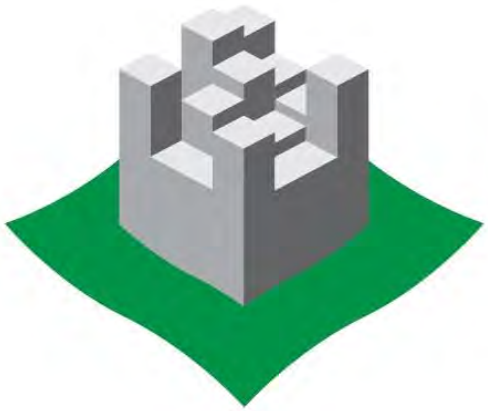

Exeter
City Council

2020 Air Quality Annual Status Report (ASR)

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

June 2020

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Executive Summary: Air Quality in Our Area

Air Quality in Exeter

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 (Data from Environmental equity, air quality, socioeconomic status and respiratory health, 2010 and Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006).

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion (from Defra, Abatement cost guidance for valuing changes in air quality, May 2013).

Public Health England's Public Health Outcomes Framework tool shows that in Exeter in 2018 the fraction of mortality attributable to particulate air pollution was 4.0%. This is below the regional figure for the south west (4.4%) and below the national level of 5.2%. Exeter therefore has levels of particulate matter which are causing harm, but this problem is less severe than in over 75% of the country.

Indicator	Period	Exeter			Region	England	England		
		Recent Trend	Count	Value	Value	Value	Worst	Range	Best
Fraction of mortality attributable to particulate air pollution	2018	–	-	4.0%	4.4%	5.2%	7.3%		2.4%
Air pollution: fine particulate matter	2017	–	-	7.7	7.8	8.9	12.6		5.0

Data from Public health England

There are two national objectives for levels of nitrogen dioxide. These are for the average level over a whole year, which should be below 40 μg/m^3, and the average level for one hour, which should be below 200 μg/m^3. It is not easy to measure the average level for one hour, so a proxy has been developed by the Department for Environment, Food and Rural Affairs (DEFRA) which is that the average over a whole year should be below 60 μg/m^3. The annual average objective applies to residential, hospital and educational sites. The hourly average objective applies to these sites and to busy streets and workplaces as well.

Exeter City Council has a monitoring network that is designed to identify the areas with the highest levels of nitrogen dioxide, at the locations where the objectives apply. Most of the monitoring sites are therefore on residential properties in close proximity to the busiest roads and junctions in the city. The results of the monitoring conducted by the City Council is not generally representative of typical or average conditions across the city. Instead it is indicative of the worst case locations.

In recent years the annual average objective has not been met at a number of places in the city. These are Alphington Street and along the Heavitree corridor into the city. The highest levels are measured on the Heavitree corridor, at East Wonford Hill. Here levels have historically been close to or above the levels which indicates an exceedance of the hourly objective.

The measured results for 2019 can be found in table A.3 of this report. Trends in annual nitrogen dioxide concentrations can also be seen in Figure A.1. These show that in 2019 levels of nitrogen dioxide at most sites, including East Wonford Hill fell compared to 2018 and no new areas of exceedance were identified.

Some sites have levels between 35 and 40 $\mu g/m^3$ (i.e. are close to but not above the objective level of 40). These are Cowick Street / Cowick Lane junction, Red Cow Village, York Road, the junction of Blackboy Road and Pinhoe Road, Barrack Road and Rowancroft (Heavitree Road) at Livery Dole and Topsham Road near Tollards Road. Away from these locations, but still along the busy routes into and around the city, concentrations of nitrogen dioxide are in the range between 25 and 35 $\mu g/m^3$.

As you move away from busy roads, levels fall below 25 $\mu g/m^3$. Typical suburban streets with only local traffic flows experience levels of between 13 and 25 $\mu g/m^3$. The majority of the population of Exeter therefore live in locations with concentrations of nitrogen dioxide well below the objective, but a small number are exposed at home to levels above the objective. No schools in Exeter experience levels above the objective.

NO_2 levels in Exeter have at most sites been broadly stable since around 2012, following a decrease from 2009 levels. 2018 was a year with unusual weather conditions, and this seems to have resulted in higher pollution levels, for example by increased emissions from cold engines in the cold winter, or use of vehicle air conditioning in the hot summer. Levels at most sites in the city fell again in 2019.

Trends in air quality generally take several years to emerge, because of the annual variability caused by weather. If any trends appear, it will necessitate updates to the Air Quality Action Plan (AQAP), which will be reported in future Annual Status Reports.

The Annual Status Report also summarises the results of particulate pollution measurements (PM_{10} and $PM_{2.5}$). No areas in the city are thought to exceed the objectives for this type of air pollution.

The current AQAP covers the period 2019-2024. It was published following a significant consultation and engagement process which reached nearly 3000 people. The plan is available online at this link. Exeter City Council will work with Devon County Council Highways team, neighbouring authorities, Exeter City Futures and Sport England to deliver the measures in this plan.

Air quality in 2020 will have been significantly affected by the Covid-19 lockdown. It is not yet possible to draw conclusions about the scale of this impact and weather conditions will also have affected pollution levels when compared to 2019. This will be reported on in the next Annual Status Report.

Actions to Improve Air Quality

More detail on the measures that we are taking to improve air quality can be found in the Action Plan. Key completed measures are:

1. Exeter City council has published a Physical Activity Strategy which has prioritised development projects for the Wonford Health & Wellbeing Centre and Exeter Arena Sports Village. Both projects are aimed at increased cycling and promoting active travel in everyday life. The Sport England Local Delivery Pilot has developed over 20 projects for implementation in 2020 including active school community projects in six schools (to promote active travel to and from school), five play streets and two school streets delivered as part of active environments projects. All this will be underpinned by a communications strategy, tested during the COVID 19 pandemic, that focusses on getting the least active members of the community moving more (including active travel) A key focus of all these initiatives is to increase active travel.

2. The Council conducted a staff travel survey which has informed the development for a radical active travel policy to be co-designed with staff and implemented in 2020
3. Extension of the Council's monitoring network to include 10 new sites representative of suburban locations and in areas of significant new development. Exceedances of the objective are not expected at any of these sites, but they do expand the understanding of concentrations away from the identified hot spots.
4. Environmental Health Officers undertook an education project in a city centre primary school close to the Air Quality Management Area working with Sustrans and provided a stand and presentation at Junior Life Skills, offering active travel education to over 1000 year six pupils from primary schools throughout the city.
5. Commencement of work on a scheme for battery storage linked to extended Council solar panels which would be able to power a fleet of electric refuse collection vehicles.
6. Scrutiny of planning applications for air quality impacts, including making objections to developments on air quality grounds where this is justified and the negotiation of mitigation in accordance with Council and national planning policy.
7. From 1st Jan 2020 adopted policy required the Hackney carriage fleet to be 50% Euro 6 wheelchair accessible vehicles and 50% Ultra Low Emission Vehicles saloon cars with a stated emission level of 75g km CO_2 or below.
8. A reduction in NOx emissions from buildings as a result of a variety of measures intended primarily to address fuel poverty and carbon emissions. These include retrofitting 6 ECC Council houses under a ZEBCat (zero energy buildings catalyst) pilot, completion of 26 new PassivHaus standard homes by Exeter City Council, commencement of construction of an Extra Care facility and a leisure centre and swimming pool both meeting the PassivHaus standard and continued implementation of district heating schemes to provide heating and hot water to 2800 homes at Monkerton, Tithebarn, Mosshayne, Pinn Court and Park Farms, and Exeter Science Park.

9. Work on the new bus station continued, which will provide improved facilities for public transport users in the city.
10. Consultation by Devon County Council on a new draft Transport Strategy in early 2019. Proposed measures and targets within this included:
    a. 50% of trips by foot or cycle within the city,
    b. Removal of all air quality exceedances in the city,
    c. Single ticketing platform combing bus, bike and car club (with scope for all these to be electric in the future).
11. Work started on a new Park and Change site at the Science Park, to be completed in 2021.
12. Further enhancement of the local Co-Cars car club which now includes 30 cars, 5 of which are electric.
13. Roll out of a fleet of 60 new e-bikes to upgrade the local Co-Bikes on-street cycle hire scheme and completion of the plans for a further 40 in 2020.
14. Further development of the cycle network in and around the city, particularly route E4. Work in Exhibition Fields was completed, construction started on Summer Land overbridge and at Exhibition Way and design work for Stoke Hill and Union Road is progressing.
15. Devon County Council continue to undertake residential Travel Planning. Staff engaged with 600 dwellings last year, making a total of around 1600 homes so far.

Exeter City Council will continue to work with partners on implementing the actions in the AQAP over the course of the next reporting year, particularly:

- Implementation of the agreed programme of Sport England work.
- Further development of the net zero plan for Exeter, in conjunction with Exeter City Futures.
- Publication of the final Transport Strategy by Devon County Council. This will update the transport policy context for Exeter, which will make it easier to bring forward actions to increase active and sustainable travel, reduce emissions and implement the AQAP.

- Improvements to the E4 cycle route linking the new development areas at Monkerton, Tithebarn and Cranbrook with the University. This will make it safer and easier to make journeys by bike.
- New Park and Change sites on the outskirts of the city. This will provide sustainable and active travel options for those who travel in to the city from outside.
- Devin County Council, in conjunction with Exeter City Council, Exeter University and the Royal Devon and Exeter Hospital Trust were successful in obtaining grant funding to purchase and trial cargo E-Bikes. Three of these will be used by the Environmental Health & Community Safety team. The intention is to demonstrate how and under what circumstances electric cargo bikes can replace car and light van journeys and to act as a demonstrator project for the wider Council and businesses in the city.
- Significant alterations to road space allocation have been made at very short notice by Devon County Council in order to facilitate active travel and social distancing. This includes closing some roads to car traffic and ‘pop-up’ cycle lanes. The future of these measures will be reviewed as the year progresses.

Conclusions and Priorities

No exceedances were identified in 2019 outside the existing AQMA. Levels at most sites have fallen in 2019 after an increase in 2018, thought to be caused at least partly by unusual weather conditions that year. Any emerging trends will be closely monitored.

Exeter City Council’s priorities for 2020 are to continue to progress the actions in the AQAP, particularly those that are part of the Sport England Local Delivery Pilot programme, and to assist Devon County Council in the development of plans for the Heavitree corridor. The emerging Climate Emergency work for both Devon and Exeter will also affect the AQAP but neither of these plans has yet been finalised. Once they are, the AQAP can be amended as required in the next nnual Status Report.

The Covid-19 recovery plans will develop and evolve as 2020 progresses and these will also have an impact on travel habits, vehicle emissions and community engagement.

The Greater Exeter Strategic Plan (GESP) has been subject to some delay but the next stage of consultation is expected in 2020. The GESP contributes to measures within the Action Plan and so this delay could also affect the delivery of the AQAP. Until the GESP is agreed the Council will continue to robustly implement the existing planning policies relating to air pollution and ensure that developers follow the latest best practice for assessing air quality impacts.

Local Engagement and How to get Involved

Local air pollution currently has a high profile within the city. For example it is one of Exeter City Futures 12 goals, nearly 3000 people were involved in the recent consultation on the AQAP and Devon County Council have committed in the draft Transportation Strategy to resolve exceedances of the objective.

Exeter City Futures welcomes proposals from community and interest groups who wish to improve air quality in their local area. The Wellbeing Exeter Community Builders are actively engaging with local communities to increase active travel, social inclusion, improve the public realm for walking and cycling and benefit air quality.

Further enquiries about pollution levels and actions to improve air quality should be made to environmental.protection@exeter.gov.uk.

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1 Local Air Quality Management

This report provides an overview of air quality in Exeter during 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Exeter City Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Exeter City Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at this link. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored / modelled concentration at a location of relevant exposure) at Declaration	Level of Exceedance (maximum monitored / modelled concentration at a location of relevant exposure) now	Action Plan Name	Date of Publication	Link
Exeter AQMA	Declared 2007, Amended 2011	NO2 Annual Mean	Exeter	An area encompassing the radial routes into the city and other major routes	NO	70 µg/m3	53.5 µg/m3	Exeter AQAP 2019-2024	2018	link
Exeter AQMA	Declared 2007, Amended 2010	NO2 1 Hour Mean	Exeter	An area encompassing the radial routes into the city and other major routes	NO	65 µg/m3	53.5 µg/m3	Exeter AQAP 2019-2024	2018	link

☒ **Exeter City Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

2.2 Progress and Impact of Measures to address Air Quality in Exeter

Defra's appraisal of last year's ASR concluded that 'the report is well structured, detailed, and provides the information specified in the Guidance' and goes on to say 'The Council has no current plans to amend the AQMA and reduce the size of the area it encompasses which is a decision that is supported'. It also says '. It is encouraging to see that the Council is taking an active approach to reviewing and amending their monitoring program as necessary'. The appraisal makes suggestions for additional content in future Annual Status Reports, such as the Public Health Outcomes Framework indicator and these have all been included this year.

