2023 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: June, 2023

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Report Reference Number	TRDC/BF/ASR/2023_FINAL
Date	June 2023

Executive Summary: Air Quality in Our Area

Air Quality in Three Rivers

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[1,2].

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Three Rivers is a sub-urban district of 88.8 square kilometres located in south-west Hertfordshire. It borders Watford and Hertsmere Boroughs to the east, Buckinghamshire Council (Chiltern and South Bucks Areas) to the west, St Albans City & District and Dacorum Borough to the north, and the London Boroughs of Hillingdon and Harrow are to the south. The latest estimated population of Three Rivers is 93,800 (Source: Office for National Statistics - Census 2021).

The key road links through the District are the M1 and M25 motorways, which are likely significant sources of local air pollutant emissions. There are no significant pollutant sources within the district apart from road traffic emissions.

From 1st May 2019, Three Rivers District Council delegated certain Environmental Health functions to Watford Borough Council (WBC) including local air quality management.

The latest monitoring data shows a general trend of decreasing concentrations of NO_2. This is in line with the national trend. Defra recently reported that “between 2007 and

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

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

[3] Defra. Air quality appraisal: damage cost guidance, January 2023

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

2019 inclusive, the annual mean NO_2 concentration at roadside sites reduced by an average of 1.8 µg/m^3 each year. This reduction was observed at most long-running monitoring sites across the UK; which could be a consequence of the large reduction in road transport emissions of NO_2 over the same period in the UK, as newer vehicles subject to stricter emissions standards enter the transport fleet".

In 2022, NO_2 concentrations decreased at most sites (those sites that existed prior to 2022). There is a general trend of reduction over the last 5 years.

There are no new major sources of emissions in the Borough. The Council has not introduced any new AQMAs, Action Plans or Strategies. The Council intends to draft a new AQAP in the coming year.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan[5] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[6] details 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.

New Local Plan

Three Rivers District Council is preparing a new Local Plan that will set out a vision and policy framework for the future levels of growth within the District up until 2038.

[5] Defra. Environmental Improvement Plan 2023, January 2023

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

Climate Emergency & Sustainability Strategy.

The strategy outlines how the Council aims to deliver and facilitate the changes needed to tackle the twin crises of climate change and biodiversity decline in the District while enabling greener, healthier lifestyles and a thriving local economy, in collaboration with local residents, businesses, community groups, voluntary organisations and partners.

The Strategy will embed the climate and ecological emergencies into the culture and decision making of the Council, reduce carbon emissions through regular measurement, minimise energy consumption and promote a transition to renewable energy. It will also enable and encourage sustainable modes of travel to reduce reliance on carbon-fuelled transport and improve local air quality.

Local initiatives

Ev charging points

There are now more than forty electric charging points available to the public in Three Rivers.

Cycling

Three Rivers District Council has promoted its Cycling Strategy for nearly 40 years, introducing many new improvements to make cycling easier and to improve walking conditions.

Buses

Three Rivers District Council supports the Intalink partnership.

Free Air Pollution Alerts

Three Rivers District Council, along with ten other Hertfordshire and Bedfordshire Local Authorities has signed up to a notification service called ‘Herts & Beds Air Pollution Alert System’. The system is provided by Ricardo Energy and Environment. The service provides a text or email alert straight to your mobile when levels of air pollution in your area increase to a moderate level or above.

This service sits alongside a website that provides ‘at-a-glance’ air quality information for Hertfordshire and Bedfordshire. Coloured markers on a map pinpoint exact areas and give an immediate pollution summary ranging from 1-10.

Conclusions and Priorities

NO_2 concentrations decreased at most sites (those sites that existed prior to 2022). There is a general trend of reduction over the last 5 years.

In the Chorleywood NO_2 AQMA, there were no exceedances of the annual mean objective.

There were no exceedances of the annual mean objective at the Council's new monitoring locations.

Drafting a new AQAP is a priority for the coming year.

WBC are hopeful that it will be possible for monitoring equipment (purchased by Hertfordshire County Council) to be deployed in the Chorleywood PM_{10} AQMA to permit the monitoring of particulate matter and enable consideration of the need for the PM_{10} AQMA.

Local Engagement and How to get Involved

It is important that members of the public appreciate the impact of their transport choices on air quality. The Three Rivers District Council AQAP highlights that the District is developing strategies to develop Sustainable Travel and Better Buses to inform how it will support the County Council's bus services. Three Rivers District Council has also supported Office for Low Emissions Vehicles (OLEV) initiatives to install electric vehicle charging points.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Watford Borough Council.

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

If you have any comments on this ASR please send them to the Environmental Health Team at:

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1 Local Air Quality Management

This report provides an overview of air quality in Three Rivers during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Three Rivers District Council 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 (AQMAs) 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 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

A summary of AQMAs declared by Three Rivers District Council can be found in Table 2.1. The table presents a description of the two AQMA(s) that are currently designated within Three Rivers. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The air quality objectives pertinent to the current AQMA designation(s) are as follows:

- NO_2 annual mean;
- PM_{10} 24-hour mean.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Chorleywood NO_2 AQMA	Declared 01/04/2001	NO_2 Annual Mean	Along the M25 south of Junction 18 to just north of where the motorway crosses the River Chess	YES	>40	19.4	10	Three Rivers District Council Air Quality Action Plan, July 2013	https://www.airqualityengland.co.uk/local-authority/hnb-reports
Chorleywood PM_{10} AQMA	Declared 01/04/2001	PM_{10} 24 Hour Mean	A slightly narrower area from just north of Junction 18, along the M25 to just north of where the motorway crosses the River Chess	YES	>50, exceeded more than 35 times in a year	PM_{10} concentrations are not monitored at this location	PM_{10} concentrations are not monitored at this location	Three Rivers District Council Air Quality Action Plan, July 2013	https://www.airqualityengland.co.uk/local-authority/hnb-reports

☒ **Three Rivers District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Three Rivers District Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Three Rivers District Council

Defra's appraisal of last year's ASR concluded:

The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports:

1. Reference to the Public Health Outcomes Framework has been made and this practice should continue going forward.
2. Trends have been presented with a robust comparison to the Air Quality Objectives.
3. QA/QC procedures are robust, with sufficient supporting evidence provided.

The following improvements are recommended:

1. The ASR should state clearly which lab is used and its location. In this ASR submitted, only the lab name, Socotec has been submitted and has not specified which Socotec lab this is. Cross referencing this with the National Bias Adjustment Factor spreadsheet, it is likely that the lab used was the Socotec Didcot lab which had a 0.86 National Bias Adjustment Factor.

The Council has addressed the matters raised following Defra's appraisal:

1. This has been addressed in this year's report. In 2021, the National Bias Adjustment Factor for the SOCOTEC Didcot laboratory was 0.78 (50% TEA in acetone, Spreadsheet Version Number 03/22.

Three Rivers 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 completed, in progress or planned are set out in Table 2.2. Seven measures are included within Table 2.2, with the type of measure and the progress Three Rivers District Council have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in the Three Rivers District Council Air Quality Action Plan, July 2013. Key completed measures are:

- 2 x indicative PM2.5 AQ Monitors (now removed);

- OLEV initiative;
- AirTEXT;
- LTP, Walking, Cycling and bus strategy;
- Improvement of bus network;
- Additional cycle routes;
- Alternative routes via green ways.

Three Rivers District Council's priority for the coming year is to draft a new AQAP.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Three Rivers District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the Chorleywood NO_2 and PM_{10} AQMAs.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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	AirTEXT	Public Information	Via other mechanisms	2015	2018	TRDC	TRDC	NO	Funded	< £10k	Completed	Exposure of most vulnerable	Hits on Hertfordshire Air Quality Forecast website	Operational	TRDC has signed up to the Herts & Beds Pollution Alert System.
2	2 x indicative $PM_{2.5}$ AQ Monitors	Other	Other	2017	2017	TRDC	HCC	NO	Funded	£10k - 50k	Completed	Inform future projects id required	$PM_{2.5}$ AQ Data	Equipment installed	The equipment was installed in 2017, monitoring ceased in the same year. The equipment was removed and placed in storage on 5th December 2019.
3	LTP, Walking, Cycling and bus strategy	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2015	2020	TRDC/HCC	TRDC/HCC	NO	Funded	£100k - £500k	Completed	NO_2/PM_{10}/$PM_{2.5}$	Decrease in private car use	Ongoing	A long-term plan that sets out home walking and cycling can be improved in the Three Rivers District is out for public consultation.
4	Improvement of bus network	Transport Planning and Infrastructure	Bus route improvements	2015	2020	TRDC/HCC	TRDC/HCC	NO	Funded	£100k - £500k	Completed	NO_2/PM_{10}/$PM_{2.5}$	Increased bus use	Ongoing	The Intalink Partnership represents the operators and Local Authorities in Hertfordshire to develop better coordinated bus and rail services. Intalink is currently producing a Plan to improve Bus Services.
5	OLEV initiative	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2015	2020	TRDC/OLEV	OLEV	NO	Funded	£10k - 50k	Completed	NO_2/PM_{10}/$PM_{2.5}$	Increased electric vehicle ownership	Ongoing	The Council is investigating using capital funding to encourage electric driving in the district. The Council's Transport & Parking Projects team is procuring electric vehicle charging points for public car parks to encourage drivers of electric vehicles to visit local shops. These rapid charge points will also be available to residents who do not have a charge point home.
6	Additional cycle routes	Transport Planning and Infrastructure	Cycle network	2015	2020	TRDC/HCC	TRDC/HCC	NO	Funded	£50k - £100k	Completed	NO_2/PM_{10}/$PM_{2.5}$	Increase cycling	Ongoing	A long-term plan that sets out home walking and cycling can be improved in the Three Rivers District is out for public consultation.
7	Alternative routes via green ways	Transport Planning and Infrastructure	Other	2015	2020	TRDC/HCC	TRDC/HCC	NO	Funded	£50k - £100k	Completed	Reduce exposure	Use of greenways	Ongoing	No information provided

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Exposure to high concentrations of particulate matter can exacerbate lung and heart conditions, significantly affecting quality of life, increasing hospital admissions and deaths. Children, the elderly and those with pre-existing respiratory and cardiovascular disease, are known to be more susceptible to the health impacts from air pollution.

Inhalation of particulate matter can have adverse impacts on human health, the greatest impact is believed to be from long term exposure to $PM_{2.5}$, which increase age-specific mortality risk, particularly from cardiovascular causes.

The following is taken from the Hertfordshire Local Authorities Report on Particulate Matter ($PM_{2.5}$) in Ambient Air in 2021 for Hertfordshire County Council Public Health:

Poor air quality is considered to be the largest environmental risk to the public's health and contributes to all non-communicable disease, although most commonly referenced are:

- Cardiovascular disease;
- Lung cancer;
- Respiratory diseases;
- Increased chance of hospital admissions and visits to Emergency Departments.

Evidence also states that air pollution is a significant contributor to preventable ill health and early death.

Whilst legal limits are in place, evidence suggests that health effects occur significantly below these limits, as recognised by the 2021 WHO guideline value of 5ug/m^3.

The only specific indicator for air pollution is included within the Public Health Outcomes Framework and relates to particulate matter (PM) with a diameter of 2.5um or smaller (Public Health Outcome Indicator (PHOI) 3.01).

PHOI 3.01 is 'the fraction of annual all-cause mortality attributable to long-term exposure to current levels of anthropogenic particulate pollution.' The indicator is based on an estimated amount of $PM_{2.5}$ derived by Defra modelling from local measurement, including one site in Borehamwood, Hertfordshire and another in Sandy, Bedfordshire. That data is then adjusted by way of population to give a population weighted figure before its use in deriving the PHOI.

The $PM_{2.5}$ focussed PHOI reflects the adverse impact that this type of air pollution can have on public health as a result of the fine particles being carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.

However, it is important to recognise that the figures published for PHOI 3.01 are estimates and therefore cannot be used for performance monitoring; they can only provide an indication of the scale of the issue.

It is for this reason that this report no longer makes direct reference to the PHOI figures, but uses the population weighted Defra modelled $PM_{2.5}$ concentrations in their place.

The fraction of mortality attributable to particulate air pollution (new method) for England (2021) is 5.5%. The PHOF data is available at:

https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/4/gid/1000043/pat/159/par/K02000001/ati/15/are/E92000001/iid/93861/age/230/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1/page-options/ovw-do-0_car-ao-1_car-do-0.

