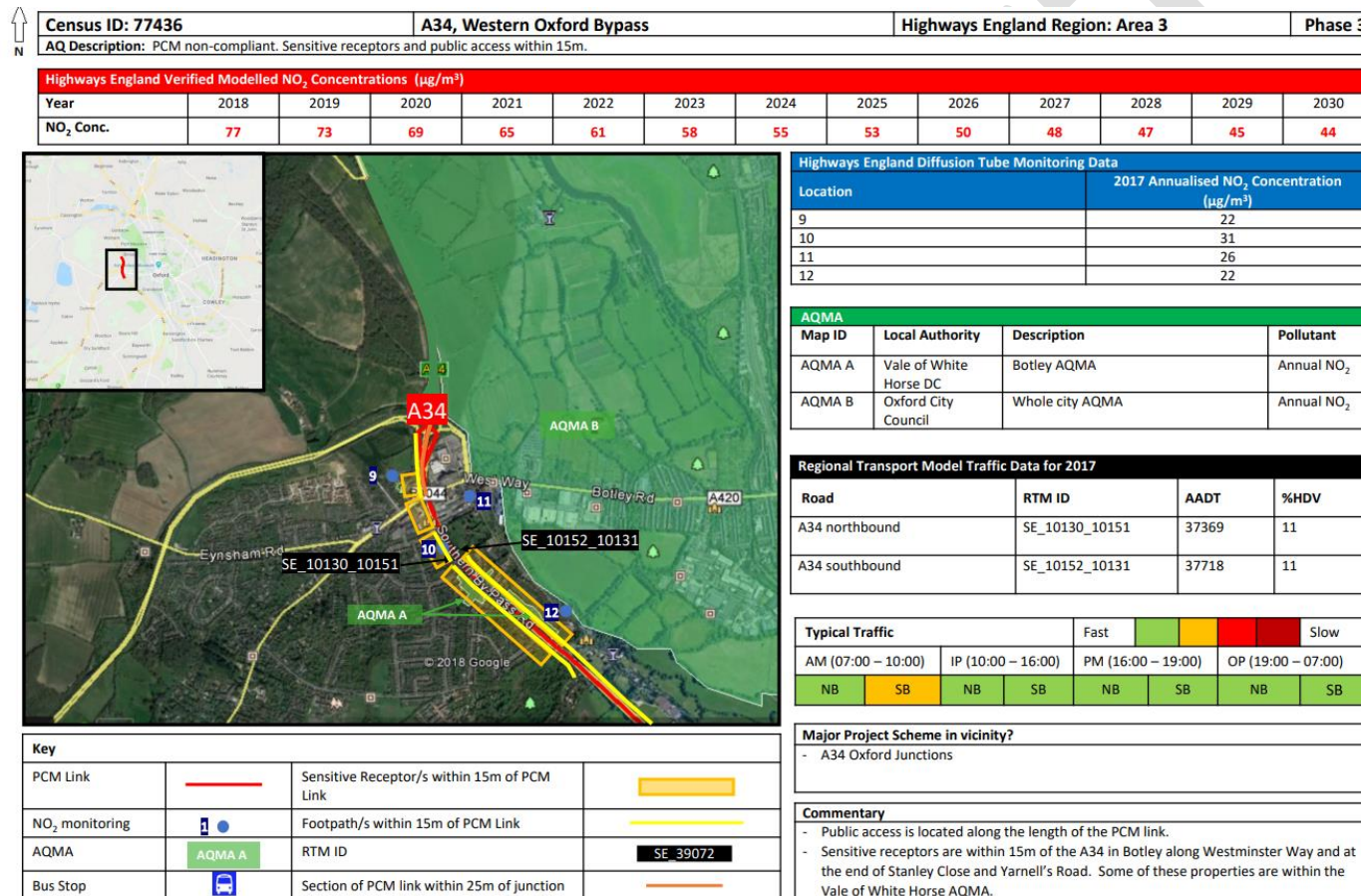
Figure C-6: Botley AQMA



Appendix D: National Highways Reporting relating to Botley AQMA

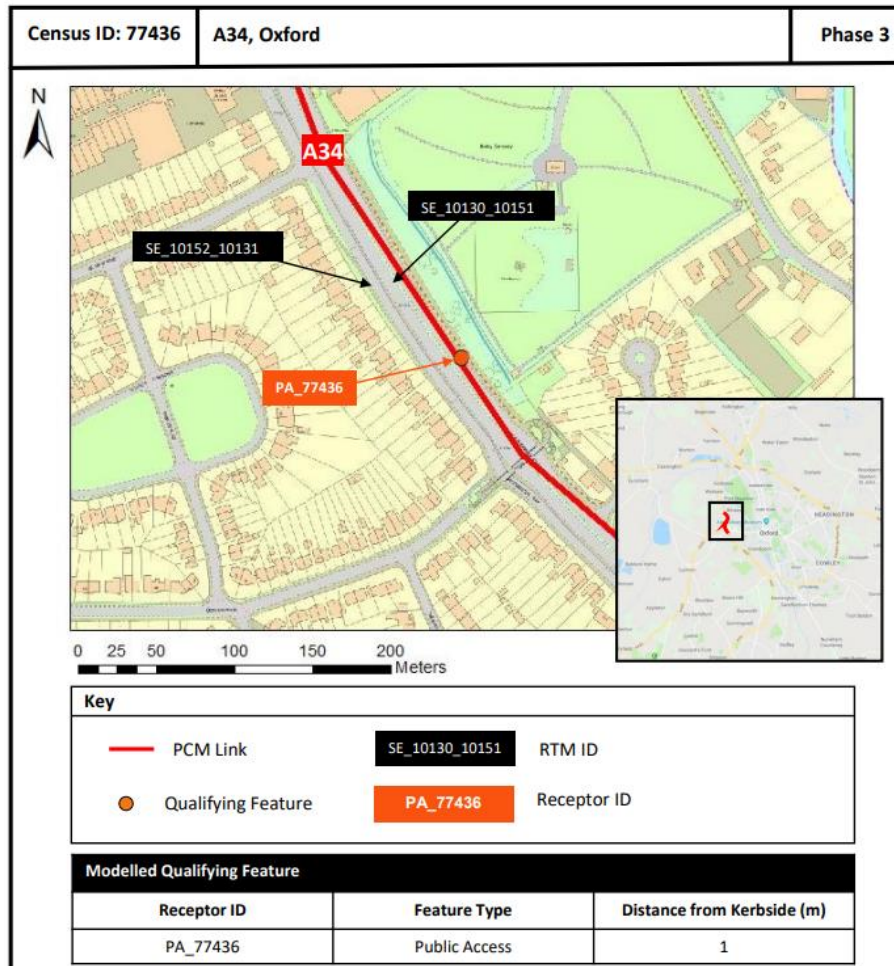
National Highways Modelling Map:

Ref: National Highways. Phase 3, Appendix A: Phase 3 Modelling Maps. PCM Link Details_77436 A34 Oxford. Available online at: <https://nationalhighways.co.uk/our-work/environment/air-quality-and-noise/air-quality/air-quality-reports/>. Accessed January 2023.



National Highways Nearest Receptor Location

REF: National Highways. Phase 3, Appendix A: Phase 3 Receptor Maps. PCM Link Details_77436 A34 Oxford. Available online at: <https://nationalhighways.co.uk/our-work/environment/air-quality-and-noise/air-quality/air-quality-reports/>. Accessed January 2023.