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

More detail on these measures can be found in the Action Plan. Key completed measures are:

16. Exeter City council has published a Physical Activity Strategy which has prioritised development projects for the Wonford Health & Wellbeing Centre and Exeter Arena Sports Village. Both projects are aimed at increased cycling and promoting active travel in everyday life. The Sport England Local Delivery Pilot has developed over 20 projects for implementation in 2020 including active school community projects in six schools (to promote active travel to and from school), five play streets and two school streets delivered as part of active environments projects. All this will be underpinned by a communications strategy, tested during the COVID 19 pandemic, that focusses on getting the least active members of the community moving more (including active travel) A key focus of all these initiatives is to increase active travel.
17. The Council conducted a staff travel survey which has informed the development for a radical active travel policy to be co-designed with staff and implemented in 2020
18. Extension of the Council's monitoring network to include 10 new sites representative of suburban locations and in areas of significant new

development. Exceedances of the objective are not expected at any of these sites, but they do expand the understanding of concentrations away from the identified hot spots.

19. Environmental Health Officers undertook an education project in a city centre primary school close to the AQMA working with Sustrans and provided a stand and presentation at Junior Life Skills, offering active travel education to over 1000 year six pupils from primary schools throughout the city.

20. Commencement of work on a scheme for battery storage linked to extended Council solar panel arrays which would be able to power a fleet of electric refuse collection vehicles.

21. Scrutiny of planning applications for air quality impacts, including making objections to developments on air quality grounds where this is justified and the negotiation of mitigation in accordance with Council and national planning policy.

22. From 1st Jan 2020 adopted policy required the Hackney carriage fleet to be 50% Euro 6 wheelchair accessible vehicles and 50% ULEV saloon cars with a stated emission level of 75g km CO_2 or below.

23. A reduction in NOx emissions from buildings as a result of a variety of measures intended primarily to address fuel poverty and carbon emissions. These include retrofitting 6 ECC Council houses under a ZEBCat (zero energy buildings catalyst) pilot, completion of 26 new PassivHaus standard homes by Exeter City Council, commencement of construction of an Extra Care facility and a leisure centre and swimming pool both meeting the PassivHaus standard and continued implementation of district heating schemes to provide heating and hot water to 2800 homes at Monkerton, Tithebarn, Mosshayne, Pinn Court and Park Farms, and Exeter Science Park.

24. Work on the new bus station continued, which will provide improved facilities for public transport users in the city.

25. Consultation by Devon County Council on a new draft Transport Strategy in early 2019. Proposed measures and targets within this included:

    a. 50% of trips by foot or cycle within the city,

b. Removal of all air quality exceedances in the city,

c. Single ticketing platform combing bus, bike and car club (with scope for all these to be electric in the future).

26. Work started on a new Park and Change site at the Science Park, to be completed in 2021.

27. Further enhancement of the local Co-Cars car club which now includes 30 cars, 5 of which are electric.

28. Roll out of a fleet of 60 new e-bikes to upgrade the local Co-Bikes on-street cycle hire scheme and completion of the plans for a further 40 in 2020.

29. Further development of the cycle network in and around the city, particularly route E4. Work in Exhibition Fields was completed, construction started on Summer Land overbridge and at Exhibition Way and design work for Stoke Hill and Union Road is progressing.

30. DCC continue to undertake residential Travel Planning. Staff engaged with 600 dwellings last year, making a total of around 1600 homes so far.

Exeter City Council will continue to work with partners on implementing the actions in the AQAP over the course of the next reporting year, particularly:

- Implementation of the agreed programme of Sport England work.
- Further development of the net zero plan for Exeter, in conjunction with Exeter City Futures.
- Publication of the final Transport Strategy by DCC. This will update the transport policy context for Exeter, which will make it easier to bring forward actions to increase active and sustainable travel, reduce emissions and implement the AQAP.
- Improvements to the E4 cycle route linking the new development areas at Monkerton, Tithebarn and Cranbrook with the University. This will make it safer and easier to make journeys by bike.
- New Park and Change sites on the outskirts of the city. This will provide sustainable and active travel options for those who travel in to the city from outside.

- Devin County Council, in conjunction with Exeter City Council, Exeter University and the Royal Devon and Exeter Hospital Trust were successful in obtaining grant funding to purchase and trial cargo E-Bikes. Three of these will be used by the Environmental Health & Community Safety team. The intention is to demonstrate how and under what circumstances electric cargo bikes can replace car and light van journeys and to act as a demonstrator project for the wider Council and businesses in the city.
- Significant alterations to road space allocation have been made at very short notice by Devon County Council in order to facilitate active travel and social distancing. This includes closing some roads to car traffic and 'pop-up' cycle lanes. The future of these measures will be reviewed as the year progresses.

Exeter City Council's priorities for the coming year are to continue to progress the AQAP, in conjunction with the development of the city and county's Climate Emergency plans and in the context of the Covid-19 lockdown and recovery. At the time of writing, the recovery plans are still being developed and are expected to evolve throughout the year. This may well necessitate changes to the AQAP either in terms of timing of delivery or the nature of measures. These will be reported on in the next Annual Status Report.

The principal challenges and barriers to implementation that Exeter City Council anticipates facing are further funding constraints within Local Government, available officer time, and public, business and political appetite for measures that may be perceived potentially as harming or delaying economic recovery (even if this is not the case).

Concerns have previously been raised by local interest groups over the impact that delays in the GESP timetable may have on implementation of the AQAP. Work on the GESP is progressing, with the next stage of consultation taking place in 2020 and the Transport Strategy was consulted upon in 2019. Until the GESP is agreed , the Council will continue to robustly implement the existing planning policies relating to air pollution and ensure that develops follow the latest best practice for assessing air quality impacts. If further delays occur then changes to the AQAP may be required via the mechanism of future Annual Status Reports.

Exeter City Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in the Exeter AQMA although the full impact of Covid-19 and recovery (including financial pressures on local authorities) is not yet understood. Progress with implementing the priority measures and all the actions listed in Table 2.2 will be reported on in the next Annual Status Report in 2021 and changes can be made to the AQAP if required by the mechanism of future ASRs.

Table 2.2 – Progress on Measures to Improve Air Quality

The measures are colour-coded, green are most effective and yellow are expected to have the lowest impacts.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1 (green measure)	Filtered permeability projects to be considered for the city with an initial focus on the Heavitree corridor area and including a feasibility study for corridor improvements	Policy Guidance and Development Control	Other policy	Initial work commenced 2019	DCC via Transport Strategy and Exeter City Futures, Sport England Local Delivery Pilot	SELDP, DCC, Developer Contributions, Grant Funding where available and ECC	12% cycle to work and 50% walk or cycle to work and Heavitree corridor improvements designed to achieve compliance with the objective	The target for design of changes to the Heavitree corridor area will be to eliminate exceedances. Details will be finalised as the design emerges, but it is currently expected that a reduction in emissions of between 39 and 78% will be required	DCC have undertaken an initial prioritisation of proposals for Heavitree area to identify those to progress this year. Play Streets policy and application developed, first 5 streets to be piloted in summer/Autumn 2020. COVID-19 Emergency Active Travel measures piloted in key SELDP priority areas (focus on RD&E hospital/Wonford)	Rolling Programme	Plans will be developed for individual areas in consultation with communities. New temporary road closures have also taken place in 2020 to enable social distancing.
2 (amber measure)	Consider access restrictions which will reduce the dominance of private cars, including in the city centre	Policy Guidance and Development Control	Other policy	Initial work commenced 2019	DCC via Transport Strategy and Exeter City Futures	DCC, grant funding as available and developer contributions	Less than 50% private car commute	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	Traffic reduction scheme for Bartholomew Street West to be implemented in 2020. Roadside interviews in the city centre have been undertaken to inform a city centre traffic strategy. Liveable Exeter vision for the city published, which includes development on car parks, and a reduction in road space for cars. Initial work on South Street project is progressing, to include improved cycle routes, and connections between the city centre and the Quay area.	Ongoing Programme, next phases to be implemented 2021	Consultation and obtaining relevant permissions, consents and traffic orders as well as bringing together necessary funding. New temporary road closures have also taken place in 2020 to enable social distancing.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
3 (amber measure)	New transport links and Park & Change facilities to make it easier for those living outside the city to choose active and sustainable travel modes	Transport Planning and Infrastructure	Other	Construction has commenced, first sites will open in 2020/21	DCC via Transport Strategy	DCC, grant funding as available and developer contributions	Publication of Transport Strategy. Less than 50% private car commute.	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	Pinhoe Park and Change under construction. Park and Change at Science Park being developed and construction expected to commence in 2020.	Ongoing Programme	Consultation and obtaining relevant permissions, consents and traffic orders as well as bringing together necessary funding
4 (yellow measure)	Changes to parking charges to discourage car travel in peak times, encourage longer stays in the city centre and support other measures in this plan, such as active travel	Traffic Management	Other	All proposed changes to parking tariffs paused during covid lockdown pending review	ECC via Local Plan	ECC	New charging scheme in place	<1% reduction in emissions. This measure is expected to have an indirect effect on emissions, such that it is not possible to reliably quantify the impact of this measure alone.	This was being actively pursued with ECCs equipment providers but future structure of parking charges and plans for city centre car parks are being considered as part of the recovery plans.	2021	Recovery plans will develop and evolve throughout 2020.
5	Maximise efficiency of existing highway network	Transport Planning and Infrastructure	Other	Identify areas for specific improvement and develop detailed models to assess solutions in 2020	DCC via Transport Strategy and Exeter City Futures	DCC, ECC, grant funding as available and developer contributions	TBC in subsequent annual air quality status reports	TBC, based on predicted changes to traffic parameters provided by DCC as plans for specific locations emerge and are consulted upon	In planning phase	Ongoing programme	Consultation and obtaining relevant permissions, consents and traffic orders as well as bringing together necessary funding
6 (amber measure)	Access Fund and cycle/walking network, Local Walking and Cycling Infrastructure Plan (LCWIP)	Transport Planning and Infrastructure	Other	2019	DCC via Transport Strategy	Access Fund money obtained until April 2020	12% cycle to work and 50% walk or cycle to work	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	Planned E4 Cycle Route improvements ongoing, with 2km of works to be completed by the end of 2020. The next phase of works are being planned. The LCWIP document is being prepared alongside this.	Ongoing, as DCC have current plans for upgrades to cycling and walking infrastructure which will evolve as the LCWIP develops	Consultation and obtaining relevant permissions, consents and traffic orders as well as bringing together necessary funding

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
7 (amber measure)	Expand school and community projects, car free events and events promoting active travel, building on the success of the Heavitree pilot	Promoting Travel Alternatives	Other	2019	ECC via Sport England Local Delivery Pilot & Exeter City Futures	Sport England funding and programme agreed for two years.	12% cycle to work and 50% walk or cycle to work	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	Two primary schools identified for School Streets programme in Sep 2020; Newtown & Whipton. Community Builders and newly appointed SELDP local Physical Activity Organisers planning play street 'non car events'	Ongoing programme, which evolves as previous events and projects are evaluated	Plans will be developed in individual areas with local communities. Increased community cohesion and activism as a result of covid may benefit this work.
8 (amber measure)	Use social prescribing and community building to help individuals get and stay active	Public Information	Other	2019 (Wellbeing Exeter programme)	ECC via Sport England Local Delivery Pilot and local Health Service providers	Sport England funding and programme agreed for two years.	12% cycle to work and 50% walk or cycle to work	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	Behaviour change training delivered for all Community Builders and Community Connectors to provide support to people to lead active lifestyles. New social prescribing posts recruited to support health & wellbeing of Children and Young Families. Exeter Community Wellbeing Programme established in response to COVID-19 supporting c. 3000 residents in need of support during pandemic	Ongoing programme, which evolves as previous events and projects are evaluated	The Covid recovery plans seek to retain and enhance the increase in activity levels, community activism, volunteering and contact with nature seen during lockdown.
9 (amber measure)	High quality parks, play areas, sport and leisure facilities	Promoting Travel Alternatives	Other	2019	ECC via Physical Activity Strategy, Sport England Local Delivery Pilot & Local Plan	Sport England funding and programme agreed for two years.	Exeter the most active city in England	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	Physical Activity Strategy published and flagship programmes in development - Wonford Health & Wellbeing Centre and Exeter Arena Sports Village now in feasibility stage. Focus on sites becoming more accessible for sustainable transport and increased active travel infrastructure	Ongoing programme	2020 start to implement plans, after obtaining necessary permissions and consents, and funding

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
10 (yellow measure)	Communications plan, to support measures that will achieve modal shift	Public Information	Other	Communications under review as part of the Recovery Plan	ECC via Sport England Local Delivery Pilot & Exeter City Futures	ECC via existing internal budgets, Sport England Local Delivery Pilot & Exeter City Futures	12% cycle to work and 50% walk or cycle to work	<1% reduction in emissions. The purpose of this measure is to enable the Council to explain why it is taking action. The measure itself is unlikely to have significant impact on its own.	Communications strategy developed through SELDP for summer 2020 launch - 'Let's Move'. Focus on small steps for 'least active' residents and communities to move more in their local neighbourhoods. Walking & Cycling central to this communications strategy	Ongoing (iterative process of developing and implementing communications / messages)	Future communications may be brought under the umbrella of the Recovery Plan
11 (yellow measure)	Promote and expand Co-Bikes network, and support the roll out of electric car club vehicles to more locations	Promoting Travel Alternatives	Other	2019	DCC, ECC via Transport Strategy, Sport England Local Delivery Pilot & Exeter City Futures	Ongoing programme, dependent on funding availability	ULEV Co-Car fleet and expanded network of Co-Bikes	<1% reduction in emissions. This measure will have indirect benefits for air quality by facilitating active travel and supporting a change in car ownership patterns. It is not possible to reliably model the impact of this measure alone on emissions	DCC have planned upgrades to the Co-Bikes network. Bikes and docking stations upgraded in 2019. Ongoing expansion of car network.	Ongoing programme	Dependent on funding availability
12 (amber measure)	An improved multi-modal public transport network, incorporating cleaner bus technologies	Transport Planning and Infrastructure	Other	Initial work commencing 2020	DCC via GESP, Transport Strategy and Exeter City Futures	TBC	Less than 50% private car commute	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes). As an example, 33% bus electrification would achieve 5% fall in emissions at East Wonford Hill and 66% electrification would achieve 10% reduction.	14 Euro 6 busses have entered the fleet and significant new additions to the city's bus network	Ongoing programme	Dependent on funding availability and future demand for public transport (related to covid-19 recovery plans)