Three Rivers District Council is taking the following measures to address $PM_{2.5}$:

An Officer of the Council attends the Hertfordshire and Bedfordshire Air Quality Forum.

The Council will ensure compliance with the Environmental Permitting Regulations to help reduce $PM_{2.5}$ concentrations.

It is anticipated that:

- Measures to reduce emissions of NO_x by encouraging a move away from internal combustion engine vehicles to ultra-low emission vehicles (ULEV) will reduce $PM_{2.5}$ emissions from exhausts;
- Measures to reduce road travel altogether will reduce $PM_{2.5}$ emissions from brake and tyre wear and dust re-suspension.

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

This section sets out the monitoring undertaken within 2022 by Three Rivers District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Non-Automatic Monitoring Sites

Three Rivers District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 25 sites during 2022. 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_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. 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 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Figure A.1 presents trends in NO_2 annual mean concentrations at diffusion tube sites S1(NA) to TR40 between the years 2018 to 2022. In 2022, there were no exceedances of the annual mean objective. Over the last 5 years there has been a general trend of reduction experienced at most sites (those sites existing prior to 2022). Tubes are no longer deployed at S1(NA), S4(NA), S5(NA) & S6(NA), S7(NA), S1(NB), S2(NB) & S3(NB) and S4(NB), S5(NB) & S6(NB).

Figure A.2 presents trends in NO_2 annual mean concentrations in the Chorleywood AQMA between the years 2018 to 2022. In 2022, there were no exceedances of the annual mean objective. There is a general trend of reduction experienced at S4(NA), S5(NA) & S6(NA) (tubes are no longer deployed at this location).

Appendix A: Monitoring Results

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
S1 (NA)	Watford Road, Croxley Green	Kerbside	507134	195283	NO2	No - Tubes no longer deployed at this location	8.0	1.0	No	2.7
TR16	The Retreat	Urban Background	508100	201800	NO2	No	8.0	1.0	No	2.7
TR17	Bridge Road	Kerbside	508177	200550	NO2	No	3.0	2.0	No	2.8
TR18	Glenthorn	Other	508517	199701	NO2	No	22.0	3.0	No	2.7
TR15	Glen View	Rural	506430	198590	NO2	No	97.0	17.0	No	2.5
S4 (NA), S5 (NA), S6 (NA)	Sunrise Senior Living/Junction 18 M25, Chorleywood	Kerbside	504162	196286	NO2	Yes - Chorleywood AQMA - Tubes no longer deployed at this location	17.0	1.0	No	2.5
S7 (NA)	Rickmansworth Fire Station, Rectory Road	Urban Background	505500	194400	NO2	No - Tubes no longer deployed at this location	30.0	10.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
S1 (NB), S2 (NB), S3 (NB)	Belfry House Uxbridge Road (Mill End 1)	Kerbside	505264	194251	NO2	No - Tubes no longer deployed at this location	7.0	1.5	No	3.1
S4 (NB), S5 (NB), S6 (NB)	A412 Long Lane (Mill End 2)	Kerbside	504162	196286	NO2	No - Tubes no longer deployed at this location	17.0	1.0	No	2.1
TR19	Old Solesbridge Lane	Other	504165	197033	NO2	Yes - Chorleywood AQMA	28.0	0.0	No	2.0
TR20	Brewery Cottages	Kerbside	503785	196504	NO2	No	4.0	3.0	No	2.8
TR21	North Lodge	Roadside	503133	196806	NO2	No	20.0	0.0	No	2.8
TR22	Wyatt's Road	Kerbside	504177	196752	NO2	Yes - Chorleywood AQMA	20.0	0.0	No	3.0
TR23	Wyatt's Close	Kerbside	504182	196435	NO2	Yes - Chorleywood AQMA	23.0	0.0	No	2.8
TR24	Sunrise	Roadside	504127	196288	NO2	Yes - Chorleywood AQMA	31.0	0.0	No	2.8
TR25	Chestnut Avenue	Kerbside	504125	195961	NO2	Yes - Chorleywood AQMA	12.0	0.0	No	2.7
TR26	Exchange Mansion	Kerbside	505720	194679	NO2	No	5.0	2.0	No	2.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
TR27	Uxbridge Road 1	Roadside	505482	194331	NO2	No	17.0	0.0	No	3.0
TR28	Uxbridge Road 2	Kerbside	505415	194278	NO2	No	4.0	1.0	No	2.7
TR29	Uxbridge Road 3	Kerbside	505274	194258	NO2	No	25.0	2.0	No	3.1
TR30	Swannells Walk	Other	503741	19495	NO2	No	8.0	27.0	No	2.0
TR31	Tara	Kerbside	503897	193483	NO2	No	17.0	2.0	No	2.9
TR32	Denham Way 1	Kerbside	503388	192966	NO2	No	22.0	0.0	No	2.6
TR33	Crosslands	Roadside	503311	192771	NO2	No	25.0	0.0	No	2.8
TR34	Denham Way 2	Roadside	503287	192556	NO2	No	23.0	1.0	No	2.7
TR35	Denham Way 3	Kerbside	503162	192221	NO2	No	16.0	1.0	No	2.8
TR36	St Mary's Court	Kerbside	506184	194131	NO2	No	7.0	3.0	No	2.6
TR37	Church Street	Kerbside	506337	193876	NO2	No	3.0	3.0	No	2.8
TR40	Prince of Wales PH	Roadside	507852	192359	NO2	No	32.0	3.0	No	2.3
TR39	Hampermill Lane	Kerbside	510808	194633	NO2	No	9.0	2.0	No	3.1

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.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
S1 (NA)	507134	195283	Kerbside	15.4	15.4	27.6	26.4	17.4	19.3	-
TR16	508100	201800	Urban Background	100.0	100.0	27.7	25.1	17.5	18.9	18.3
TR17	508177	200550	Kerbside	76.9	76.9					25.5
TR18	508517	199701	Other	76.9	76.9					16.2
TR15	506430	198590	Rural	100.0	100.0	26.5	21.2	16.5	16.3	16.9
S4 (NA), S5 (NA), S6 (NA)	504162	196286	Kerbside	23.1	23.1	34.1	30.5	33.4	21.5	19.4
S7 (NA)	505500	194400	Urban Background	23.1	23.1	27.1	27.7	26.0	18.0	18.3
S1 (NB), S2 (NB), S3 (NB)	505264	194251	Kerbside	15.4	15.4	**48.5**	39.0	**41.0**	28.0	30.9
S4 (NB), S5 (NB), S6 (NB)	504162	196286	Kerbside	23.1	23.1	30.0	29.8	29.8	22.9	19.4
TR19	504165	197033	Other	76.9	76.9					12.9
TR20	503785	196504	Kerbside	76.9	76.9					25.9
TR21	503133	196806	Roadside	76.9	76.9					22.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2018	2019	2020	2021	2022
TR22	504177	196752	Kerbside	76.9	76.9					13.9
TR23	504182	196435	Kerbside	76.9	76.9					16.9
TR24	504127	196288	Roadside	76.9	76.9					26.3
TR25	504125	195961	Kerbside	76.9	76.9					24.3
TR26	505720	194679	Kerbside	76.9	76.9					17.2
TR27	505482	194331	Roadside	76.9	76.9					23.1
TR28	505415	194278	Kerbside	76.9	76.9					27.1
TR29	505274	194258	Kerbside	76.9	76.9					21.9
TR30	503741	19495	Other	76.9	76.9					24.9
TR31	503897	193483	Kerbside	76.9	76.9					18.4
TR32	503388	192966	Kerbside	76.9	76.9					22.5
TR33	503311	192771	Roadside	76.9	76.9					22.2
TR34	503287	192556	Roadside	67.3	67.3					24.2
TR35	503162	192221	Kerbside	76.9	76.9					18.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
TR36	506184	194131	Kerbside	76.9	76.9					17.8
TR37	506337	193876	Kerbside	76.9	76.9					18.2
TR40	507852	192359	Roadside	76.9	76.9					22.4
TR39	510808	194633	Kerbside	76.9	76.9					24.5

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **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 µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

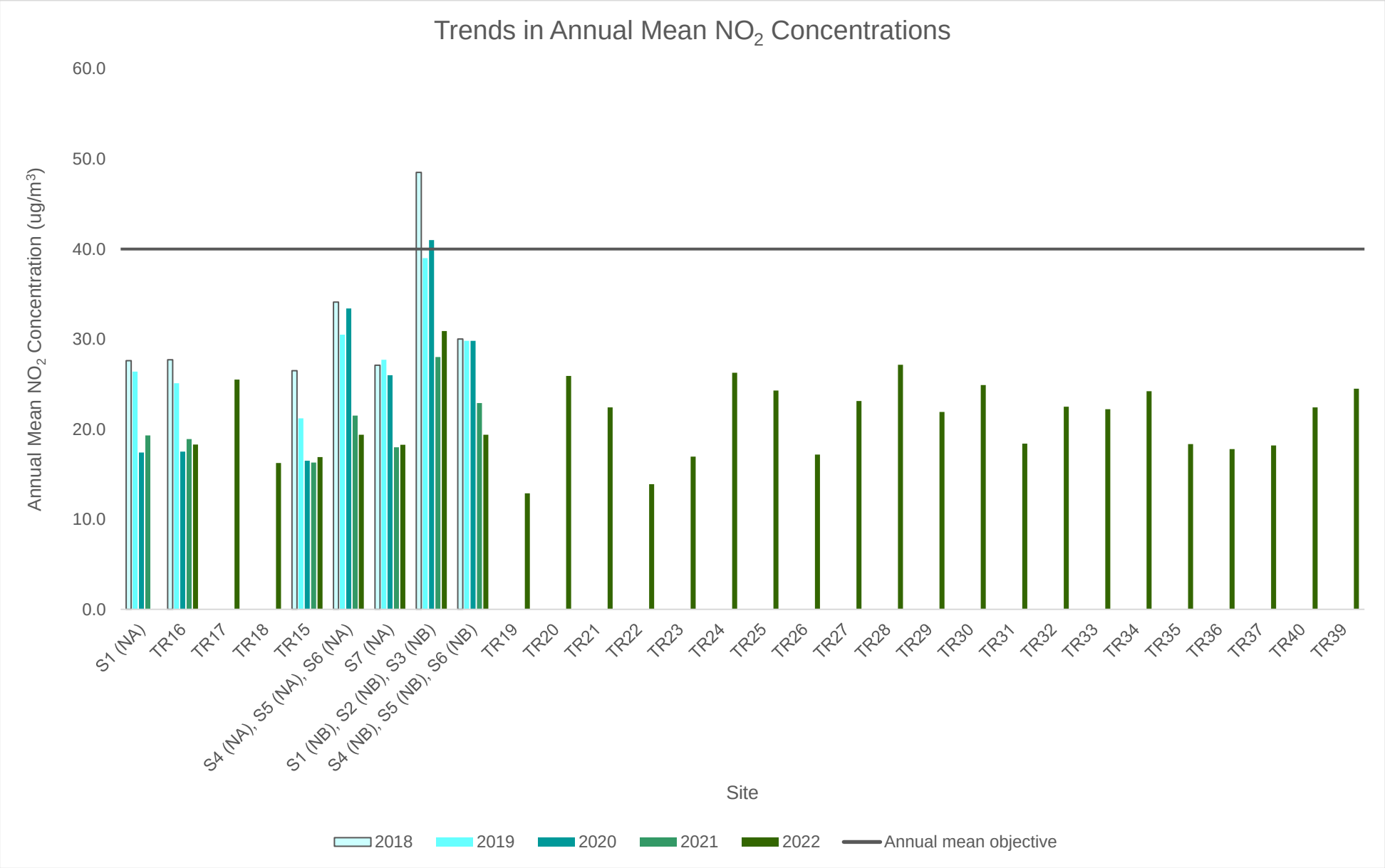
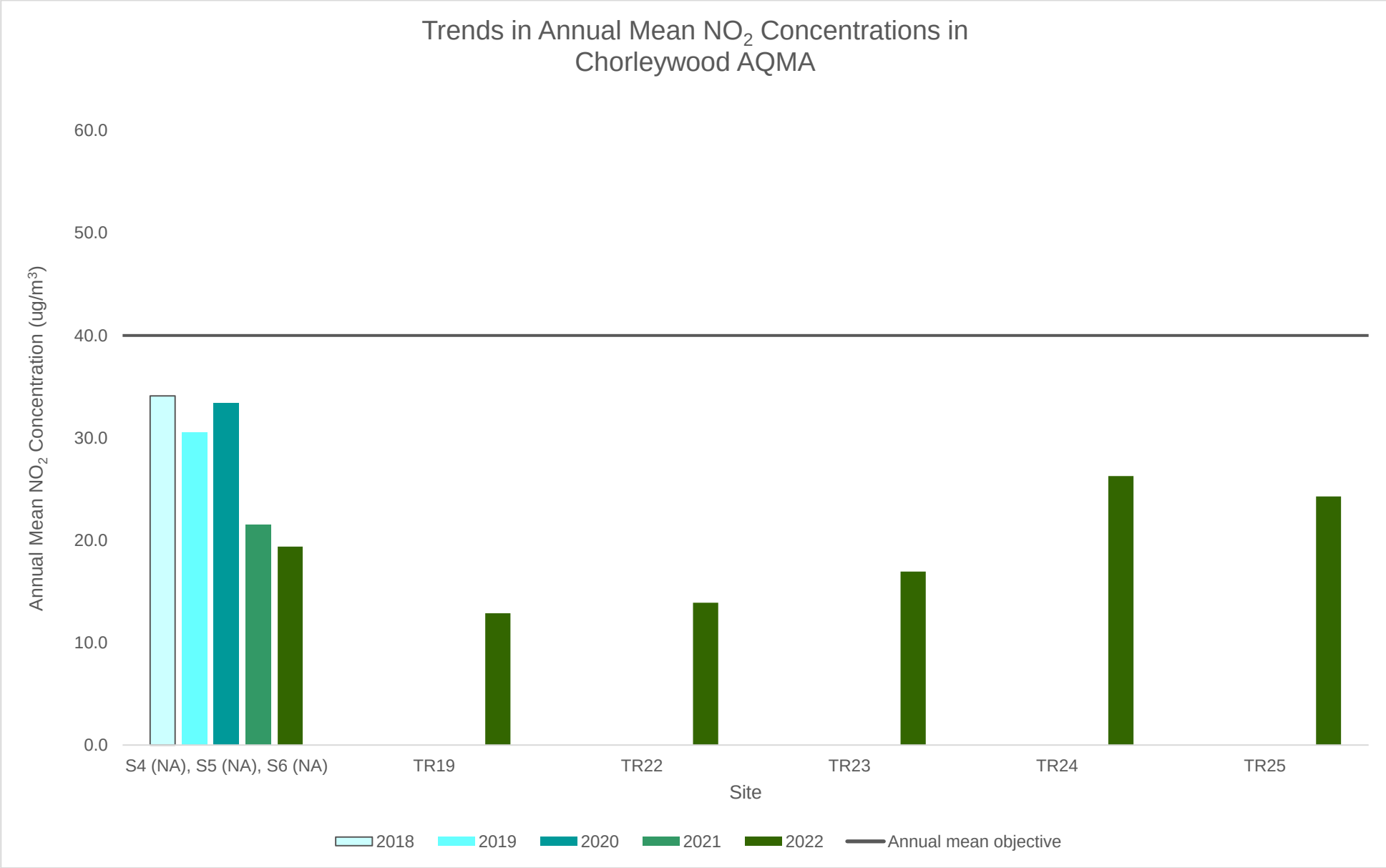