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National Highways Audit Report

KEY:		✘ - Not possible	✓ - Possible	? - More research required
Option	Feasible to bring compliance forward?	Summary		
Source – reducing emissions from the SRN				
Electric vans	✘	<p>Research completed for Highways England indicates that it would only be 'possible to bring forward a maximum of 250 electric vans over the next few years in any one location. To achieve this would require the creation of a specialist centre.</p> <p>'Based on the observed speed of 50 mph along this PCM link, it has been 'calculated that 250 electric vans would equate to an NO₂ reduction of 'approximately 0.2yg/m' along this ink. As such, the implementation of this</p> <p>'measure would not achieve an earlier compliance date.</p>		
Traffic Management	✘	<p>Possible traffic management options for the link were discussed in a workshop held during ate 2018 into early 2019. The outcomes of the workshop indicated that there may be the possibility for local traffic management measures to help 'support improvements in air quality. A feasibility study was commissioned in Autumn 2019 to investigate in more detail 'whether the proposed local traffic measures would deliver changes in traffic that in tum would lead to improvements in ai quality and support compliance with the limit values in the shortest timescales possible.</p> <p>However, following detailed investigations to support the feasibility study has been concluded that there are no viable local traffic management measure solutions that could be delivered for this SRN PCM link capable of improving air quality.</p> <p>"The existing speed limit along the A34 is 50mph. WebTRIS data has identified the daily average speed of vehicles traveling along tis section of the A34 as being 'approximately 50mph. The introduction of a speed limit would therefore not be 'appropriate along this PCM link.</p>		

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Bus Retrofit	x	<p>A review of bus movements along this section of the A34 has identified 6 journeys. per day. The bus route seems to be associated with school drop off in the 'morning and return journey in the afternoon only and a review of the bus timetables for the area indicates there are no other bus journeys made on the A34. The Euro standard of the buses making these journeys are unknown. However, if they did require retrofitting, the 6 journeys per day would not support 'any measurable reduction in annual mean NO concentrations along this PCM link. Bus retrofit would not support delivery of compliance with the Air Quality Directive in the shortest timescale possible. Therefore, this measure is not being taken forward.</p>
HGV Retrofit	x	<p>Review of traffic data for this PCM link has identified approximately 8,140 HGVs traveling along this ink. Theoretically, a HGV retrofit scheme could reduce 'annual mean NO: concentrations by 1.3 ug/m3. However, no accredited retrofit system is currently available for HGVs nor is & known the mechanism for delivery. As such, it is anticipated that this measure would require a Government led 'scheme for delivery and Highways England is not able to progress this measure at this time.</p>

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Recommendation	<p>The verified air quality modelling completed for the Phase 3 assessment has concluded that there are exceedances of the limit values along PCM link 77436 up and including the year 2030.</p> <p>In completing the assessment for this SRN PCM link, Highways England has considered a range of measures to support compliance in the shortest possible timeframe. These measures have included; speed management measures, however the speed limit along this link was already 50mph and no further reduction would improve air quality; traffic management measures, however detailed investigations have concluded no viable measures would improve air quality; and a 9.5m high barrier, although it is not considered possible to build a barrier at this location due to physical constraints.</p> <p>Following the completion of the feasibility study, it has been concluded there are no viable measures currently available to Highways England to help meet limit values in a shorter timescale than modelled.</p> <p>However, Highway England continues to investigate whether there are new or emerging ideas and / or technologies that could be considered, alongside any measures put forward by Government for the SRN.</p> <p>A workshop will be held with the local authority to determine whether any other viable measures could be considered to help support compliance with limit values along this PCM link in the shortest timescales possible.</p>
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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
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
LAQM	Local Air Quality Management
LCWIP	Oxfordshire Local Cycling and Walking Infrastructure Plan
LTCP	Oxfordshire Local Transport and Connectivity Plan
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
OCC	Oxfordshire County Council
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less

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PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
SODC	South Oxfordshire District Council
TG22	Defra's Local Air Quality Management Technical Guidance
UTC	Urban Traffic Control
VOWHDC	Vale of White Horse District Council
ZEBRA	Zero Emission Bus Regional Areas (ZEBRA) scheme
ZEZ	Zero Emission Zone

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