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
13	Developers to mitigate the effects of their development on air quality	Policy Guidance and Development Control	Other policy	2020 consultation on draft policies and options for GESP	GESP team, ECC via GESP & Local Plan	Resourced by the GESP authorities	Incorporation of new policies into GESP and Local Plan review	The purpose of this measure is to limit the impact of new development. It is not intended to reduce emissions on the current baseline (although some reduction may be achieved as a result in practice)	Until GESP is published, officers will be implementing current policy in a robust manner eg when considering retail park applications and new housing.	Ongoing	The GESP timetable has been subject to some delay from when the AQAP was published. Progress is still ongoing and the next consultation stage is expected in 2020.
14	Policies deliver development where private car use is not the only realistic travel choice	Policy Guidance and Development Control	Other policy	2020 consultation on draft policies and options for GESP	GESP team, ECC via GESP & Local Plan	Resourced by the GESP authorities	12% cycle to work and 50% walk or cycle to work	The purpose of this measure is to limit the impact of new development. It is not intended to reduce emissions on the current baseline (although some reduction may be achieved as a result in practice)	Liveable Exeter vision for development in the city which is not reliant on car travel.	Ongoing	Work on the Liveable Exeter project continues but the GESP timetable has been subject to some delay from when the AQAP was published. Progress is still ongoing and the next consultation stage is expected in 2020.
15 (yellow measure)	More things to see/do in the City Centre, encouraging longer stays and supporting events which promote sustainable travel, active and healthy lifestyles.	Policy Guidance and Development Control	Other policy	2019 start to update current City Centre Strategy.	ECC via Local Plan	TBC once strategy adopted	Adoption of new City Centre Strategy	<1% reduction in emissions. This measure will not have a significant direct impact on emissions, but will support the step change in behaviour which will be required to meet the City Council's aspirations for active and healthy travel.	St Sidwells Point leisure centre development commenced. Consultants appointed to produce City Centre Strategy	Ongoing programme	The impact of Covid-19 on the city centre and travel to the city centre will be better understood as the year progresses
16	Better information to raise awareness and improve the level of understanding of air pollution and transport issues within communities	Public Information	Other	Communications under review as part of the Recovery Plan	ECC	Internal ECC budgets	12% cycle to work and 50% walk or cycle to work	Enable the Council to explain why it is taking action. Measure itself is unlikely to have significant impact on its own.	Baseline evidence report completed and will be subject to annual review following publication of each year's measurement data and any new research, national guidance etc.	Ongoing (iterative process of developing and implementing communications / messages).	Future communications may be brought under the umbrella of the Recovery Plan

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
17	An air pollution monitoring network that supports the measures in this action plan	Public Information	Other	2019	ECC	Internal ECC budgets or grant funding if available	The monitoring network provides the data required to inform the development and implementation of the actions in this plan	This measure would not in itself deliver reductions in emissions, but would support the other measures in this plan	10 new diffusion tube monitoring sites added to the network in 2019. The potential benefits of new sensor technologies has being evaluated, but no projects have currently been identified where these types of equipment would provide added value.	Ongoing evolution of network may be required, as needs change	

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Public Health England's Public Health Outcomes Framework tool shows that in Exeter in 2018 the fraction of mortality attributable to particulate air pollution was 4.0%. This is below the regional figure for the south west (4.4%) and below the national level of 5.2%. Exeter therefore has levels of particulate matter which are causing harm, but this problem is less severe than in over 75% of the country.

Indicator	Period	Exeter			Region	England	England		
		Recent Trend	Count	Value	Value	Value	Worst	Range	Best
Fraction of mortality attributable to particulate air pollution	2018	–	-	4.0%	4.4%	5.2%	7.3%		2.4%
Air pollution: fine particulate matter	2017	–	-	7.7	7.8	8.9	12.6		5.0

data from Public Health England

There is now a capacity for direct monitoring of $PM_{2.5}$ in Exeter, since August 2018. Faults with the new analyser installed at Exeter RAMM mean that data from that site is not available for part of 2019, but it is for the Alphington Street site. This showed $PM_{2.5}$ concentrations of 9.5 µg/m^3 at Alphington Street and an annualised concentration at RAMM of 9.8 µg/m^3 (annualised using the method from LAQM.TG16). The national modelling by PHE shown above suggests that for 2017 (the most recent data available), the average figure for the city as a whole was lower at 7.7 µg/m^3. The annual average EU limit value for $PM_{2.5}$ is 25 µg/m^3 so there is no suggestion that this level is being exceeded in Exeter. However the council still has a duty to reduce emissions of and exposure to this pollutant.

During 2020, Exeter City Council will be taking the measures described in Table 2.2 that will address $PM_{2.5}$ as well as NO_2.

Approximately 60% of Exeter is designated as Smoke Control Areas. Controls on solid fuel combustion appliances and fuels are likely to have restricted $PM_{2.5}$ emissions in these areas to some extent.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Exeter City Council undertook automatic (continuous) monitoring at two sites during 2019. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at this link.

Maps showing the location of the monitoring sites are provided at this link. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Exeter City Council undertook non- automatic (passive) monitoring of NO_2 at 81 sites during 2019. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided at this link and 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 (which is explained in more detail here), “annualisation” (where the data capture falls below 75%), and distance correction (further information on fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)). Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3. Note that the concentration data presented in Table A.3 represents the concentration

at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (the values here do not include any distance adjustment, where concentrations are corrected to allow for the fact that receptors may be further from the road than the monitoring point).

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, where relevant.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The data shows that six locations measured an exceedence of the annual objective in 2019. Four of these are at relevant locations (DT19 Alphington Street, DT52 Livery Dole, DT56 Fore Street Heavitree Inbound and DT57 East Wonford Hill). The other two (DT54 Salutary Mount and DT58 Honiton Road) are not at relevant receptors. When DT54 and FT58 are corrected for the distance to the nearest receptor the objective is **not** exceeded at the façade of the nearest houses (Appendix B). For DT58 there is also a tube located at the nearest property (DT59 Honiton Road façade); this tube does not show an exceedence either.

All six locations that exceeded the objective are within the AQMA. The extent of the exceedence of the objective ranges from 0.3 µg/m^3 at DT56 Fore Street Heavitree to 13.5 µg/m^3 at DT57 East Wonford Hill. No annual average level was over a level of 60µg/m^3, suggesting that an exceedance of the 1-hour mean objective is unlikely at these sites. However levels at East Wonford Hill exceeded this level in 2018 and were close to this level in 2017, so the Council has no plans to remove exceedence of the short-term objective from the AQMA designation at this time.

DT42 (Blackboy Road / Pinhoe Road lamp post) was a persistent location of exceedence until 2018 when it dipped below the objective level for the first time. A further fall was seen in 2019. If concentrations remain below the objective it can reasonably safely be concluded that the exceedence at this junction has been resolved although care will have to be taken when interpreting the 2020 results as a result of the Covid-19 lockdown.

Hotspots of pollution do clearly remain in some locations where congestion and poor dispersion combine to create specific local conditions that cause higher pollution levels. The extent of these areas is smaller than the extent of the AQMA, however Exeter City Council has no current plans to amend the AQMA and reduce the area included. The AQMA boundary was originally drawn to include a larger area than just the strict areas of exceedence (Exeter City Council 2011). The rationale for this boundary remains sound although the situation will be kept under review.

The number of sites where measured levels were above the objective has decreased from eight in 2018 to six in 2019 and only 4 of these are relevant receptors. The six sites where levels were above the objective in 2019 were also above the objective in 2018. There is no longer an exceedance at DT29 Cowick Street (outbound) and DT53 Rowancroft. The 2018 exceedence at DT29 Cowick St (outbound) occurred as a result of a 10 mg/m^3 increase from 2017 levels, with the cause of an increase of this magnitude being unclear. Levels in 2019 have returned to levels measured in the years previous to 2018, a decrease of 9 mg/m^3 (table A.3). The scale of increase in 2018 and decrease in 2019 is not reflected in the other monitoring locations on Cowick Street (DT27, 28 or 30). Devon County Council were unaware of any specific road works in this area which may have affected the results in 2018. As the levels have returned to below the objective this tends to suggest that the 2018 result was affected by poor data quality and/or errors in the data.

Figure A.1 and the data in Table A.3 shows that NO_2 levels in Exeter have at most sites been broadly stable since around 2012, following a decrease from 2009 levels. However in 2018 50 out of 67 monitoring locations showed increases from the levels measured in 2017. In 2019 60 out the same 67 locations showed decreases from the levels measured in 2018, returning to levels around those measured in 2017 . Whether the increase seen in 2018 is the start of a trend or part of the variation between years which occurs naturally will not become clear until data can be evaluated over a longer timescale. However the decreases seen in 2019 suggest it is is likely to be part of the natural variation between years and not the start of any upward trend. Any long term trends which develop will necessitate update to the AQAP, which will be reported in future Annual Status Reports.

In 2019 the Council added ten new diffusion tube locations to its network. These are areas of significant new housing development (to monitor trends in pollution levels)

and in suburban areas to quantify pollution levels to which residents are exposed in typical housing locations. As expected, no exceedences of the objectives occurred at any of these new sites.

Air Quality in 2020 will have been significantly affected by the Covid-19 lockdown. It is not yet possible to draw conclusions about the scale of this impact and weather conditions will also have affected pollution levels when compared to 2019. This will be reported on in the next Annual Status Report.

Exeter City Council has always chosen to focus monitoring at expected hot spots and relevant worst-case locations. No further revision to the monitoring network is therefore currently proposed in order to identify suspected exceedences, although regular review of the network will continue to ensure that monitoring is taking place at all areas of potential exceedance at locations of relevant exposure. In 2020 the Council has added three new diffusion tube locations to its network. These are intended to provide additional data on concentrations at or close to relevant receptors between the existing sites and allow us to better understand concentrations around the city.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

There were no measured exceedences of the PM_{10} air quality objectives in Exeter in 2019. Annual average concentrations have been broadly consistent, with some interannual variability, and there were just four exceedences of an hourly mean of 50µg/m^3 in 2019 (all at Alphington Street). The long-term trend in annual concentrations is a decline since 2005 or 2006.

Issues with the new equipment installed in 2018 affected the data capture at the Exeter Roadside site for the first four months of 2019. The data for Exeter Roadside has been annualised using the methodology in LAQM.TG(16). This was not done for the Alphington Street site because the data capture was above 75%.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years.

There were no measured exceedences of the $PM_{2.5}$ air quality objectives in Exeter in 2019. Issues with the new equipment installed in 2018 affected the data capture at the Exeter Roadside site for the first four months of 2019. The data for Exeter Roadside has been annualised using the methodology in LAQM.TG(16). This was not done for the Alphington Street site because the data capture was above 75%.

3.2.4 Ozone (O_3)

Table A.8 in Appendix A presents the ratified continuous monitored O_3 8-Hour mean concentrations for the past 5 years with the air quality objective of 100µg/m^3, not to be exceeded more than 10 times per year.

Although not a local air pollutant, Exeter City Council has the facility to measure ozone (O_3) levels. Table A.8 in Appendix A compares the ratified continuous monitored O_3 concentrations for 2019 with the nationally applied air quality objective for this pollutant. (In 2016, the data capture was low (below 90%) and so the 97th percentile of 8-hour running means is also shown for comparison with the objective). The objective was exceeded in Exeter in 2019, which may be a result of the fine summer. A report by the Air Quality Expert Group (2009) did suggested that urban O_3 concentrations would increase over the years as a result of reduced scavenging of ozone by NO. As stated above, ozone is not a local air pollutant so Exeter City Council is not responsible for reporting on, or mitigating, exceedances of this objective. This is the responsibility of DEFRA.