Figure A.2 - Trends in Annual Mean NO_2 Concentrations in the Chorleywood AQMA



Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Diffusion Tube Results (µg/m^3)

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 (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S1 (NA)	507134	195283	41.0		33.6										-	-	-	
TR16	508100	201800	35.6	23.2	26.9	22.5	21.0	18.9	21.8	20.4	23.8	23.4	24.4	27.1	24.1	18.3	-	
TR17	508177	200550				29.3	29.1	34.6	33.1	30.3	33.9	39.0	33.3	39.6	33.6	25.5	-	
TR18	508517	199701				21.8	17.2	18.0	21.9	21.9	22.6	22.7	21.6	24.6	21.4	16.2	-	
TR15	506430	198590	27.6	20.0	31.0	19.7	18.0	16.5	19.3	18.6	18.0	25.6	23.7	28.8	22.2	16.9	-	
S4 (NA)	504162	196286	34.3	27.5	39.2										-	-	-	Triplicate Site with S4, S5 and S6 - Annual data provided for S6 only
S5 (NA)	504162	196286	37.3	26.9	34.1										-	-	-	Triplicate Site with S4, S5 and S6 - Annual data provided for S6 only
S6 (NA)	504162	196286	34.2	26.0	38.5										33.1	19.4	-	Triplicate Site with S4, S5 and S6 - Annual data provided for S6 only
S7 (NA)	505500	194400	33.8	20.7	39.2										31.2	18.3	-	
S1 (NB)	505264	194251	24.2		35.3										-	-	-	Triplicate Site with S1 (NB), S2 and S3 - Annual data provided for S3 only
S2 (NB)	505264	194251	49.7		45.3										-	-	-	Triplicate Site with S1 (NB), S2 and S3 - Annual data provided for S3 only
S3 (NB)	505264	194251	47.7		41.7										40.7	30.9	-	Triplicate Site with S1 (NB), S2 and S3 - Annual data provided for S3 only
S4 (NB)	504162	196286	34.3	27.5	39.2										-	-	-	Triplicate Site with S4, S5 and S6 - Annual data provided for S6 only
S5 (NB)	504162	196286	37.3	26.9	34.1										-	-	-	Triplicate Site with S4, S5 and S6 - Annual data provided for S6 only
S6 (NB)	504162	196286	34.2	26.0	38.5										33.1	19.4	-	Triplicate Site with S4, S5 and S6 - Annual data provided for S6 only
TR19	504165	197033				16.2	13.0	12.7	12.9	15.3	15.3	20.6	23.5	23.0	16.9	12.9	-	
TR20	503785	196504				30.7	32.5	34.7	33.3	30.8	31.0	38.9	37.2	37.7	34.1	25.9	-	

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 (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
TR21	503133	196806				29.3	28.3	27.6	28.2	29.4	26.9	35.3	27.5	32.9	29.5	22.4	-	
TR22	504177	196752				18.6	12.7	12.9	15.2	16.7	18.2	22.1	22.5	25.6	18.3	13.9	-	
TR23	504182	196435				20.7	16.9	17.7	18.3	19.2	20.6	28.3	30.8	28.2	22.3	16.9	-	
TR24	504127	196288				29.2	22.3	29.0	30.6	30.7	33.8	46.2	48.0	41.2	34.6	26.3	-	
TR25	504125	195961				33.0	28.2	27.3	29.5	35.3	34.7	28.1	31.1	40.4	32.0	24.3	-	
TR26	505720	194679				21.4	17.1	15.6	19.1	19.7	22.9	31.3	26.3	30.1	22.6	17.2	-	
TR27	505482	194331				32.7	29.0	27.4	30.8	28.2	34.0	23.6	31.1	37.2	30.4	23.1	-	
TR28	505415	194278				36.6	31.8	31.2	33.7	35.4	32.7	42.5	40.9	36.7	35.7	27.1	-	
TR29	505274	194258				28.4	25.9	24.3	26.7	27.9	28.7	33.6	29.3	34.8	28.8	21.9	-	
TR30	503741	19495				34.2	32.0	29.0	28.9	29.4	36.8	29.1	33.8	41.7	32.8	24.9	-	
TR31	503897	193483				25.7	22.6	20.6	22.2	20.9	24.3	22.3	25.8	33.4	24.2	18.4	-	
TR32	503388	192966				26.6	24.1	26.5	26.6	26.1	26.8	37.3	33.4	39.0	29.6	22.5	-	
TR33	503311	192771				29.5	27.3	25.0	30.3	29.7	31.4	31.8	23.5	34.6	29.2	22.2	-	
TR34	503287	192556					26.0	25.9	27.6	25.7	29.5	34.3	35.6	30.0	29.3	24.2	-	
TR35	503162	192221				20.1	18.1	18.3	16.5	21.5	23.0	27.6	29.8	42.3	24.1	18.3	-	
TR36	506184	194131				18.4	21.3	19.5	20.2	17.7	24.3	28.5	28.4	32.3	23.4	17.8	-	
TR37	506337	193876				24.7	19.4	19.2	21.9	22.3	25.4	24.6	25.2	32.7	23.9	18.2	-	
TR40	507852	192359				26.9	23.6	25.8	24.8	27.4	28.7	35.1	35.6	37.7	29.5	22.4	-	
TR39	510808	194633				29.0	28.3	28.3	29.6	30.0	30.9	37.1	36.0	40.8	32.2	24.5	-	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **National bias adjustment factor used.**

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

☒ **Three Rivers District Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Three Rivers District Council During 2023

Three Rivers District Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Three Rivers District Council During 2022

Three Rivers District Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes were supplied by SOCOTEC (Didcot laboratory) in 2022. The method of preparation used was 50% TEA (triethanolamine) in acetone.

SOCOTEC are UKAS accredited. Diffusion Tubes were analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes For Ambient NO_2 Monitoring: Practical Guidance.'

SOCOTEC participate in the AIR PT intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes. SOCOTEC currently holds the highest rank of a Satisfactory laboratory.

In the most recent round (AIR PT AR050 May – June 2022), 100% of results submitted were determined to be satisfactory.

SOCOTEC were considered to have good diffusion tube precision in 2022.

Monitoring was completed in adherence with the 2022 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Annualisation was required for S4 (NA), S5 (NA) & S6 (NA), S7 (NA), S4 (NB), S5 (NB) & S6 (NB) and TR34. Details of the calculation method undertaken are provided in Table C.1.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

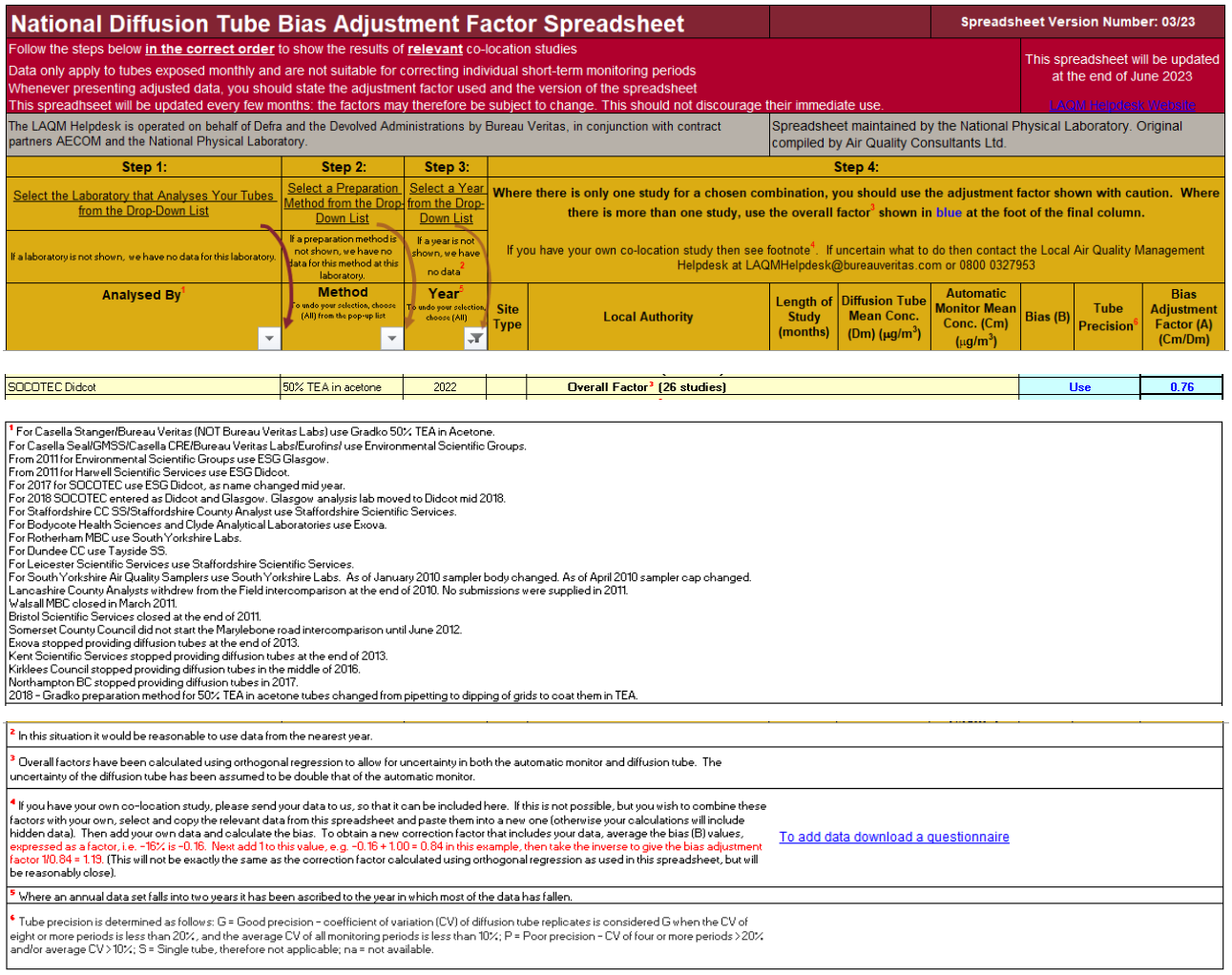
Site ID	Annualisation Factor Borehamwood Meadow Park	Annualisation Factor London N. Kensington	Annualisation Factor Hillingdon	Annualisation Factor <Site 4 Name>	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
S4 (NA)	0.8104	0.6874	0.8129		0.7702	-	-
S5 (NA)	0.8104	0.6874	0.8129		0.7702	-	-
S6 (NA)	0.8104	0.6874	0.8129		0.7702	33.1	25.5
S7 (NA)	0.8104	0.6874	0.8129		0.7702	31.2	24.1
S4 (NB)	0.8104	0.6874	0.8129		0.7702	-	-
S5 (NB)	0.8104	0.6874	0.8129		0.7702	-	-
S6 (NB)	0.8104	0.6874	0.8129		0.7702	33.1	25.5
TR34	1.0474	1.1564	1.0560		1.0866	29.3	31.9

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 the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Three Rivers District Council have applied a national bias adjustment factor of 0.76 to the 2022 monitoring data. A screenshot of the relevant sections of the National Diffusion Bias

Adjustment Factor Spreadsheet is included below A summary of bias adjustment factors used by Three Rivers District Council over the past five years is presented in Table C.2.



National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/23

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2023

LAQM Helpdesk Website

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

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

Step 1:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2022		Overall Factor[3] (26 studies)				Use		0.76

[1] For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone.
For Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins/ use Environmental Scientific Groups.
From 2011 for Environmental Scientific Groups use ESG Glasgow.
From 2011 for Harwell Scientific Services use ESG Didcot.
For 2017 for SOCOTEC use ESG Didcot, as name changed mid year.
For 2018 SOCOTEC entered as Didcot and Glasgow. Glasgow analysis lab moved to Didcot mid 2018.
For Staffordshire CC SS/Staffordshire County Analyst use Staffordshire Scientific Services.
For Bodycote Health Sciences and Clyde Analytical Laboratories use Exova.
For Rotherham MBC use South Yorkshire Labs.
For Dundee CC use Tayside SS.
For Leicester Scientific Services use Staffordshire Scientific Services.
For South Yorkshire Air Quality Samplers use South Yorkshire Labs. As of January 2010 sampler body changed. As of April 2010 sampler cap changed.
Lancashire County Analysts withdrew from the Field intercomparison at the end of 2010. No submissions were supplied in 2011.
Walsall MBC closed in March 2011.
Bristol Scientific Services closed at the end of 2011.
Somerset County Council did not start the Marylebone road intercomparison until June 2012.
Exova stopped providing diffusion tubes at the end of 2013.
Kent Scientific Services stopped providing diffusion tubes at the end of 2013.
Kirklees Council stopped providing diffusion tubes in the middle of 2016.
Northampton BC stopped providing diffusion tubes in 2017.
2018 - Gradko preparation method for 50% TEA in acetone tubes changed from pipetting to dipping of grids to coat them in TEA.

[2] In this situation it would be reasonable to use data from the nearest year.

[3] Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor.

[4] If you have your own co-location study, please send your data to us, so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a factor, i.e. -16% is -0.16. Next add 1 to this value, e.g. -0.16 + 1.00 = 0.84 in this example, then take the inverse to give the bias adjustment factor 1/0.84 = 1.19. (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close).

To add data download a questionnaire

[5] Where an annual data set falls into two years it has been ascribed to the year in which most of the data has fallen.

[6] Tube precision is determined as follows: G = Good precision - coefficient of variation (CV) of diffusion tube replicates is considered G when the CV of eight or more periods is less than 20%, and the average CV of all monitoring periods is less than 10%; P = Poor precision - CV of four or more periods >20% and/or average CV >10%; S = Single tube, therefore not applicable; na = not available.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	Not recorded	0.75
2018	National	Not recorded	0.76

NO_2 Fall-off with Distance from the Road

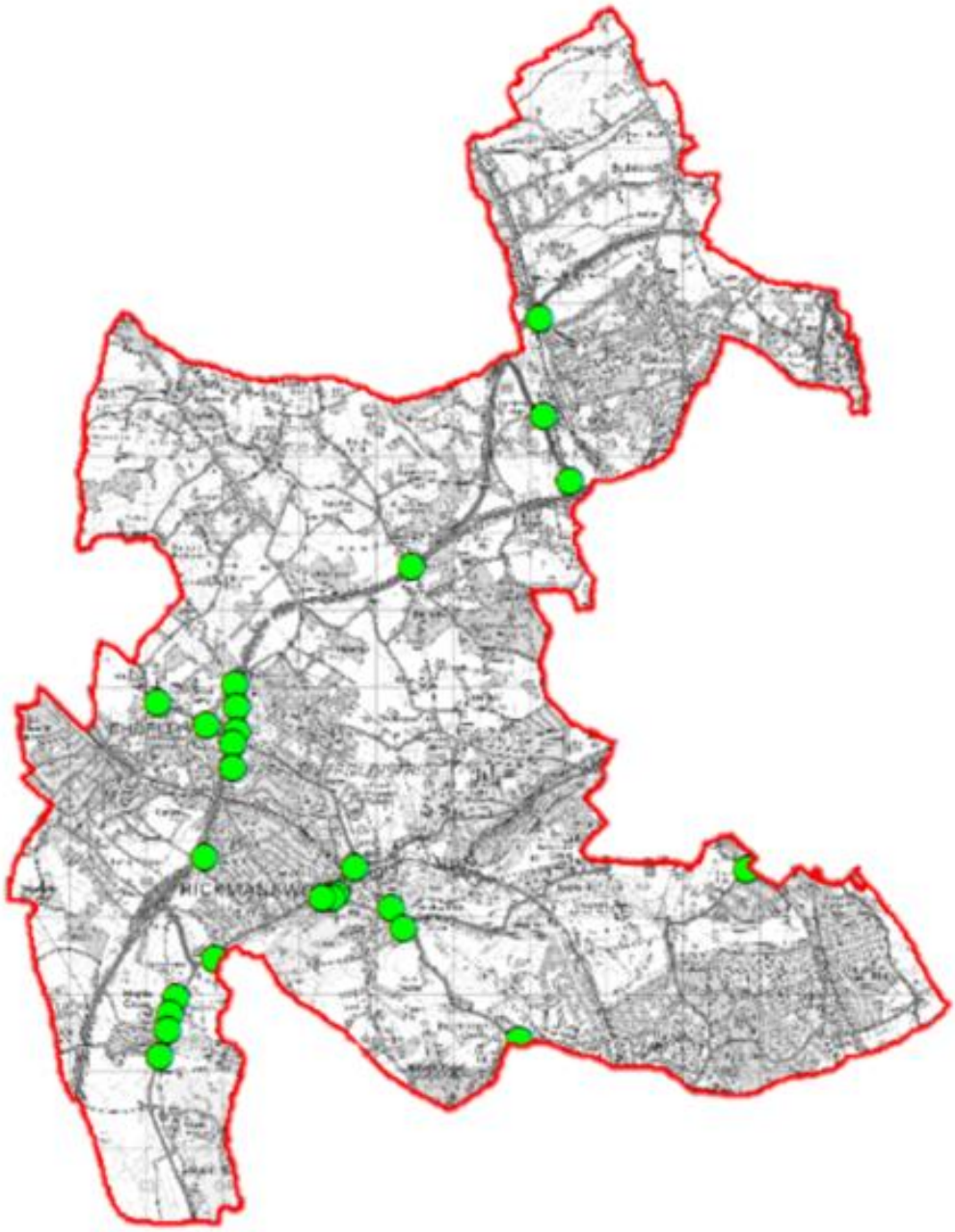
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure

has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website.

No diffusion tube NO_2 monitoring locations within Three Rivers required distance correction during 2022.

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

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



Watford Borough Council
Town Hall,
Watford,
Hertfordshire WD17 3EX

Legend

Air Quality Monitoring Sites

N

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Ordnance Survey 100018689

AERIAL PHOTOGRAPHY
2010 - Copyright GeoPerspectives

Figure D.2 - Map showing Non-Automatic Monitoring Sites in and around the Chorleywood NO_2 AQMA