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Inlet Height (m)
CM1	Exeter Roadside	Kerbside	291939	92830	NO2; O3; PM10; PM2.5	YES	Chemiluminescent; UVA; Optical Light Scattering	0	1	1.7
CM2	Alphington Street	Roadside	291670	91773	PM10; PM2.5	NO	Optical Light Scattering	12	3	1.7

Notes:

The Distance to Relevant Exposure is 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

The Distance to kerb of nearest road is N/A if not applicable

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

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?	Height (m)
DT1	High Street /Castle Street	Kerbside	292199	92814	NO2	YES	50	0.5	NO	2
DT2	Longbrook Street	Kerbside	292315	93016	NO2	NO	0	1	NO	1.7
DT3	New North Road	Kerbside	292185	93049	NO2	YES	0	1	NO	2
DT4	Queen Street	Kerbside	291779	93011	NO2	YES	0	1.5	NO	2
DT5	RAMM 1	Kerbside	291944	92826	NO2	YES	0	1	YES	1.7
DT6	RAMM 2	Kerbside	291944	92826	NO2	YES	0	1	YES	1.7
DT7	High Street Guildhall	Roadside	291984	92626	NO2	YES	0	2	NO	2
DT8	North Street	Kerbside	291895	92569	NO2	YES	0	1	NO	1.7
DT9	South Street	Roadside	291943	92511	NO2	YES	4	2.5	NO	2
DT10	Market Street	Kerbside	291833	92433	NO2	YES	0	1	NO	1.7
DT11	Magdalen Street	Kerbside	292291	92292	NO2	YES	6	2	NO	1.7
DT12	Magdalen Street façade	Kerbside	292422	92320	NO2	YES	0	1	NO	1.7
DT13	Archibald Road	Roadside	292590	92743	NO2	NO	0	1.5	NO	1.7
DT14	Heavitree Road inbound	Roadside	292832	92731	NO2	YES	0	10	NO	2
DT15	Heavitree Road outbound	Kerbside	292703	92807	NO2	YES	0	1	NO	1.7
DT16	Holloway Street	Kerbside	292378	92039	NO2	YES	0	1	NO	1.7

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?	Height (m)
DT17	Carder's Court, Shilhay	Roadside	291699	92091	NO2	NO	0	15	NO	1.7
DT18	Rear of Gervase Avenue	Roadside	291657	91973	NO2	YES	5	18	NO	2
DT19	Alphington Street	Kerbside	291669	91812	NO2	YES	0	1	NO	2
DT20	Alphington Road inbound	Roadside	291532	91349	NO2	YES	0	2	NO	1.7
DT21	Queen's Road	Urban Background	291460	91390	NO2	NO	8	2	NO	1.7
DT22	Alphington Road outbound	Roadside	291509	91151	NO2	YES	0	8	NO	1.7
DT23	Alphington Road outer	Roadside	291518	90813	NO2	YES	15	2	NO	1.7
DT24	Church Road Alphington	Roadside	291691	90425	NO2	YES	0	1.5	NO	1.7
DT25	Church Road II	Kerbside	291767	90160	NO2	YES	0	1	NO	1.7
DT26	Alphington Cross	Roadside	291520	90531	NO2	YES	0	1.8	NO	1.7
DT27	Cowick Street (Cowick Lane)	Kerbside	290864	91725	NO2	YES	0	1	NO	1.7
DT28	Cowick Street (inbound)	Roadside	291249	91874	NO2	YES	0	4	NO	1.7
DT29	Cowick Street (outbound)	Roadside	291376	91944	NO2	YES	0	1.5	NO	1.7
DT30	Cowick Street (Exe Bridges)	Roadside	291500	92055	NO2	YES	0	2	NO	1.7
DT31	Okehampton Street	Roadside	291351	92169	NO2	YES	0	4	NO	1.7

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?	Height (m)
DT32	Station Road	Roadside	290830	96598	NO2	NO	0	2.1	NO	1.7
DT33	Bonhay Road (St Clements Lane)	Roadside	291253	93299	NO2	YES	0	2	NO	2
DT34	Red Cow Village	Kerbside	291242	93483	NO2	YES	0	1	NO	1.7
DT35	Red Cow II	Kerbside	291272	93468	NO2	YES	0	1	NO	1.7
DT36	Cowley Bridge Road	Roadside	291054	94399	NO2	YES	0	4	NO	1.7
DT37	Pennsylvania Road	Roadside	292391	93291	NO2	NO	0	1	NO	1.7
DT38	York Road School	Roadside	292469	93245	NO2	NO	3.5	2.5	NO	1.7
DT39	York Road	Kerbside	292579	93146	NO2	NO	1.5	0.1	NO	1.7
DT40	Union Road	Roadside	293047	93877	NO2	NO	0	1	NO	1.7
DT41	Pinhoe Road inbound	Roadside	293405	93395	NO2	YES	0	3	NO	1.7
DT42	Pinhoe Road (Polsloe Road)	Kerbside	293251	93375	NO2	YES	0	1	NO	1.7
DT43	Blackboy Road (Polsloe Road)	Roadside	293227	93356	NO2	YES	0	2	NO	1.7
DT44	Beacon Heath	Kerbside	295068	94487	NO2	NO	10	1	NO	1.7
DT45	Venny Bridge	Kerbside	295888	94101	NO2	NO	8	1	NO	1.7
DT46	Pinhoe	Kerbside	296418	94470	NO2	NO	20	0.1	NO	1.7
DT47	Langaton Lane	Urban Background	296984	94327	NO2	NO	12	0.5	NO	1.7

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?	Height (m)
DT48	Pinn Lane	Roadside	296494	93782	NO2	NO	9.5	1	NO	2
DT49	Pinhoe Road (Fairfield Avenue)	Roadside	295413	93689	NO2	YES	0	5	NO	1.7
DT50	East John Walk	Urban Background	293091	92825	NO2	NO	1.5	N/A	NO	1.7
DT51	Magdalen Road (Barrack Road)	Kerbside	293448	92419	NO2	YES	0	1	NO	1.7
DT52	Livery Dole	Roadside	293418	92497	NO2	YES	0	1.5	NO	1.7
DT53	Rowancroft	Kerbside	293533	92473	NO2	YES	0	0.2	NO	2
DT54	Salutary Mount	Roadside	293738	92396	NO2	YES	4.5	1.5	NO	1.7
DT55	Fore Street Heavitree outbound	Roadside	293781	92409	NO2	YES	6	4	NO	1.7
DT56	Fore Street Heavitree inbound	Roadside	294043	92359	NO2	YES	0	2	NO	1.7
DT57	East Wonford Hill	Roadside	294410	92310	NO2	YES	0	2	NO	1.7
DT58	Honiton Road	Roadside	295203	92378	NO2	YES	20	1.5	NO	2
DT59	Honiton Road façade	Roadside	295191	92395	NO2	NO	0	15	NO	1.7
DT60	Sidmouth Road lamp post	Roadside	295466	92365	NO2	YES	7	2	NO	2
DT61	Sidmouth Road Middlemoor	Roadside	295636	92232	NO2	YES	0	10	NO	1.7

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?	Height (m)
DT62	Newcourt Way	Roadside	295710	90571	NO2	NO	17	2	NO	2
DT63	Topsham Road (Countess Wear)	Roadside	294694	90001	NO2	YES	0	5	NO	2
DT64	Bridge Road (Countess Wear)	Roadside	294652	89974	NO2	NO	0	15	NO	1.7
DT65	High Street Topsham	Kerbside	296415	88477	NO2	NO	0	1	NO	1.7
DT66	Topsham Road (Tollards Road)	Roadside	294227	90435	NO2	YES	0	1.5	NO	1.7
DT67	Topsham Road (Barrack Road)	Roadside	293213	91245	NO2	YES	0	10	NO	1.7
DT68	Riverside Valley Park	Urban Background	292291	91678	NO2	NO	N/A	N/A	NO	2
DT69	Cowick Barton Playing Fields	Urban Background	291016	91304	NO2	NO	N/A	N/A	NO	1.7
DT70	Exwick Playing Fields	Urban Background	291298	92593	NO2	NO	N/A	N/A	NO	2
DT71	Heavitree Pleasure Ground	Urban Background	294387	92611	NO2	NO	N/A	N/A	NO	2
DT72	Ladysmith School/Pretoria Road	Roadside	293617	93090	NO2	NO	1.5	1.5	NO	1.7
DT73	Pennsylvania	Urban Background	293052	94185	NO2	NO	6	2	NO	2
DT74	Northernhay Gardens	Urban Background	292056	93043	NO2	NO	N/A	N/A	NO	2
DT75	Chudleigh Road	Roadside	291721	89727	NO2	YES	0	4	NO	2

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?	Height (m)
DT76	Mill Lane	Urban Background	291555	90449	NO2	NO	8.5	1	NO	2
DT77	Sidwell Street	Kerbside	292553	93082	NO2	YES	6	1	NO	2
DT78	Station Road Pinhoe	Other	296415	94165	NO2	NO	1.5	1.5	NO	1.7
DT79	Tithebarn Link Road	Roadside	296827	93886	NO2	NO	2	2	NO	2
DT80	Exeter Road	Roadside	295967	88876	NO2	NO	14.5	3	NO	2
DT81	St. Leonards Road	Roadside	292637	91991	NO2	NO	0	2	NO	1.7

Notes:

The Distance to Relevant Exposure is 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

The Distance to kerb of nearest road is N/A if not applicable

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture 2019 (%)	2015 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2016 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2017 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2018 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2019 NO_2 Annual Mean Concentration ($\mu g/m^3$)
CM1	291939	92830	Kerbside	Automatic	91.1%	28	30.5	27.7	29.1	29.0
DT1	292199	92814	Kerbside	Diffusion Tube	100.0%	25	26.8	28.0	29.2	26.5
DT2	292315	93016	Kerbside	Diffusion Tube	91.7%	24.8	25.5	25.9	25.2	26.4
DT3	292185	93049	Kerbside	Diffusion Tube	83.3%	26.5	26.3	26.5	25.9	27.8
DT4	291779	93011	Kerbside	Diffusion Tube	100.0%	21.6	23.2	24.3	23.1	23.8
DT5	291944	92826	Kerbside	Diffusion Tube	91.7%	29.6	29.6	27.7	29.6	27.8
DT6	291944	92826	Kerbside	Diffusion Tube	91.7%	28.9	29.5	27.9	29.3	27.5
DT7	291984	92626	Roadside	Diffusion Tube	100.0%	25	25.2	24.4	26.0	22.6
DT8	291895	92569	Kerbside	Diffusion Tube	91.7%	34.8	33.4	35.7	33.9	35.7
DT9	291943	92511	Roadside	Diffusion Tube	100.0%	30.6	31.1	31.5	29.1	28.5
DT10	291833	92433	Kerbside	Diffusion Tube	100.0%	28.3	29.6	31.0	30.8	29.5
DT11	292291	92292	Kerbside	Diffusion Tube	100.0%	27.6	28.1	29.2	29.4	28.9
DT12	292422	92320	Kerbside	Diffusion Tube	91.7%	28	30.1	31.8	31.1	29.3
DT13	292590	92743	Roadside	Diffusion Tube	100.0%	20.5	22.5	20.8	21.6	19.6

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture 2019 (%)	2015 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2016 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2017 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2018 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2019 NO_2 Annual Mean Concentration ($\mu g/m^3$)
DT14	292832	92731	Roadside	Diffusion Tube	100.0%	19.6	21.0	19.6	20.3	19.0
DT15	292703	92807	Kerbside	Diffusion Tube	100.0%	33.5	36.4	34.1	34.5	31.4
DT16	292378	92039	Kerbside	Diffusion Tube	100.0%	28.8	33.4	31.3	34.2	29.3
DT17	291699	92091	Roadside	Diffusion Tube	100.0%	20.5	22.4	22.0	22.4	21.4
DT18	291657	91973	Roadside	Diffusion Tube	100.0%	23.7	23.4	23.4	22.3	22.7
DT19	291669	91812	Kerbside	Diffusion Tube	91.7%	35.2	**40.3**	**40.8**	**47.0**	**42.0**
DT20	291532	91349	Roadside	Diffusion Tube	100.0%	32.5	32.9	33.9	33.6	31.3
DT21	291460	91390	Urban Background	Diffusion Tube	100.0%	12.8	14.2	13.7	15.3	12.7
DT22	291509	91151	Roadside	Diffusion Tube	100.0%	25.3	27.5	26.8	29.0	26.2
DT23	291518	90813	Roadside	Diffusion Tube	91.7%	22.3	24.8	23.4	27.3	23.4
DT24	291691	90425	Roadside	Diffusion Tube	91.7%	24.1	25.8	29.1	28.0	23.4
DT25	291767	90160	Kerbside	Diffusion Tube	100.0%	26.9	26.9	25.6	26.1	23.5
DT26	291520	90531	Roadside	Diffusion Tube	100.0%			32.7	31.3	30.2
DT27	290864	91725	Kerbside	Diffusion Tube	100.0%	36.4	37.0	37.0	39.9	38.7