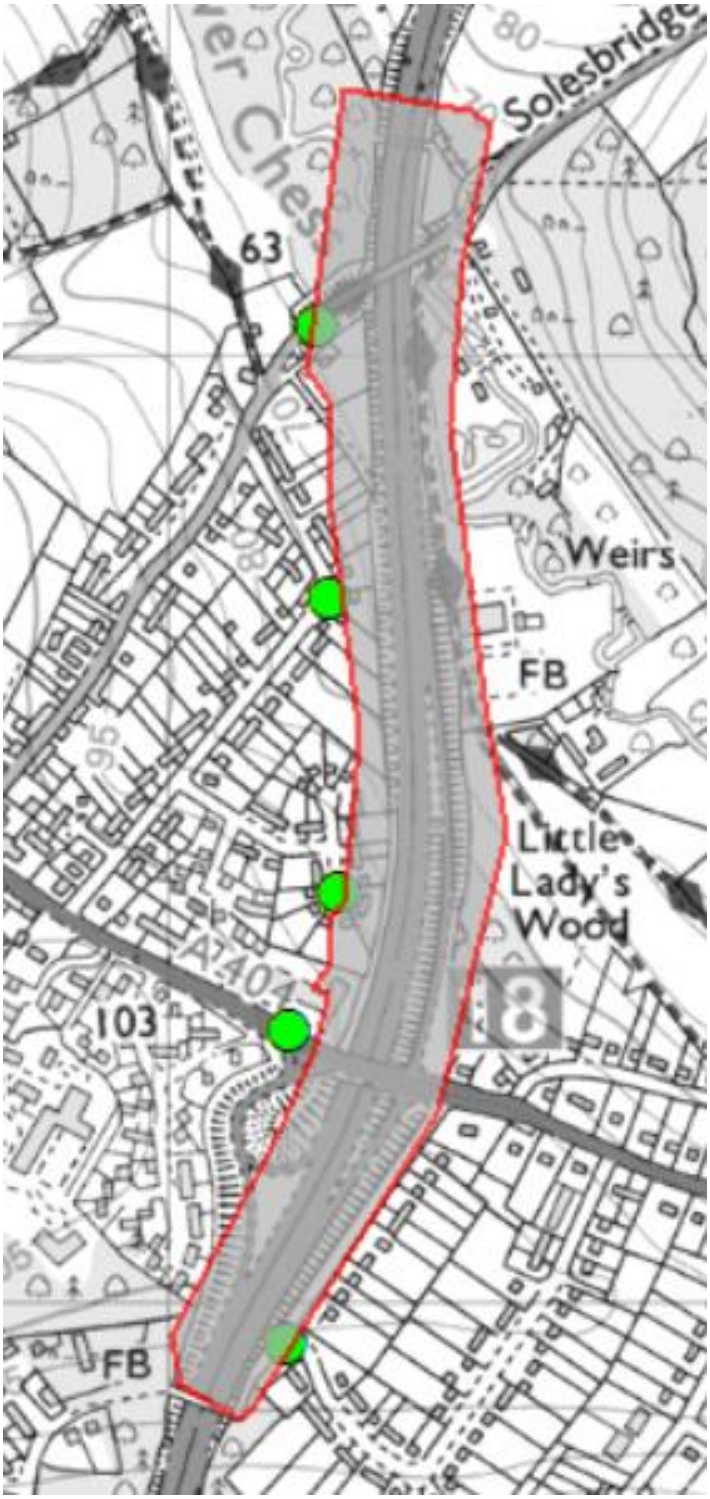
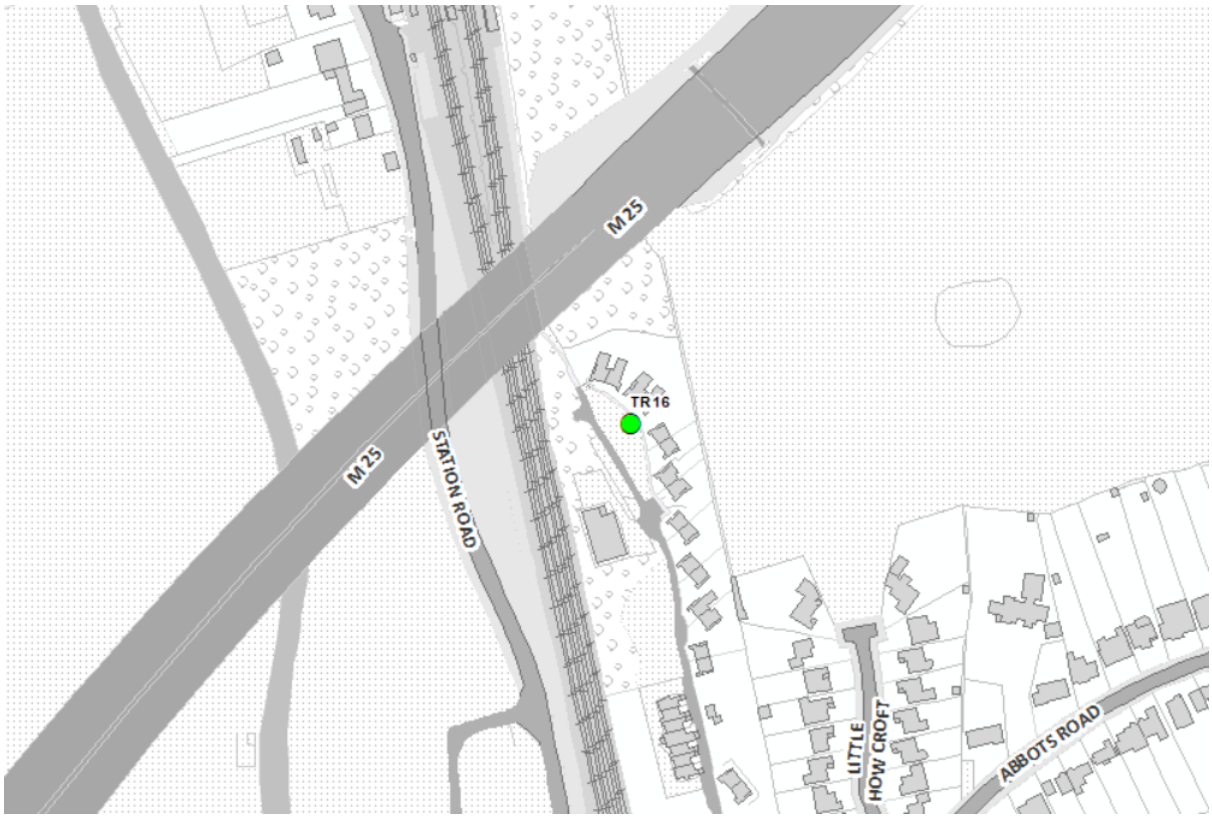
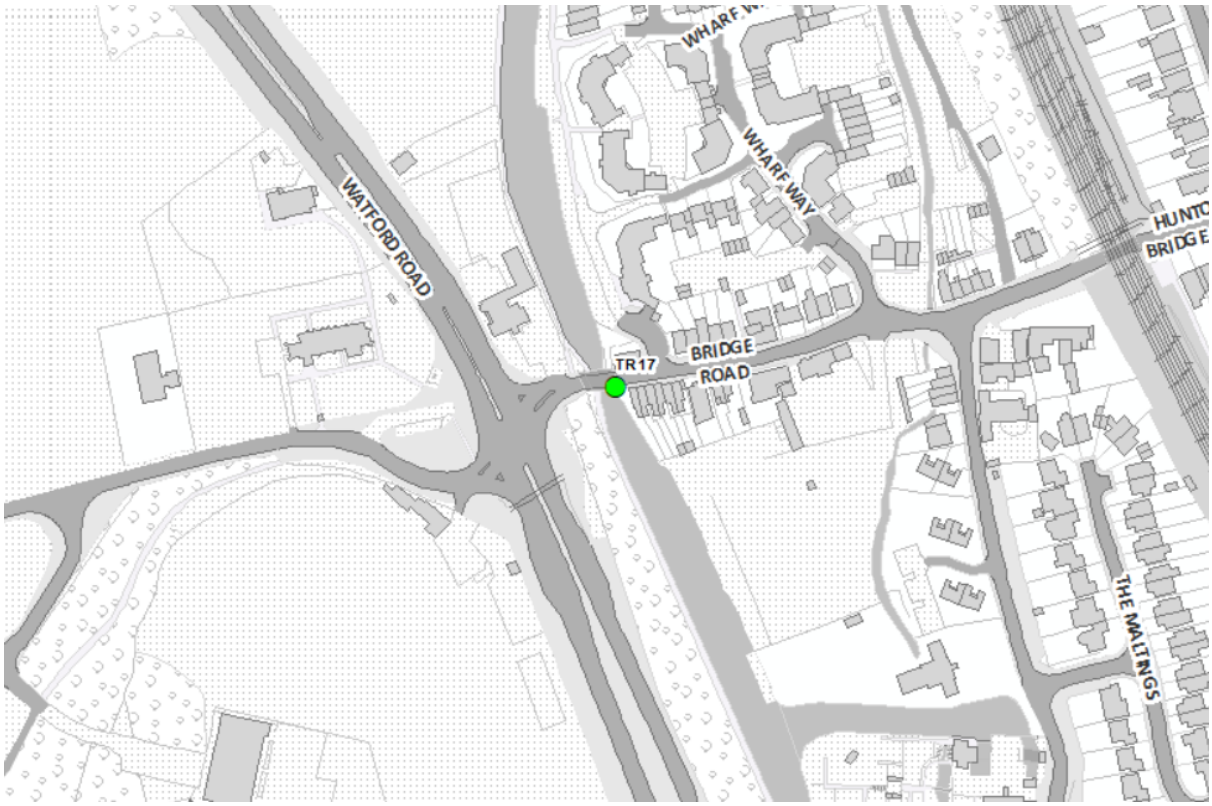


Figure D.3 - Maps showing Non-Automatic Monitoring Sites (from Abbotts Langley in the north to Maple Cross in the south)