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture 2019 (%)	2015 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2016 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2017 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2018 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2019 NO_2 Annual Mean Concentration ($\mu g/m^3$)
DT28	291249	91874	Roadside	Diffusion Tube	91.7%	20.5	23.0	20.7	23.9	21.1
DT29	291376	91944	Roadside	Diffusion Tube	100.0%	34	33.6	33.6	**43.4**	34.4
DT30	291500	92055	Roadside	Diffusion Tube	91.7%	32.4	31.7	32.0	33.2	30.1
DT31	291351	92169	Roadside	Diffusion Tube	100.0%	23.7	24.3	24.6	25.2	24.3
DT32	290830	96598	Roadside	Diffusion Tube	100.0%			27.1	25.4	25.4
DT33	291253	93299	Roadside	Diffusion Tube	91.7%	27.2	29.4	28.7	30.9	26.8
DT34	291242	93483	Kerbside	Diffusion Tube	91.7%	36.1	37.7	38.0	38.3	36.0
DT35	291272	93468	Kerbside	Diffusion Tube	91.7%	32	31.7	31.9	31.4	31.1
DT36	291054	94399	Roadside	Diffusion Tube	100.0%	33.2	31.5	32.3	33.8	32.5
DT37	292391	93291	Roadside	Diffusion Tube	100.0%	25.6	28.0	26.7	28.6	28.4
DT38	292469	93245	Roadside	Diffusion Tube	100.0%	27.9	29.1	28.4	29.7	27.7
DT39	292579	93146	Kerbside	Diffusion Tube	91.7%	32	36.2	37.6	38.9	36.2
DT40	293047	93877	Roadside	Diffusion Tube	100.0%	22.3	26.4	24.0	28.0	26.4
DT41	293405	93395	Roadside	Diffusion Tube	100.0%	30.6	31.2	30.2	31.2	29.8

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture 2019 (%)	2015 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2016 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2017 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2018 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2019 NO_2 Annual Mean Concentration ($\mu g/m^3$)
DT42	293251	93375	Kerbside	Diffusion Tube	100.0%	**42.1**	**42.1**	**41.2**	37.2	35.9
DT43	293227	93356	Roadside	Diffusion Tube	100.0%	29.2	30.9	29.2	28.2	25.7
DT44	295068	94487	Kerbside	Diffusion Tube	100.0%	17.5	19.7	19.7	20.3	17.8
DT45	295888	94101	Kerbside	Diffusion Tube	100.0%		18.8	18.5	19.1	18.0
DT46	296418	94470	Kerbside	Diffusion Tube	91.7%	24.9	27.4	23.3	24.8	23.1
DT47	296984	94327	Urban Background	Diffusion Tube	100.0%	16.7	18.1	15.7	18.7	17.9
DT48	296494	93782	Roadside	Diffusion Tube	100.0%		17.4	17.2	19.3	17.6
DT49	295413	93689	Roadside	Diffusion Tube	100.0%	18.5	19.7	18.9	19.7	17.9
DT50	293091	92825	Urban Background	Diffusion Tube	100.0%	13.9	15.3	14.5	14.5	14.0
DT51	293448	92419	Kerbside	Diffusion Tube	100.0%	37.2	36.9	37.2	39.7	35.5
DT52	293418	92497	Roadside	Diffusion Tube	100.0%	**48.8**	**46.8**	**49.9**	**48.7**	**42.6**
DT53	293533	92473	Kerbside	Diffusion Tube	100.0%	38.2	39.8	**43.5**	**46.4**	38.5
DT54	293738	92396	Roadside	Diffusion Tube	91.7%	35.5	**49.7**	**52.7**	**53.6**	**43.4**
DT55	293781	92409	Roadside	Diffusion Tube	100.0%	29.5	31.4	30.0	31.2	26.7

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture 2019 (%)	2015 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2016 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2017 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2018 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2019 NO_2 Annual Mean Concentration ($\mu g/m^3$)
DT56	294043	92359	Roadside	Diffusion Tube	91.7%	38.6	38.5	**40.9**	**43.4**	**40.3**
DT57	294410	92310	Roadside	Diffusion Tube	91.7%	**59.2**	**57.9**	**59.0**	**61.9**	**53.5**
DT58	295203	92378	Roadside	Diffusion Tube	100.0%	**42.7**	**49.9**	**49.3**	**50.6**	**47.3**
DT59	295191	92395	Roadside	Diffusion Tube	100.0%	18.4	20.1	19.7	24.5	20.4
DT60	295466	92365	Roadside	Diffusion Tube	91.7%	31.4	35.0	35.8	37.0	30.7
DT61	295636	92232	Roadside	Diffusion Tube	100.0%	21.2	22.0	23.3	24.2	21.8
DT62	295710	90571	Roadside	Diffusion Tube	100.0%		17.8	20.2	19.2	16.3
DT63	294694	90001	Roadside	Diffusion Tube	91.7%	26.3	24.6	25.0	27.0	25.4
DT64	294652	89974	Roadside	Diffusion Tube	91.7%	19.3	20.5	19.9	22.6	20.6
DT65	296415	88477	Kerbside	Diffusion Tube	100.0%	21.6	24.3	26.9	27.9	24.4
DT66	294227	90435	Roadside	Diffusion Tube	100.0%	36.6	34.9	35.4	39.7	36.4
DT67	293213	91245	Roadside	Diffusion Tube	100.0%	24.1	25.0	23.4	25.6	21.5
DT68	292291	91678	Urban Background	Diffusion Tube	91.7%				13.7	13.8
DT69	291016	91304	Urban Background	Diffusion Tube	100.0%				11.5	11.2

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture 2019 (%)	2015 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2016 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2017 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2018 NO_2 Annual Mean Concentration ($\mu g/m^3$)	2019 NO_2 Annual Mean Concentration ($\mu g/m^3$)
DT70	291298	92593	Urban Background	Diffusion Tube	100.0%				17.5	16.1
DT71	294387	92611	Urban Background	Diffusion Tube	75.0%				11.2	10.5
DT72	293617	93090	Roadside	Diffusion Tube	100.0%					14.2
DT73	293052	94185	Urban Background	Diffusion Tube	100.0%					10.2
DT74	292056	93043	Urban Background	Diffusion Tube	91.7%					11.4
DT75	291721	89727	Roadside	Diffusion Tube	100.0%					15.8
DT76	291555	90449	Urban Background	Diffusion Tube	100.0%					14.7
DT77	292553	93082	Kerbside	Diffusion Tube	58.3%					31.1
DT78	296415	94165	Other	Diffusion Tube	91.7%					15.1
DT79	296827	93886	Roadside	Diffusion Tube	100.0%					19.5
DT80	295967	88876	Roadside	Diffusion Tube	100.0%					19.8
DT81	292637	91991	Roadside	Diffusion Tube	100.0%					15.6

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75%**

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

Notes:

Exceedances of the 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.**

All monitoring was for the full year therefore the data capture for the full calendar year is shown (e.g. if only 6 months of the data was accepted as valid then monitoring the data capture for the full calendar year is 50%).

All data for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

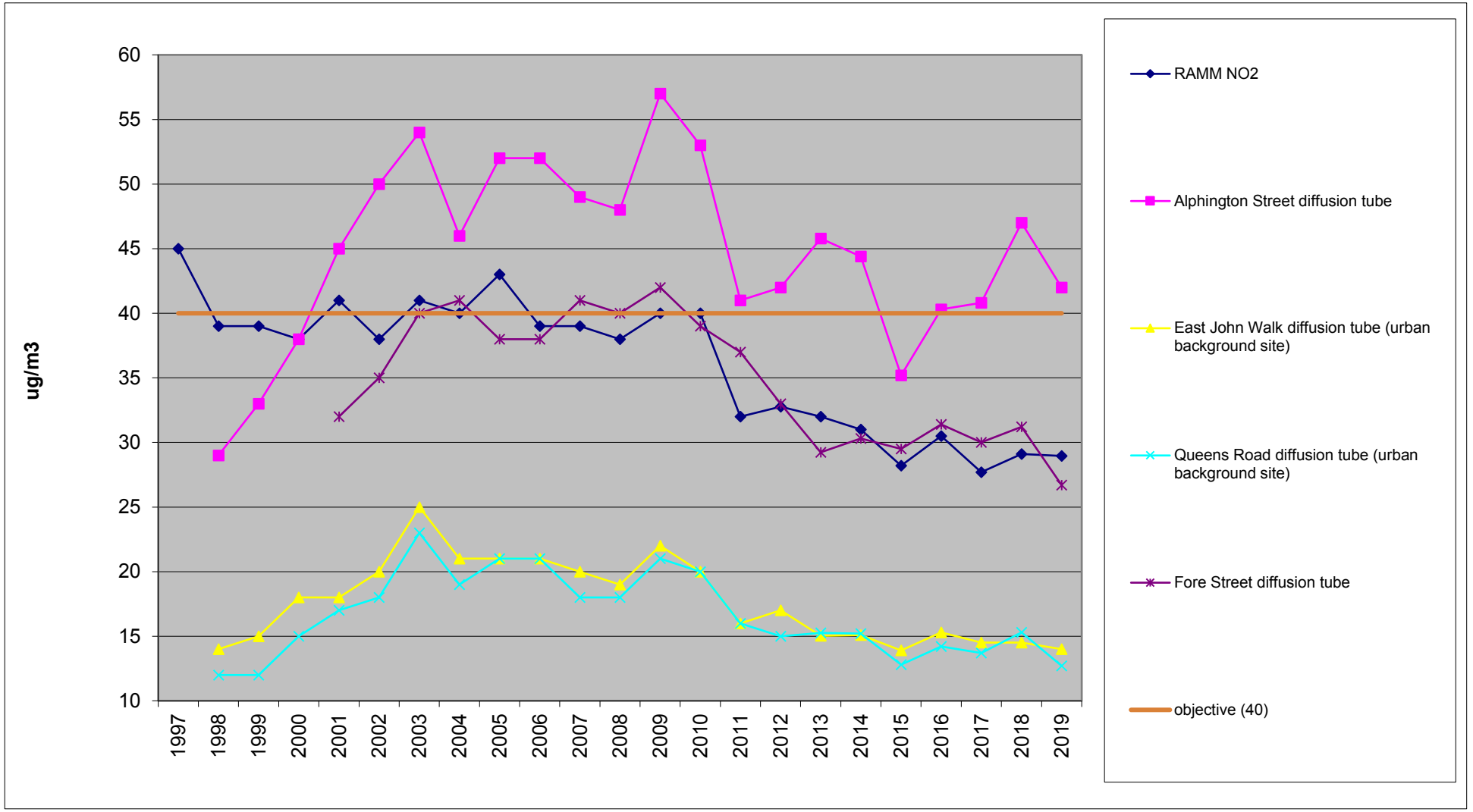


Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture 2019 (%)	2015 NO_2 1-Hour Means > 200µg/m^3	2016 NO_2 1-Hour Means > 200µg/m^3	2017 NO_2 1-Hour Means > 200µg/m^3	2018 NO_2 1-Hour Means > 200µg/m^3	2019 NO_2 1-Hour Means > 200µg/m^3
CM1	291939	92830	Kerbside	Automatic	91.1	0	0	0	0	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold.**

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2019 (%)	2015 PM_{10} Annual Mean Concentration ($\mu g/m^3$)	2016 PM_{10} Annual Mean Concentration ($\mu g/m^3$)	2017 PM_{10} Annual Mean Concentration ($\mu g/m^3$)	2018 PM_{10} Annual Mean Concentration ($\mu g/m^3$)	2019 PM_{10} Annual Mean Concentration ($\mu g/m^3$)
CM1	291939	92830	Kerbside	67.26	19	15	18	17.7	15.8
CM2	291670	91773	Roadside	99.86	19	15	19	16.7	15.1

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the PM_{10} annual mean objective of 40$\mu g/m^3$ are shown in **bold.**

All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.2 – Trends in Annual Mean PM_{10} Concentrations

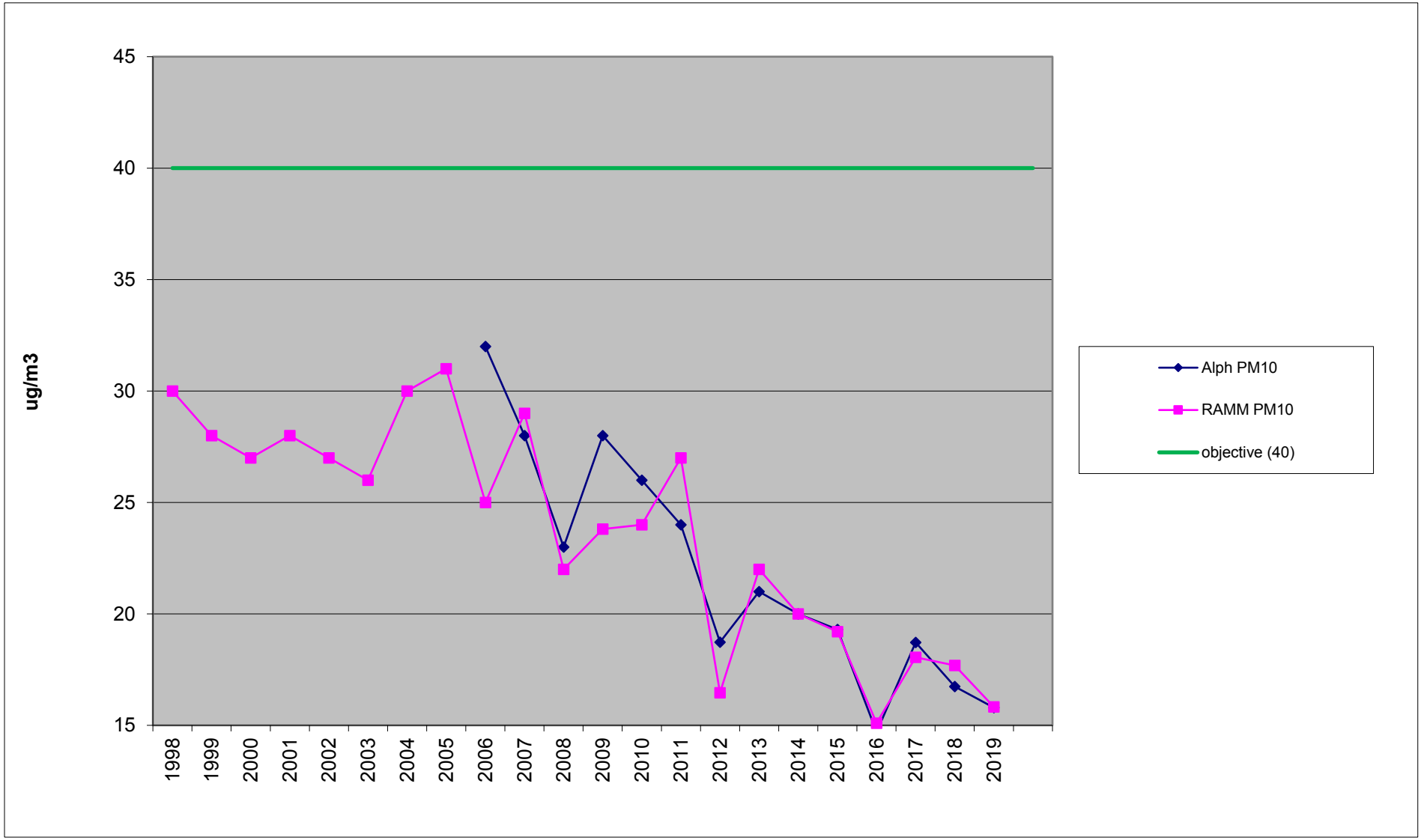


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2019 (%)	2015 PM_{10} 24-Hour Means > 50µg/m^3	2016 PM_{10} 24-Hour Means > 50µg/m^3	2017 PM_{10} 24-Hour Means > 50µg/m^3	2018 PM_{10} 24-Hour Means > 50µg/m^3	2019 PM_{10} 24-Hour Means > 50µg/m^3
CM1	291939	92830	Kerbside	67.26	6	0	1	0 (28.8)	0 (21.2)
CM2	291670	91773	Roadside	99.86	6 (29.5)	0 (23.7)	2	1	4

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold.**

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

Table A.7 – $PM_{2.5}$ Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2019 (%)	2015 $PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$)	2016 $PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$)	2017 $PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$)	2018 $PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$)	2019 $PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$)
CM1	291939	92830	Kerbside	67.26	No data	No data	No data	No data	9.97
CM2	291670	91773	Roadside	99.86	No data	No data	No data	9.02	9.48

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.8 – 8-Hour Mean O_3 Monitoring Results

Site ID	Site Type	Valid Data Capture 2019 (%)	2015 O_3 8-hour mean > 100 ($\mu g/m^3$)	2016 O_3 8-hour mean > 100 ($\mu g/m^3$)	2017 O_3 8-hour mean > 100 ($\mu g/m^3$)	2018 O_3 8-hour mean > 100 ($\mu g/m^3$)	2019 O_3 8-hour mean > 100 ($\mu g/m^3$)
CM1	Kerbside	98.5	0	0 (58.0)	0	12	11

Notes:

If the period of valid data is less than 85%, the 97th percentile of 8-hour running means is provided in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site 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 Bias Adjusted (0.89) and Annualised	Annual Mean Distance Corrected to Nearest Exposure
DT1	292199	92814	32.4	33.8	29.3	34.6	30.4	25.7	28.4	26.5	26.1	29.6	31.4	29.3	29.8	26.5	14.2
DT2	292315	93016	34.2	37.6	33.6		29.6	22.3	24.3	23.7	23.1	29.1	33.0	35.5	29.6	26.4	
DT3	292185	93049	34.0	41.1	26.1	32.8	28.8	23.6		26.7		33.2	32.6	33.0	31.2	27.8	
DT4	291779	93011	30.7	29.4	25.1	33.0	27.6	19.8	23.3	20.4	25.6	27.1	30.7	28.2	26.8	23.8	
DT5	291944	92826	39.2	33.1	32.6		33.3	27.1	27.4	22.9	29.4	32.2	38.0	28.5	31.2	27.8	
DT6	291944	92826	39.2	32.7	34.2		32.7	24.6	25.5	24.6	27.9	32.1	37.3	29.1	30.9	27.5	
DT7	291984	92626	30.4	31.8	24.1	29.0	23.7	19.2	21.7	20.9	22.1	27.1	28.9	25.9	25.4	22.6	
DT8	291895	92569	51.5	44.8	42.9	40.0	42.1	29.9	37.7	42.4	33.1		39.8	37.4	40.1	35.7	
DT9	291943	92511	39.7	33.4	33.9	33.3	31.0	27.5	31.3	26.7	27.2	34.4	33.6	32.3	32.0	28.5	24.5
DT10	291833	92433	40.0	39.0	32.0	38.0	32.5	26.9	30.5	26.7	27.6	34.6	35.3	34.5	33.1	29.5	
DT11	292291	92292	44.2	39.1	32.3	36.3	31.7	27.1	27.5	24.5	27.1	34.3	35.0	30.8	32.5	28.9	24.1
DT12	292422	92320	46.6	34.9	32.4	33.8		28.1	25.1	24.8	27.4	35.0	41.0	33.3	32.9	29.3	
DT13	292590	92743	31.5	26.0	21.4	27.7	19.1	16.5	17.9	17.0	18.8	23.8	22.8	22.2	22.1	19.6	
DT14	292832	92731	29.2	25.5	20.7	23.9	17.8	17.5	16.3	14.1	17.8	21.4	29.2	23.2	21.4	19.0	
DT15	292703	92807	38.9	39.0	40.2	44.4	35.5	34.4	32.1	25.2	30.1	31.2	40.1	32.2	35.3	31.4	
DT16	292378	92039	44.5	37.5	35.5	37.6	30.6	26.8	29.7	22.9	23.6	32.5	42.0	31.7	32.9	29.3	

Site 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 Bias Adjusted (0.89) and Annualised	Annual Mean Distance Corrected to Nearest Exposure
DT17	291699	92091	33.0	26.5	24.9	21.8	23.6	19.7	19.8	21.4	22.2	22.7	30.8	22.1	24.0	21.4	
DT18	291657	91973	33.9	31.0	25.7	26.1	23.1	19.6	22.3	23.5	21.5	25.3	28.8	25.1	25.5	22.7	21.5
DT19	291669	91812	59.6	53.6	45.4	56.0	44.1	43.0	46.6		40.1	44.2	48.9	38.1	47.2	**42.0**	
DT20	291532	91349	43.8	39.2	38.4	35.5	33.7	32.4	32.0	32.3	33.5	31.8	38.2	31.5	35.2	31.3	
DT21	291460	91390	20.0	18.6	12.1	16.7	11.3	9.9	10.4	8.9	11.2	15.5	20.6	16.1	14.3	12.7	
DT22	291509	91151	31.7	38.0	23.9	43.3	27.0	25.8	28.5	22.7	29.2	24.5	34.1	24.3	29.4	26.2	
DT23	291518	90813	26.4	37.9	23.2	34.5	21.4	21.8	20.3		22.7	26.4	32.2	22.4	26.3	23.4	18.0
DT24	291691	90425	35.4	34.7	32.2	28.9	25.9	14.8	21.0	20.2	22.1		28.6	26.1	26.3	23.4	
DT25	291767	90160	39.6	32.6	26.4	28.7	24.3	19.4	21.4	20.2	22.3	25.9	32.1	24.2	26.4	23.5	
DT26	291520	90531	42.9	37.6	36.5	34.6	29.4	26.6	30.1	34.4	34.7	34.6	38.6	27.6	34.0	30.2	
DT27	290864	91725	45.5	54.4	42.2	47.2	38.0	38.5	41.6	39.9	40.2	44.0	46.8	44.0	43.5	38.7	
DT28	291249	91874		28.3	23.0	23.8	20.7	22.1	20.8	19.7	23.7	25.5	31.5	22.2	23.7	21.1	
DT29	291376	91944	41.3	48.4	34.3	48.3	34.6	35.8	36.2	30.6	37.3	37.0	41.0	39.2	38.7	34.4	
DT30	291500	92055	37.6	39.4	35.5	33.4	33.1	30.8	33.2		33.8	34.1	32.8	28.6	33.8	30.1	
DT31	291351	92169	33.8	32.0	24.8	27.4	24.4	24.1	22.9	22.8	24.9	20.4	34.3	36.5	27.4	24.3	
DT32	290830	96598	27.4	38.7	27.9	32.0	26.9	26.2	25.7	24.3	26.6	28.5	30.9	27.6	28.5	25.4	
DT33	291253	93299	41.8	32.6		26.8	26.9	27.5	24.3	25.1	29.5	30.8	39.0	27.0	30.1	26.8	
DT34	291242	93483	45.4	48.9	38.0	41.6	40.3	36.4	39.1		39.7	37.9	40.0	38.0	40.5	36.0	
DT35	291272	93468	39.7	40.7	35.2	31.6	31.3	30.2	29.7		35.9	33.6	44.8	32.1	35.0	31.1	
DT36	291054	94399	46.4	48.6	33.2	38.1	31.5	30.2	32.9	29.4	28.3	38.9	41.4	38.9	36.5	32.5	

Site 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 Bias Adjusted (0.89) and Annualised	Annual Mean Distance Corrected to Nearest Exposure
DT37	292391	93291	37.7	42.8	31.1	36.3	30.6	25.1	26.2	23.7	27.6	31.8	35.1	34.6	31.9	28.4	
DT38	292469	93245	40.8	36.8	34.4	35.1	29.0	25.5	27.5	23.1	27.6	29.0	32.0	32.8	31.1	27.7	24.2
DT39	292579	93146	58.1	45.0	40.8	46.9	40.6	31.1	32.8		33.0	37.9	44.8	36.6	40.7	36.2	26.7
DT40	293047	93877	34.5	42.1	28.5	34.1	26.1	25.7	25.8	24.6	26.5	29.4	33.8	24.4	29.6	26.4	
DT41	293405	93395	40.4	45.8	29.9	33.3	28.0	27.3	27.6	28.5	30.7	36.0	36.5	38.3	33.5	29.8	
DT42	293251	93375	51.2	53.6	35.8	45.6	34.1	34.6	33.3	33.6	39.3	42.8	39.6	40.8	40.4	35.9	
DT43	293227	93356	37.8	36.3	29.9	24.6	23.4	24.4	22.8	26.4	28.8	30.7	31.8	29.9	28.9	25.7	
DT44	295068	94487	26.5	29.8	18.6	19.3	19.2	16.2	15.7	15.3	17.1	21.0	21.9	20.2	20.1	17.8	14.2
DT45	295888	94101	24.1	29.0	20.1	18.6	17.7	16.4	16.1	15.2	18.7	22.1	23.3	21.4	20.2	18.0	14.5
DT46	296418	94470	39.2	32.5		20.8	19.6	21.4	21.5	22.7	24.0	29.0	28.9	26.2	26.0	23.1	13.7
DT47	296984	94327	21.8	28.3	17.3	24.5	16.9	16.1	16.0	15.0	17.6	21.3	25.2	21.9	20.2	17.9	13.5
DT48	296494	93782	23.2	26.2	17.2	20.5	15.0	15.2	15.4	15.2	17.1	22.1	25.5	24.1	19.7	17.6	14.1
DT49	295413	93689	27.5	25.5	19.0	21.2	16.7	16.5	14.1	14.9	15.8	20.5	27.5	21.7	20.1	17.9	
DT50	293091	92825	20.3	24.7	15.2	16.4	11.8	9.8	10.5	11.1	11.7	17.8	22.8	16.2	15.7	14.0	
DT51	293448	92419	55.5	47.3	33.2	48.9	39.6	33.8	33.7	24.7	37.0	40.2	46.3	38.2	39.9	35.5	
DT52	293418	92497	60.8	59.3	48.1	39.5	50.0	45.3	39.0	43.2	46.2	43.4	49.5	49.9	47.8	**42.6**	
DT53	293533	92473	61.0	58.8	44.4	44.9	40.8	37.9	35.2	36.0	40.8	40.4	37.6	41.6	43.3	38.5	
DT54	293738	92396	58.0		48.4	42.5	49.8	47.6	43.2	46.9	45.7	46.4	51.0	57.3	48.8	**43.4**	34.5
DT55	293781	92409	42.1	31.1	30.9	32.5	28.0	26.2	22.9	23.9	27.9	31.6	33.5	28.7	29.9	26.7	23.4
DT56	294043	92359	48.8	64.5	41.0	45.4	42.8	39.9	38.7	38.9	40.9	48.1		49.4	45.3	**40.3**	