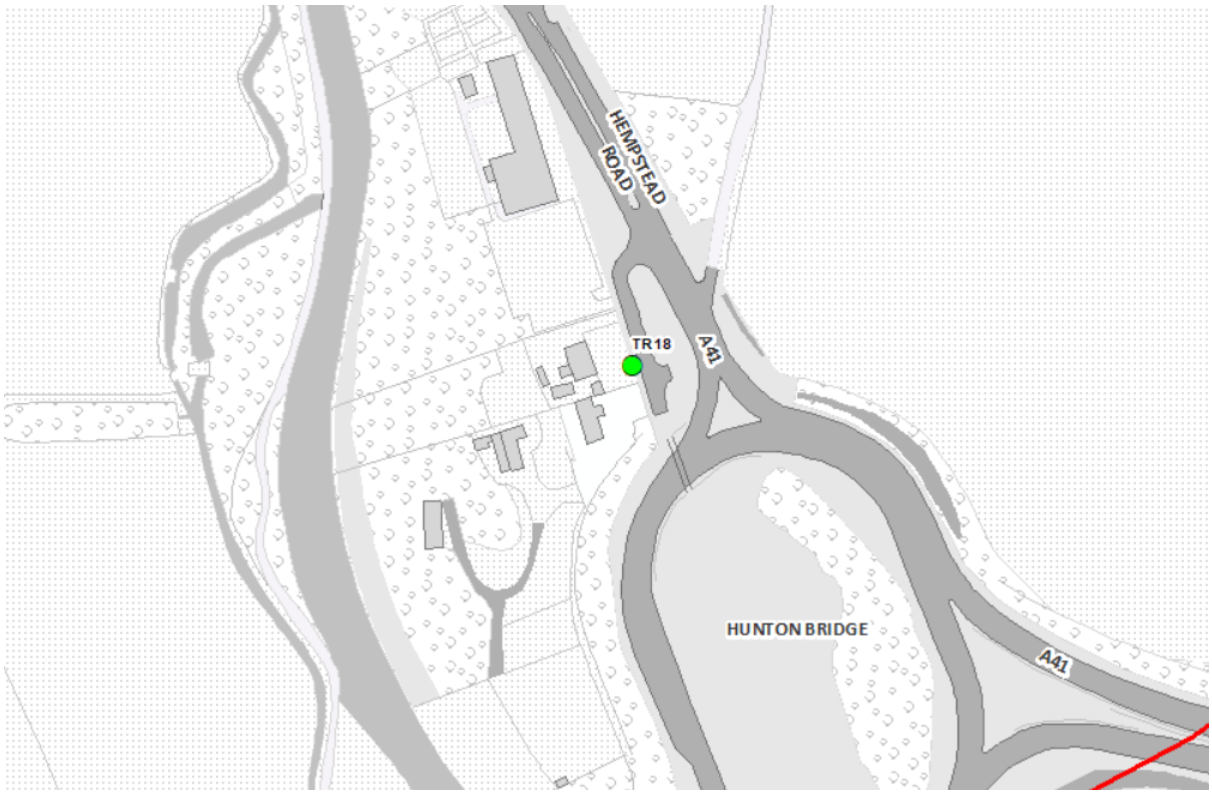
TR16 The Retreat



TR17 Bridge Road

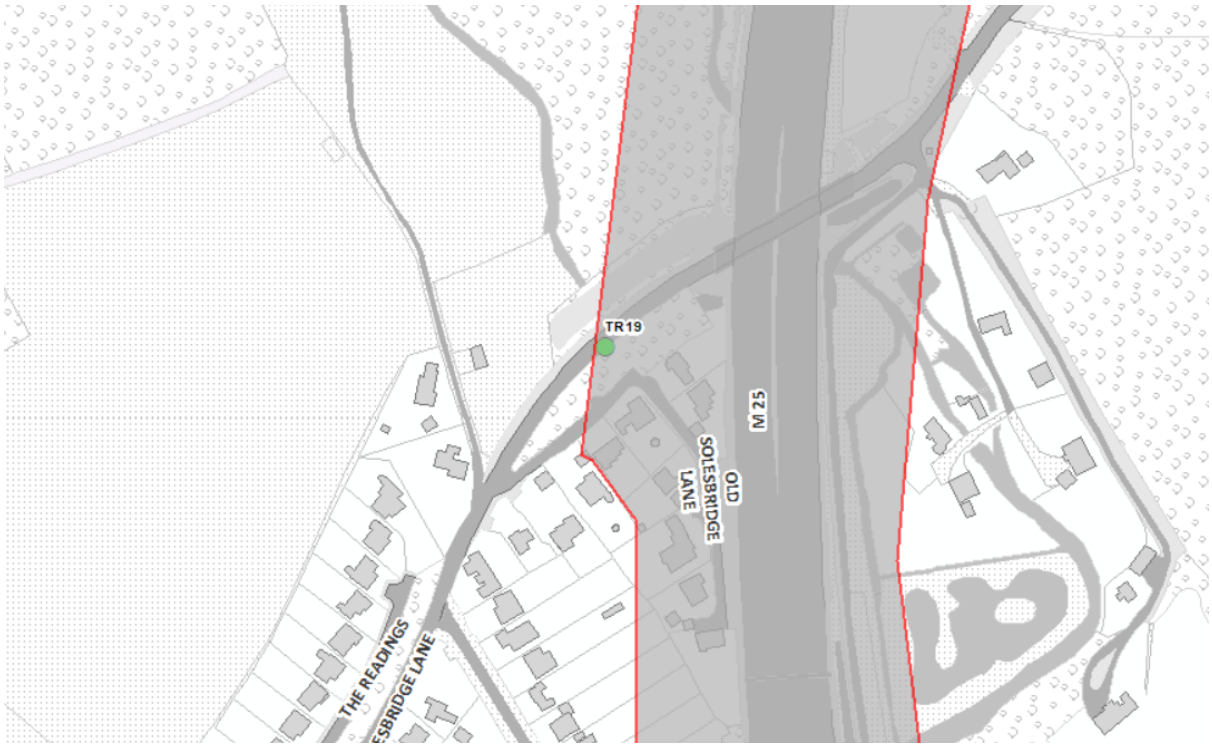


TR18 Glenthorn

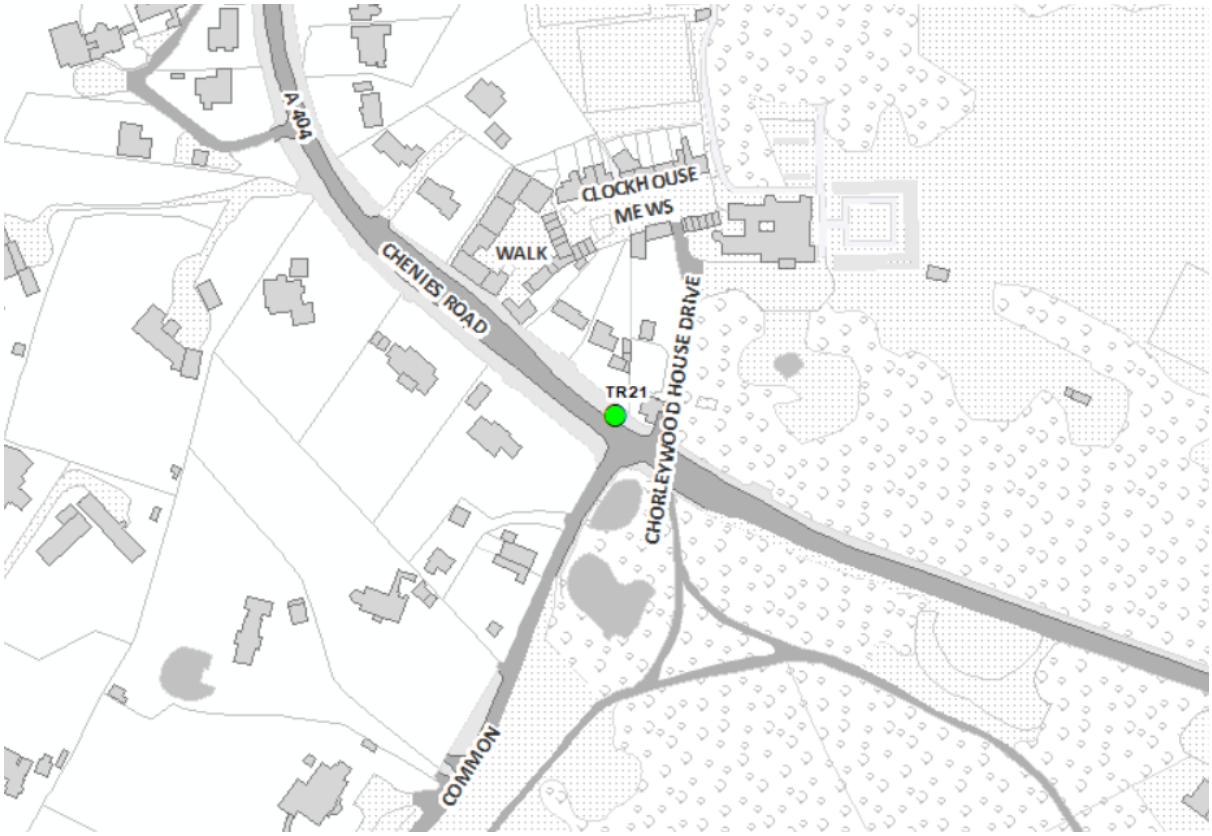


TR15 Glen View

TR19 Old Solesbridge

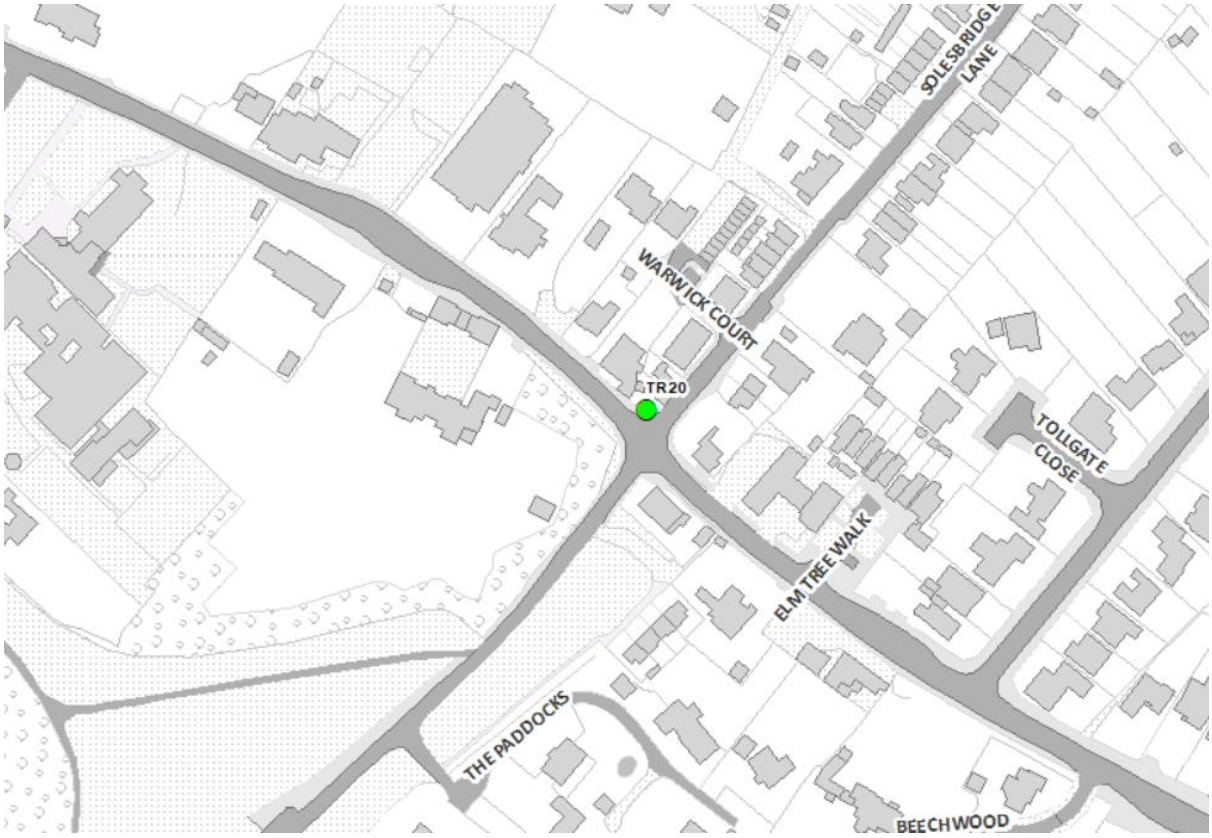


TR21 North Lodge

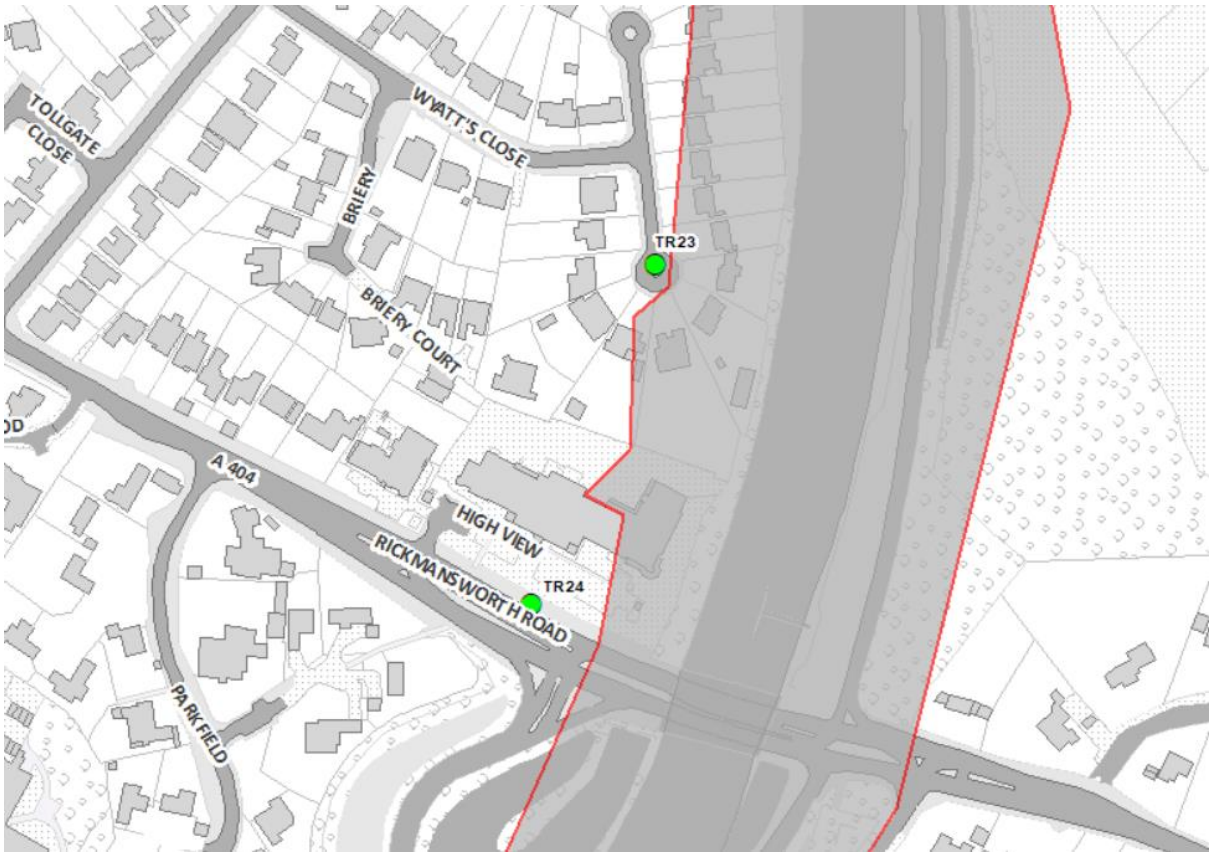


TR22 Wyatt's Road

TR20 Brewery Cottage

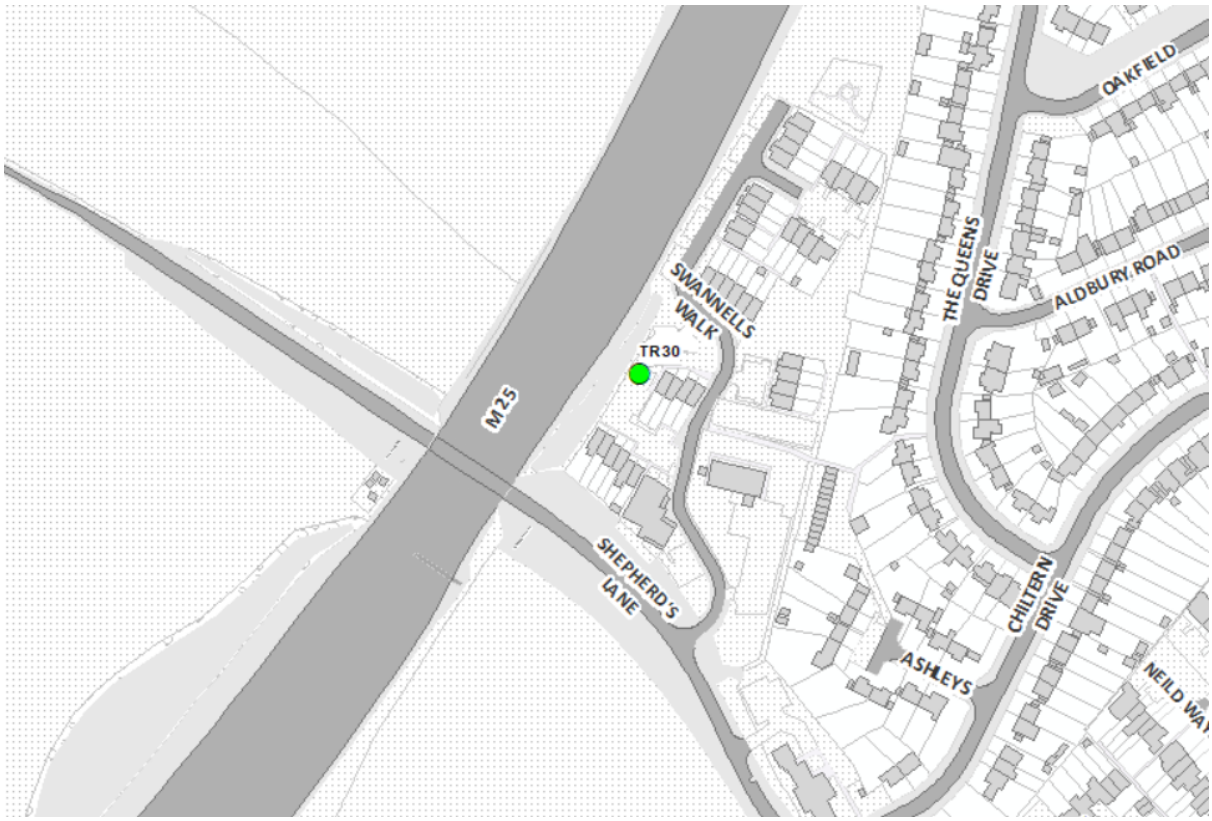


TR23 Wyatt's Close & TR24 Sunrise



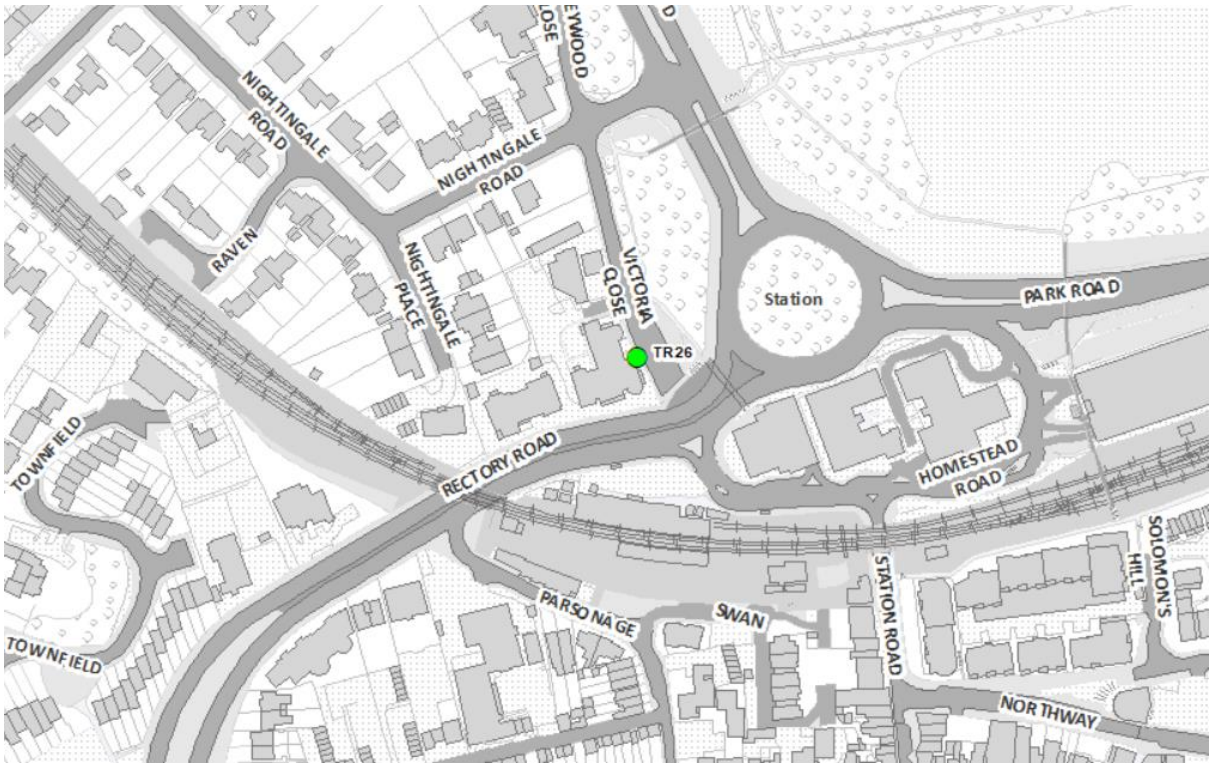
TR25 Chestnut Avenue

TR30 Swannells Walk



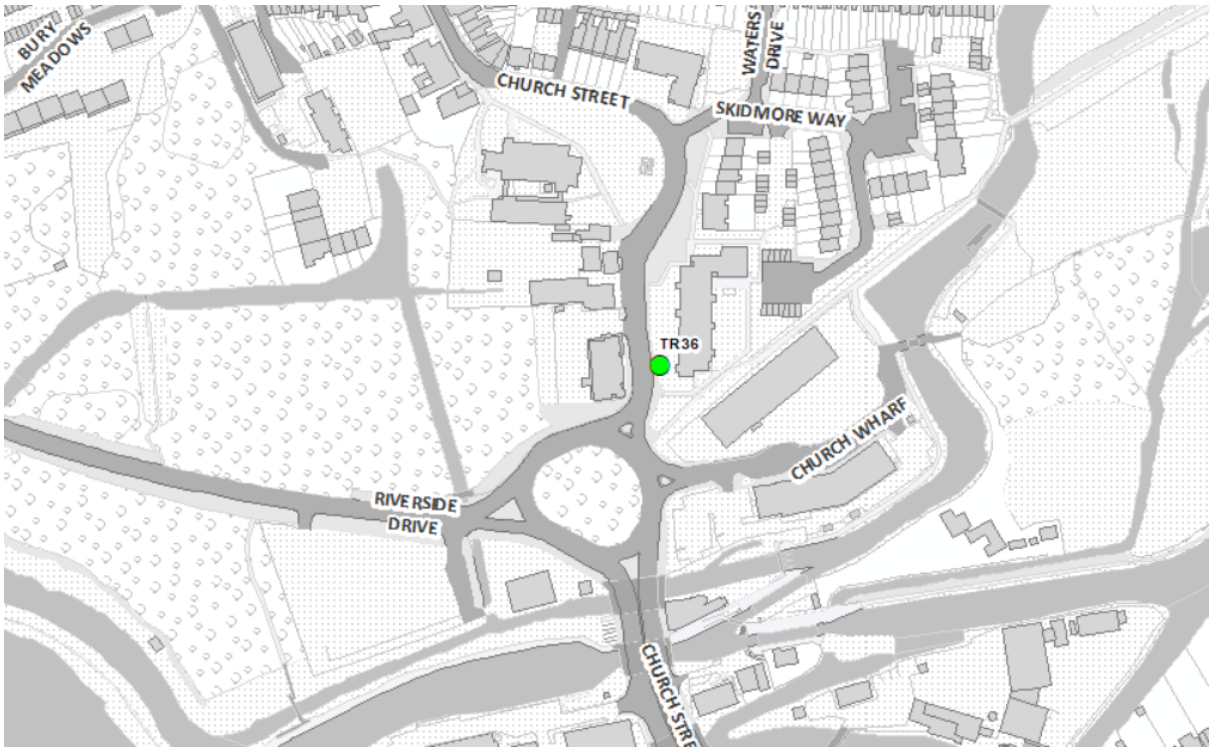
TR39 Hampermill Lane

TR26 Exchange Mansion

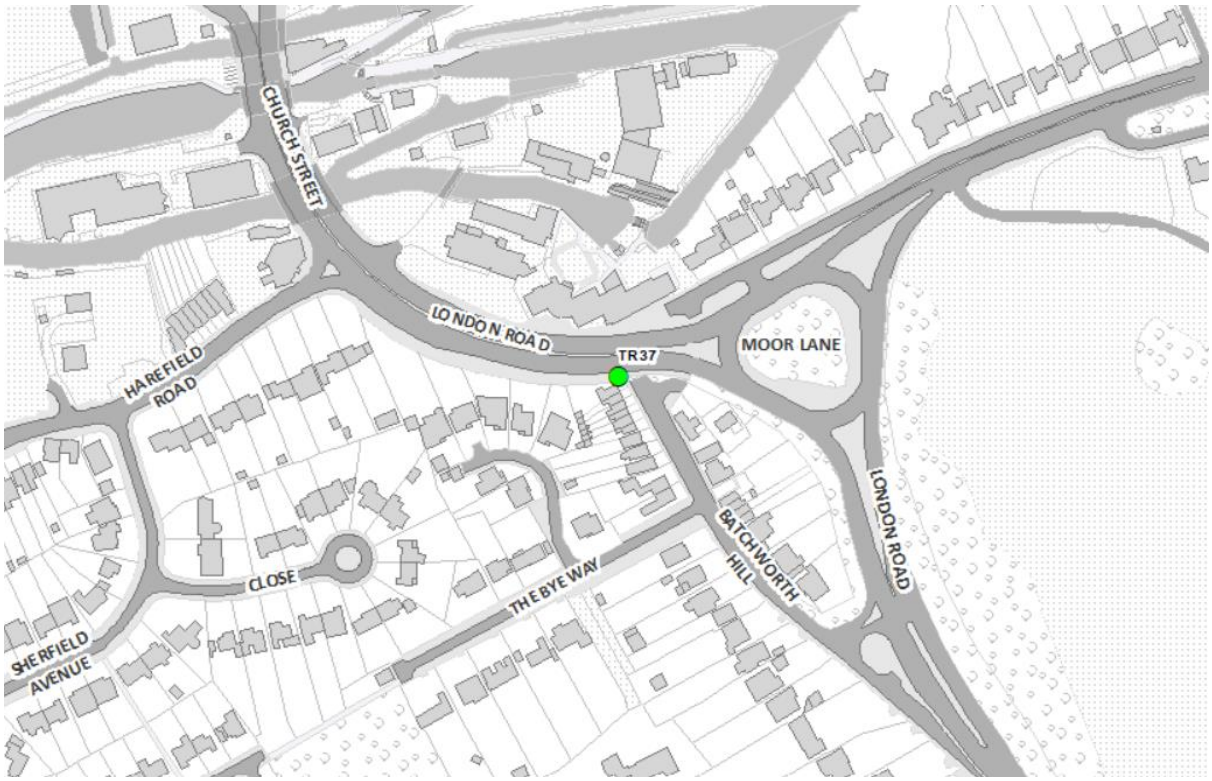


TR27 Uxbridge Road 1, TR28 Uxbridge Road 2 & TR29 Uxbridge Road 3

TR36 St Mary's Court

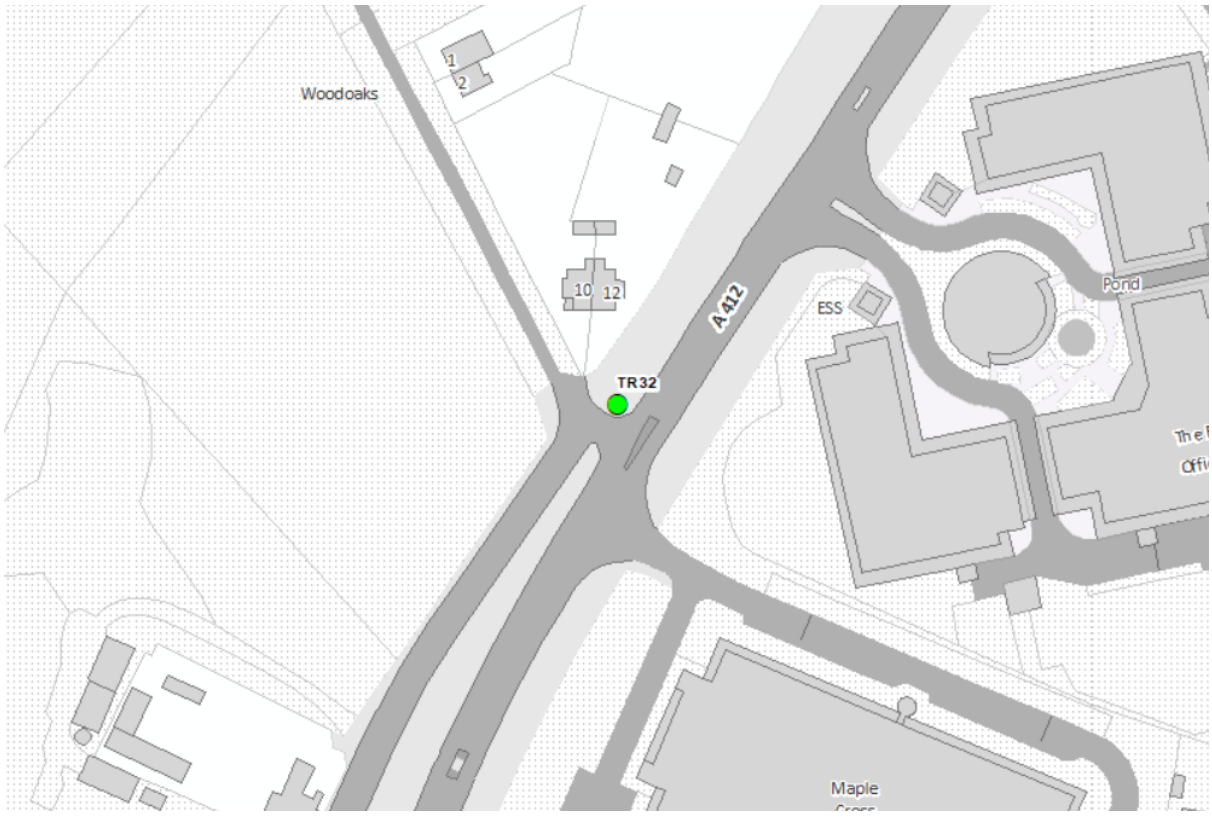


TR37 Church Street

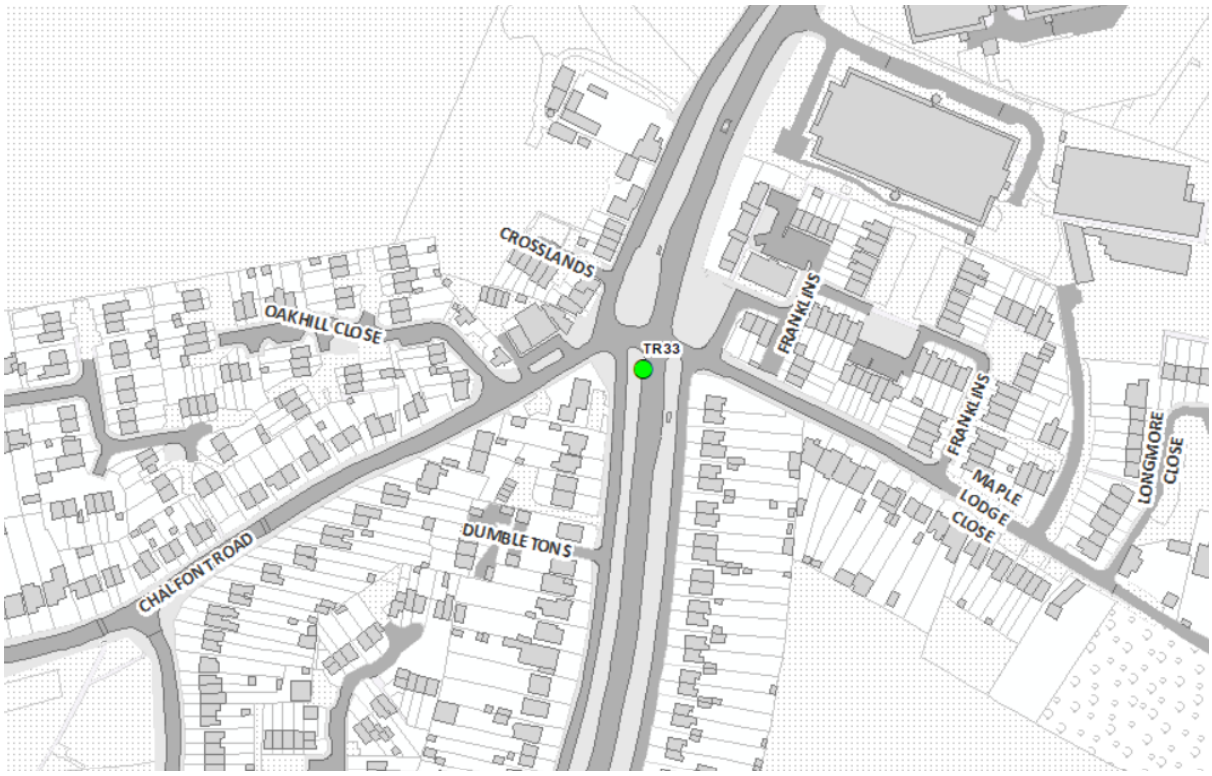


TR31 Tara

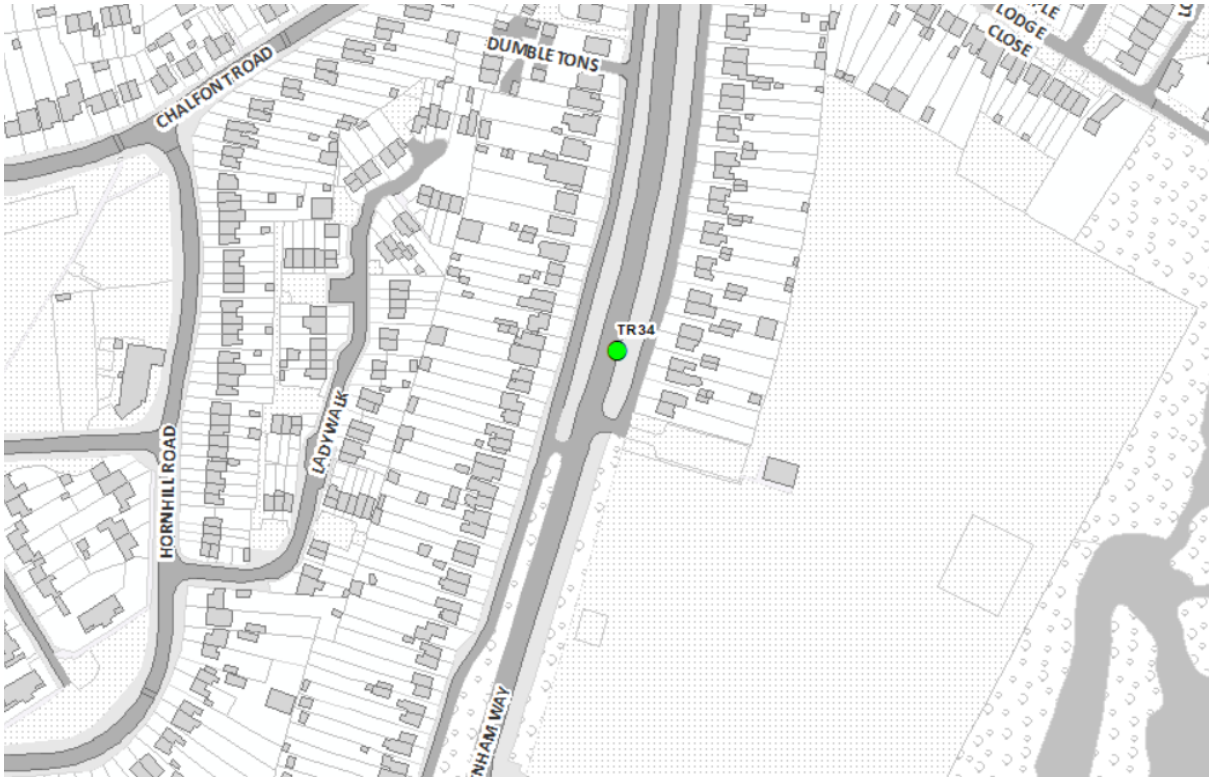