Site 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 Bias Adjusted (0.89) and Annualised	Annual Mean Distance Corrected to Nearest Exposure
DT57	294410	92310	69.9	79.6	56.3	56.3	60.3	57.0	48.3	52.6	61.9	59.5		60.0	60.2	**53.5**	
DT58	295203	92378	70.8	71.4	49.9	53.2	51.2	47.3	42.1	40.2	49.2	52.5	55.3	54.3	53.1	**47.3**	27.8
DT59	295191	92395	26.2	30.9	19.9	23.9	21.1	20.9	17.7	17.9	21.5	25.2	25.6	23.7	22.9	20.4	
DT60	295466	92365	45.2	44.7	31.4	33.3	32.5	32.3	23.2	26.3	31.9	36.1	42.3		34.5	30.7	24.8
DT61	295636	92232	28.8	33.8	17.1	27.0	25.4	20.3	21.2	20.5	22.4	24.9	29.2	23.9	24.5	21.8	
DT62	295710	90571	24.8	24.9	16.2	21.0	15.8	13.5	13.3	14.1	14.8	20.1	25.5	16.1	18.3	16.3	15.1
DT63	294694	90001	37.7	32.5	25.8	25.1	26.8	24.8		24.0	27.5	30.0	29.6	30.0	28.5	25.4	
DT64	294652	89974	30.3	25.0	19.7	23.0	19.8	20.3	16.9		21.8	24.3	28.6	25.2	23.2	20.6	
DT65	296415	88477	35.2	34.3	25.5	30.6	28.8	24.2	24.5	19.6	24.5	27.4	30.6	23.5	27.4	24.4	
DT66	294227	90435	46.5	52.2	39.9	38.1	40.6	34.4	35.2	33.9	40.7	41.8	45.5	41.5	40.9	36.4	
DT67	293213	91245	29.2	32.8	21.2	28.2	21.9	19.4	20.5	16.8	20.6	24.3	29.0	25.7	24.1	21.5	
DT68	292291	91678	20.8	21.0		18.0	14.6	10.7	11.8	10.4	11.6	15.9	20.4	15.7	15.5	13.8	
DT69	291016	91304	17.2	17.8	10.6	15.3	9.4	8.4	8.7	7.6	9.3	13.9	17.8	15.0	12.6	11.2	
DT70	291298	92593	23.0	23.4	16.9	23.0	17.5	14.8	14.7	14.6	16.1	17.4	18.6	17.6	18.1	16.1	
DT71	294387	92611	14.8	16.9	9.1	12.4		7.9		8.6	9.4	13.0		12.9	11.7	10.5	
DT72	293617	93090	23.7	20.0	15.5	15.4	11.9	12.0	11.7	11.6	12.3	17.5	22.3	17.8	16.0	14.2	14.2
DT73	293052	94185	15.2	21.3	9.6	12.7	7.7	8.0	7.4	7.3	8.6	12.6	14.4	12.3	11.4	10.2	
DT74	292056	93043	19.2		12.0	6.1	11.1	9.6	10.1	10.4	10.7	15.0	19.0	18.2	12.9	11.4	
DT75	291721	89727	25.6	22.5	16.3	20.7	13.9	12.9	13.2	13.5	15.1	19.7	23.7	16.1	17.8	15.8	
DT76	291555	90449	23.9	19.0	16.4	16.6	14.8	12.7	12.8	12.9	13.0	17.0	23.3	16.0	16.5	14.7	

Site 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 Bias Adjusted (0.89) and Annualised	Annual Mean Distance Corrected to Nearest Exposure
DT77	292553	93082	42.2	37.1	30.9	30.3			29.6	26.4	32.5				32.7	31.1	23.4
DT78	296415	94165	18.9	25.3	15.9	18.2	14.9	11.5	14.3	14.9	14.1	19.4		19.1	17.0	15.1	14.3
DT79	296827	93886	25.2	28.5	17.0	23.0	17.9	15.6	16.3	16.4	20.7	26.4	30.9	25.3	22.0	19.5	18.0
DT80	295967	88876	30.6	28.3	22.1	23.6	20.7	18.6	17.1	17.0	20.4	22.5	26.0	19.9	22.2	19.8	17.1
DT81	292637	91991	25.0	22.3	16.0	18.8	14.4	12.1	12.8	11.8	13.2	17.6	25.6	20.5	17.5	15.6	

☒ **Local bias adjustment factor used**

☐ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

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

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.

Data is distance corrected to nearest relevant public exposure where applicable.

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

C.1 Significant Changes to Sources

There were no significant changes to sources during 2019, and therefore no requirement in this report for any screening assessment of identified new or changed sources of pollution.

C.2 Dispersion Modelling and Monitoring Campaigns to Determine whether an AQMA needs to be Declared, Amended or Revoked

There was no requirement for any detailed dispersion modelling of emissions in 2019 and no monitoring campaigns were carried out to determine whether an AQMA needs to be declared, amended or revoked.

C.3 Additional Evidence

No new or additional evidence was published during 2019 specifically to support the development of measures for Action Plans.

C.4 Air Quality Monitoring Data QA/QC

Diffusion Tube Bias Adjustment Factors - National Factor

The national bias adjustment factor of 0.93 has been obtained from the spreadsheet version 03/20, for Gradko diffusion tubes (20% TEA in water). This means that the diffusion tubes over-estimate actual concentrations when compared to the reference method.

Factor from Local Co-Location Studies

The precision and local bias factor (0.89) for the co-located diffusion tubes at Exeter Roadside (RAMM Queen Street) has been calculated using the spreadsheet shown as Figure C.4.1 below. This means that the diffusion tubes over-estimate actual concentrations when compared to the reference method.

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation	95% CI of mean
1	11/01/2019	05/02/2019	39.18	39.18		39	0.0	0	0.0
2	06/02/2019	05/03/2019	33.15	32.70		33	0.3	1	2.9
3	06/03/2019	02/04/2019	32.64	34.15		33	1.1	3	9.6
4	03/04/2019	30/04/2019							
5	01/05/2019	04/06/2019	33.25	32.69		33	0.4	1	3.5
6	05/06/2019	04/07/2019	27.06	24.61		26	1.7	7	15.5
7	05/07/2019	06/08/2019	27.36	25.48		26	1.3	5	12.0
8	07/08/2019	04/09/2019	22.89	24.63		24	1.2	5	11.1
9	05/09/2019	02/10/2019	29.38	27.89		29	1.1	4	9.5
10	03/10/2019	07/11/2019	32.20	32.12		32	0.1	0	0.5
11	08/11/2019	03/12/2019	38.04	37.29		38	0.5	1	4.8
12	04/12/2019	08/10/2020	28.52	29.14		29	0.4	2	3.9
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
36.40	99.04	Good	Good
30.49	98.96	Good	Good
26.65	97.47	Good	Good
32.49	99.70		Good
31.45	64.76	Good	or Data Capture
27.10	54.78	Good	or Data Capture
20.48	98.23	Good	Good
16.97	92.96	Good	Good
23.89	98.81	Good	Good
33.72	98.96	Good	Good
35.86	98.56	Good	Good
27.96	100.00	Good	Good
Overall survey -->		Good precision	Good Overall DC

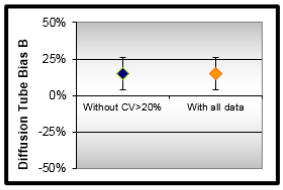
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Exeter Roadside

Precision: 11 out of 11 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 9 periods of data
Bias factor A: 0.89 (0.81 - 0.99)
Bias B: 12% (1% - 23%)
Diffusion Tubes Mean: 31 µgm^{-3}
Mean CV (Precision): 2
Automatic Mean: 28 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 28 (25 - 31) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 9 periods of data
Bias factor A: 0.89 (0.81 - 0.99)
Bias B: 12% (1% - 23%)
Diffusion Tubes Mean: 31 µgm^{-3}
Mean CV (Precision): 2
Automatic Mean: 28 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 28 (25 - 31) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Figure C.4.1 Diffusion Tube Precision and Accuracy

Discussion of Choice of Factor to Use

Data from the tubes are ratified and suspect data is rejected by Exeter City Council, following the procedure in the DEFRA practical guidance. Analysis of the data from the two tubes that are co-located with the continuous analyser shows that these have overall good precision and a bias factor of 0.89 (Figure C.4.1). The nationally collated bias adjustment factor is similar, at 0.93.

Results calculated using the Exeter factor are used in this report because the data capture at Exeter RAMM is over 90%, and it is thought to be more representative of local conditions.

QA/QC of Automatic Monitoring

Neither of the two PM analysers are part of the national network, however recommended QA/QC procedures from the AURN Local Site Operator's manual are followed. Horiba also service each analyser every six months. Data capture at the RAMM site for both PM_{10} and $PM_{2.5}$ was affected by the change-over to the new equipment in 2018 when problems with the new RAMM analyser persisted until the spring of 2019. This can clearly be seen in C.4.3 and C.4.4. The data for RAMM has

been annualised using the methodology in LAQM.TG(16). This was not done for the Alphington Street site because the data capture was above 75%.

The PM data is collected, validated and ratified by Exeter City Council. Validation involves checking the data daily for instrumentation errors etc. and then visually screening the data on a weekly basis to mark any obviously spurious or unusual measurements. The Council also undertakes data ratification on an approximately three monthly basis as well as following site services. This involves:

- Comparison of data with other pollutants and other appropriate AURN network sites (roadside sites and other sites in the south west),
- Final checking and deletion of data marked as possibly erroneous,
- Removal of data from unrepresentative periods of operation (e.g. road works in immediate vicinity of site etc. where data is shown or believed to have been affected),
- Adjustment for issues identified during services etc.

The NO_2 data from Exeter Roadside is collected and ratified by the AURN. Network data from the site can be found at this link. It is ratified every 3 months by NETCEN, and is reported in the QA / QC Data Ratification Report for the Automatic Urban Network. Data capture from the NO_2 analyser was 91% in 2019.

Plots of hourly average values for nitrogen dioxide, PM_{10} and $PM_{2.5}$ are shown below in figures C.4.2, C.4.3 and C.4.4.

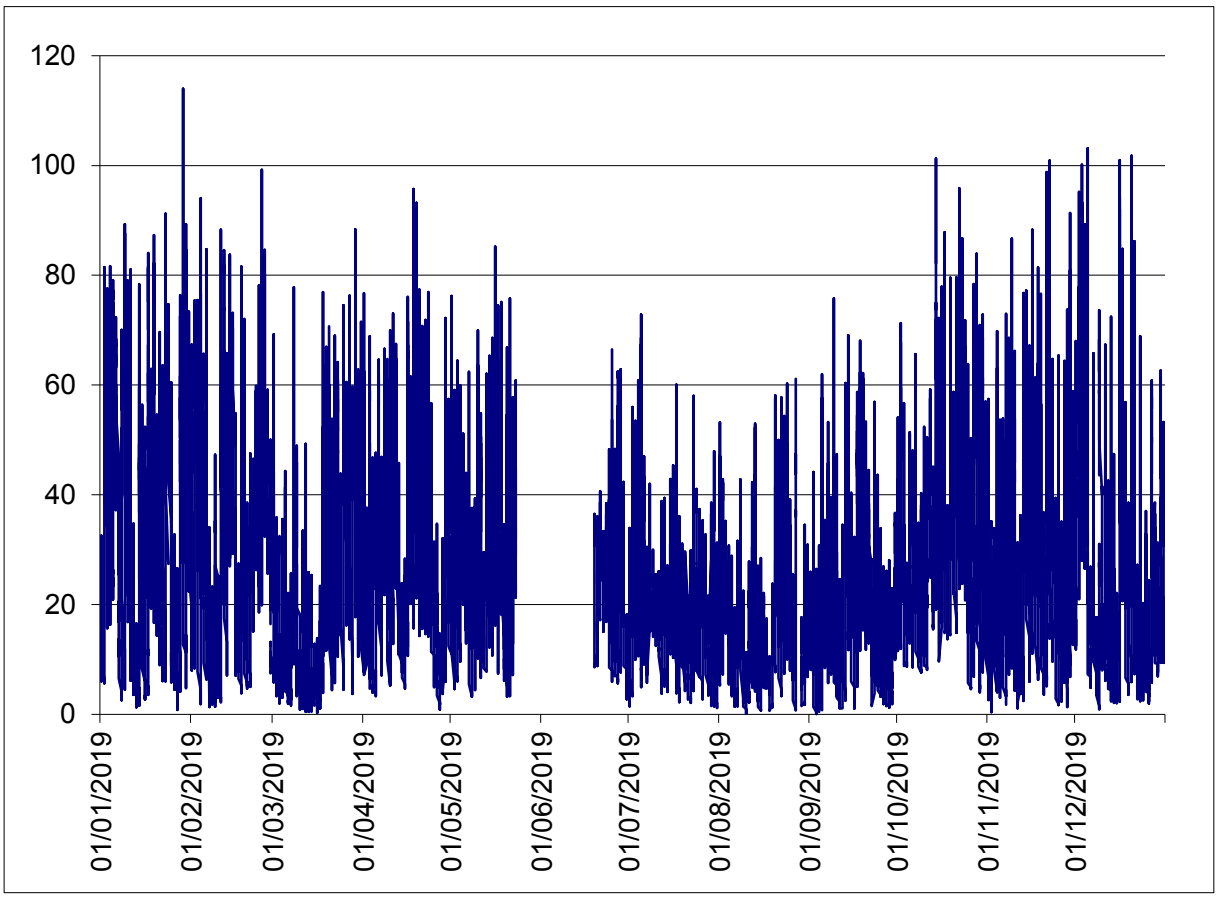


Figure C.4.2 Hourly NO_2 data from Exeter Roadside (RAMM) ($\mu g/m^3$)