TR32 Denham Way 1



TR33 Crosslands



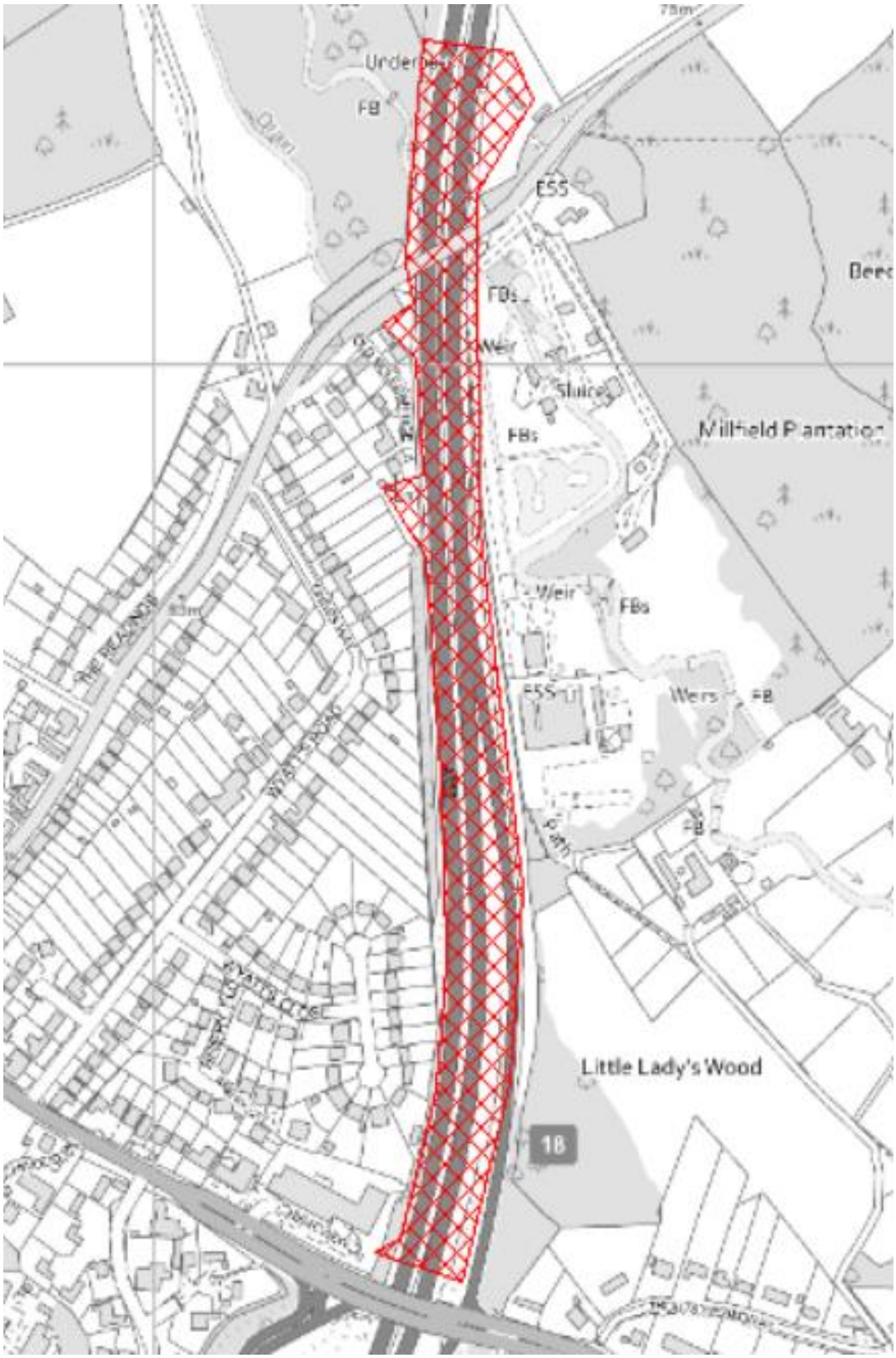
TR34 Denham Way 2



TR35 Denham Way 3

TR40 Prince of Wales PH

Figure D.4 - Map showing the Chorleywood PM_{10} AQMA



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

*The Environment Act 2021 established a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 introduced the following air quality targets:

Annual Mean Concentration Target for $PM_{2.5}$

The annual mean concentration target is that by the end of 31st December 2040 the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10 µg/m³ ("the target level").

Population exposure reduction target for $PM_{2.5}$

The population exposure reduction target is that there is at least a 35% reduction in population exposure by the end of 31st December 2040 ("the target date"), as compared with the average population exposure in the three-year period from 1st January 2016 to 31st December 2018 ("the baseline period"), determined in accordance with regulation 8.

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	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_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control

References

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- Department for Environment, Food & Rural Affairs (2022). *Local Air Quality Management Technical Guidance (LAQM.TG22)*. London. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
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- Firmin, B. (2022) *Three Rivers District Council 2022 Air Quality Annual Status Report (ASR)*. Watford Borough Council. Report Ref. TRDC/BF/ASR/2022_FINAL. Available from: https://www.airqualityengland.co.uk/local-authority/hnb-reports.
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