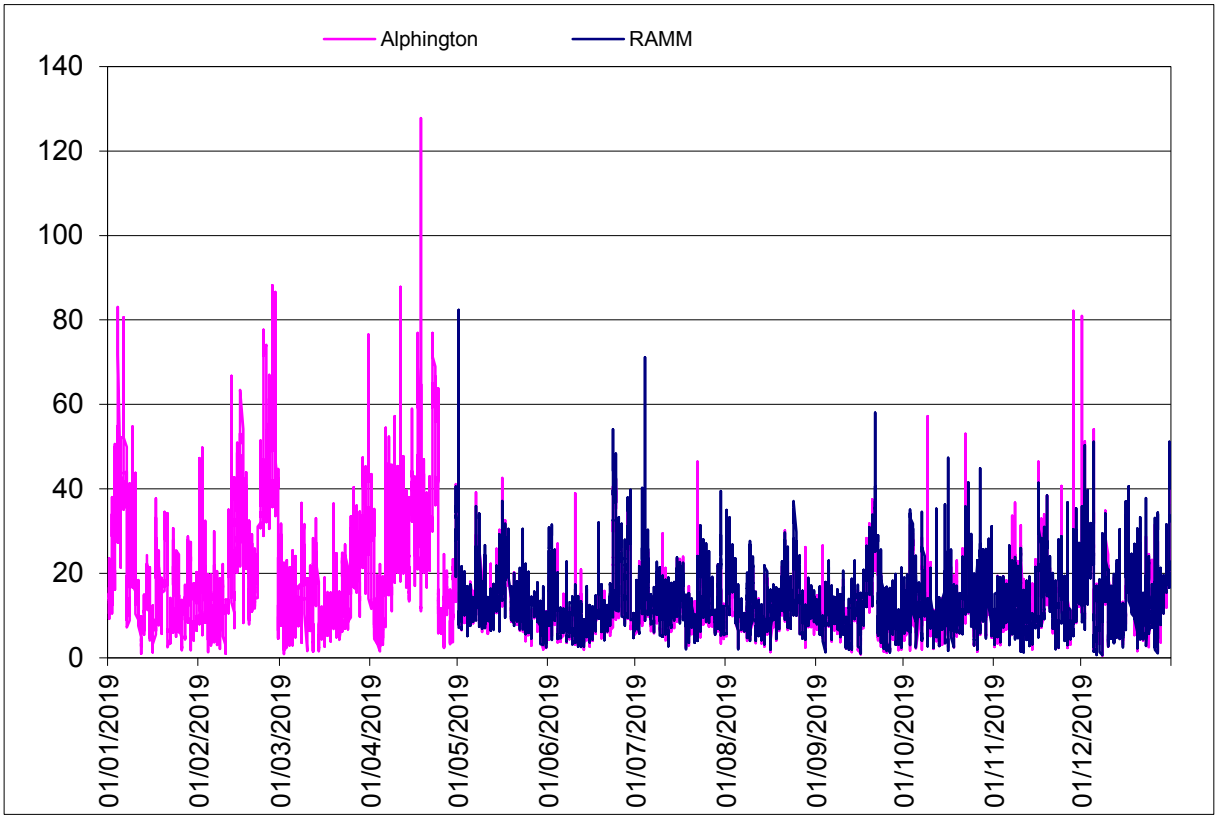


Figure C.4.3 Hourly PM_{10} data from Exeter Roadside (RAMM) and Alphington Street ($\mu g/m^3$)

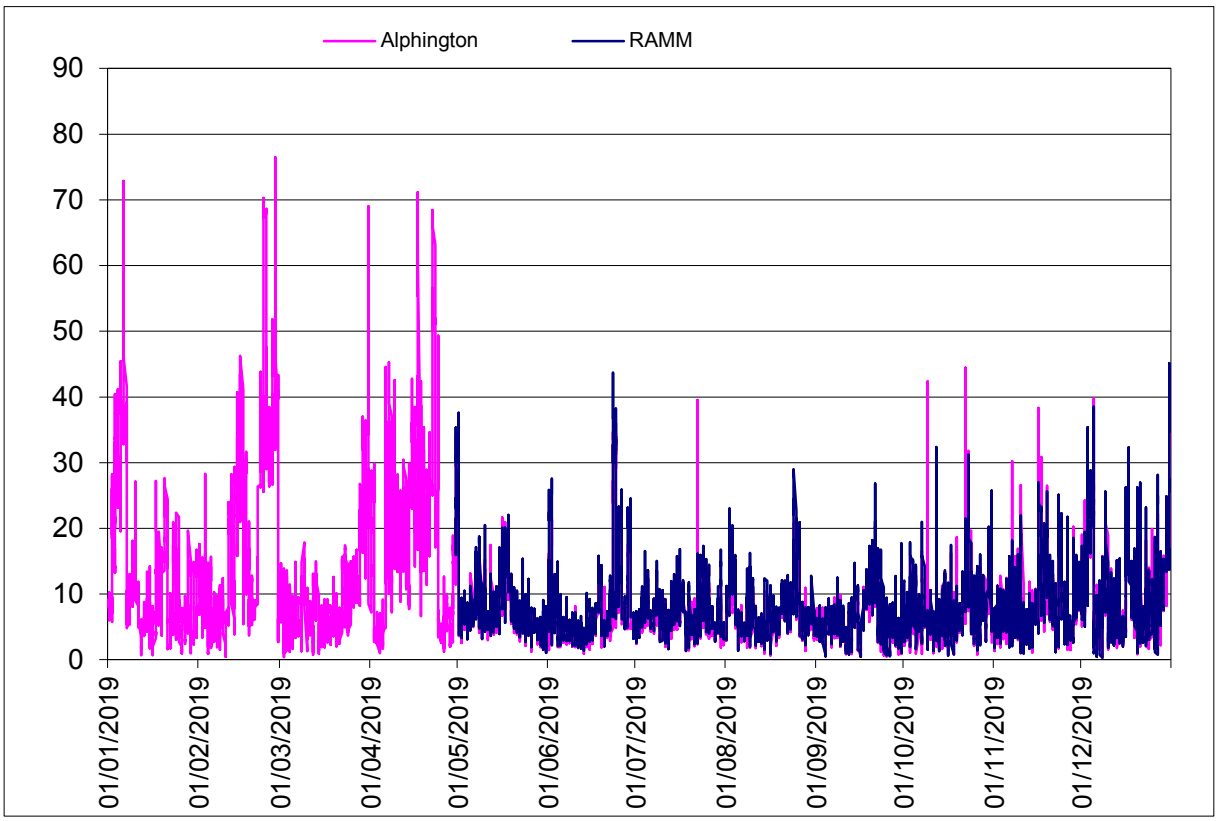


Figure C.4.4 Hourly $PM_{2.5}$ data from Exeter Roadside (RAMM) and Alphington Street ($\mu g/m^3$)

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied by GRADKO (GRADKO International Ltd., St. Martins House, 77 Wales Street, Winchester, Hants. SO23 0RH) and are prepared using 20% TEA in water. The GRADKO lab follows the procedures set out in the Harmonisation Practical Guidance. The performance of the laboratory is rated as satisfactory in the centralised AIR NO_2 PT scheme for quality assurance and quality control.

The tube exposure period used follows the timetable provided by the Air Quality Support Helpdesk, i.e. an exposure time of 4 or 5 weeks, with an allowed variation in exposure time of $\pm$ 2 days. The tubes are stored in a fridge before they are exposed. Location sites and fixings follow the recommendations in the DEFRA practical guidance on the use of diffusion tubes for NO_2 monitoring, published in 2008. Two tubes are collocated with the continuous analyser at the Royal Albert Memorial Museum (RAMM), Queen Street (Exeter Roadside).

Data from the tubes are ratified and suspect data rejected by Exeter City Council, following the procedure in the DEFRA practical guidance. Random checks of the

data in the reporting spreadsheet are also undertaken to ensure that no mistakes were made when inputting the data. Analysis of the data from the two tubes that are co-located with the continuous analyser shows that these have overall good precision.

The full monthly dataset is shown in Table B.1 above.

Annualisation

Data capture from the particulate analyser at RAMM was below 75% so this has been annualised using the methodology in LAQM TG16 (Box 7.9). An example calculation is shown below, for RAMM $PM_{2.5}$.

	Annual mean 2019	Period Mean 2019	Ratio
RAMM PM_{10}		13.76	
Barnstable A39	16.63	14.31	1.16
Plymouth Centre	16.94	15.22	1.11
Saltash Callington Road	17.79	16.24	1.10
Alphington Street	15.10	12.27	1.23
Average			1.15
Annualised			15.83

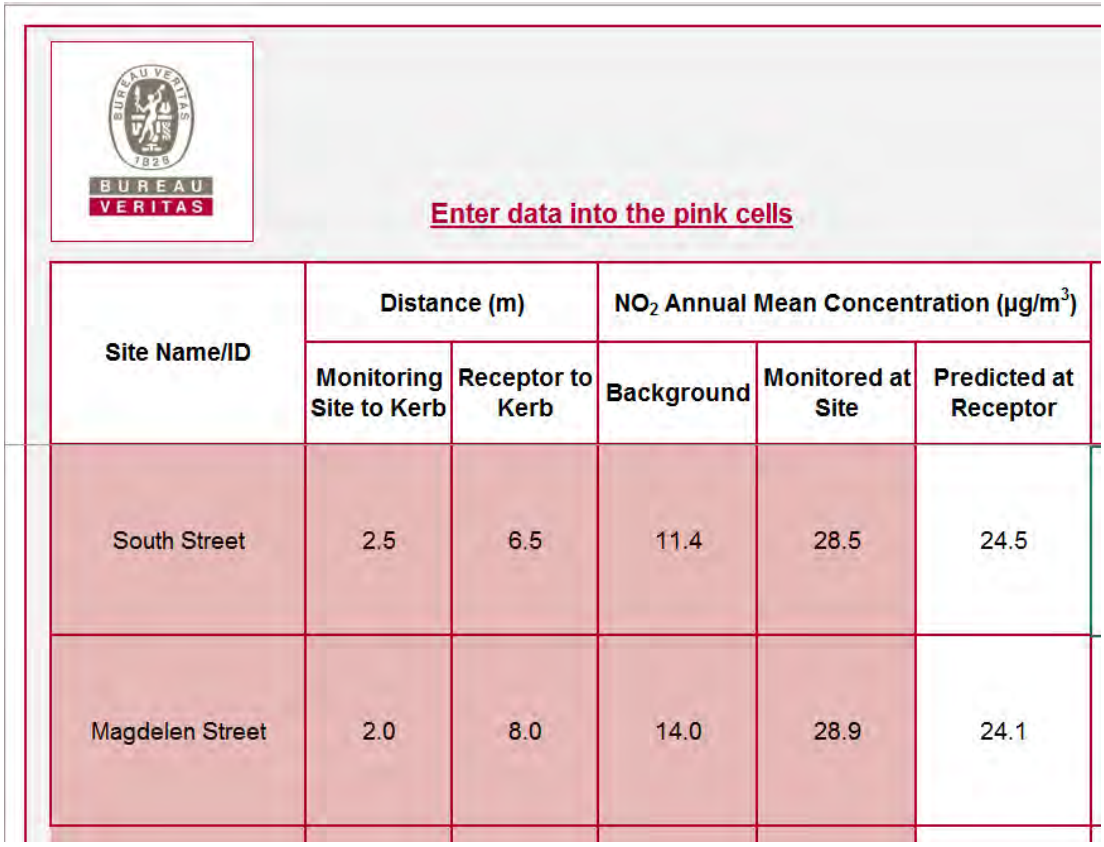
Data capture from diffusion tubes at Heavitree Pleasure Ground and Sidwell Street was below 75% so this has been annualised using the methodology in LAQM TG16 (Box 7.10). The calculation for this is shown below.

Start Date	End Date	RAMM NO_2 CA 2019	Heavitree Pleasure Ground tube	Sidwell Street tube	CA when Heavitree PG is available	CA when Sidwell St is available
11/01/2019	05/02/2019	36.40	14.82	42.16	36.40	36.40
06/02/2019	05/03/2019	30.49	16.87	37.06	30.49	30.49
06/03/2019	02/04/2019	26.65	9.13	30.90	26.65	26.65
03/04/2019	30/04/2019	32.49	12.45	30.26	32.49	32.49
01/05/2019	04/06/2019	31.45				
05/06/2019	04/07/2019	27.10	7.93		27.10	
05/07/2019	06/08/2019	20.48		29.63		20.48
07/08/2019	04/09/2019	16.97	8.58	26.43	16.97	16.97
05/09/2019	02/10/2019	23.89	9.40	32.45	23.89	23.89
03/10/2019	07/11/2019	33.72	13.04		33.72	
08/11/2019	03/12/2019	35.86				
04/12/2019	08/10/2020	27.96	12.91		27.96	
	Average	28.62	11.68	32.70	28.41	26.77
		Annualised	11.77	34.96		
				Annualisation factor	1.0075	1.0693

Distance Correction

Some of the diffusion tubes are located closer to the kerbside than the nearest relevant receptor. Where this is the case, the diffusion tube result has been corrected for the additional distance to the receptor. This data is shown in Table B.1.

The distance correction spreadsheet tool provided by DEFRA has been used to perform these calculations. The tool was downloaded from DEFRA and an example calculation is shown below.



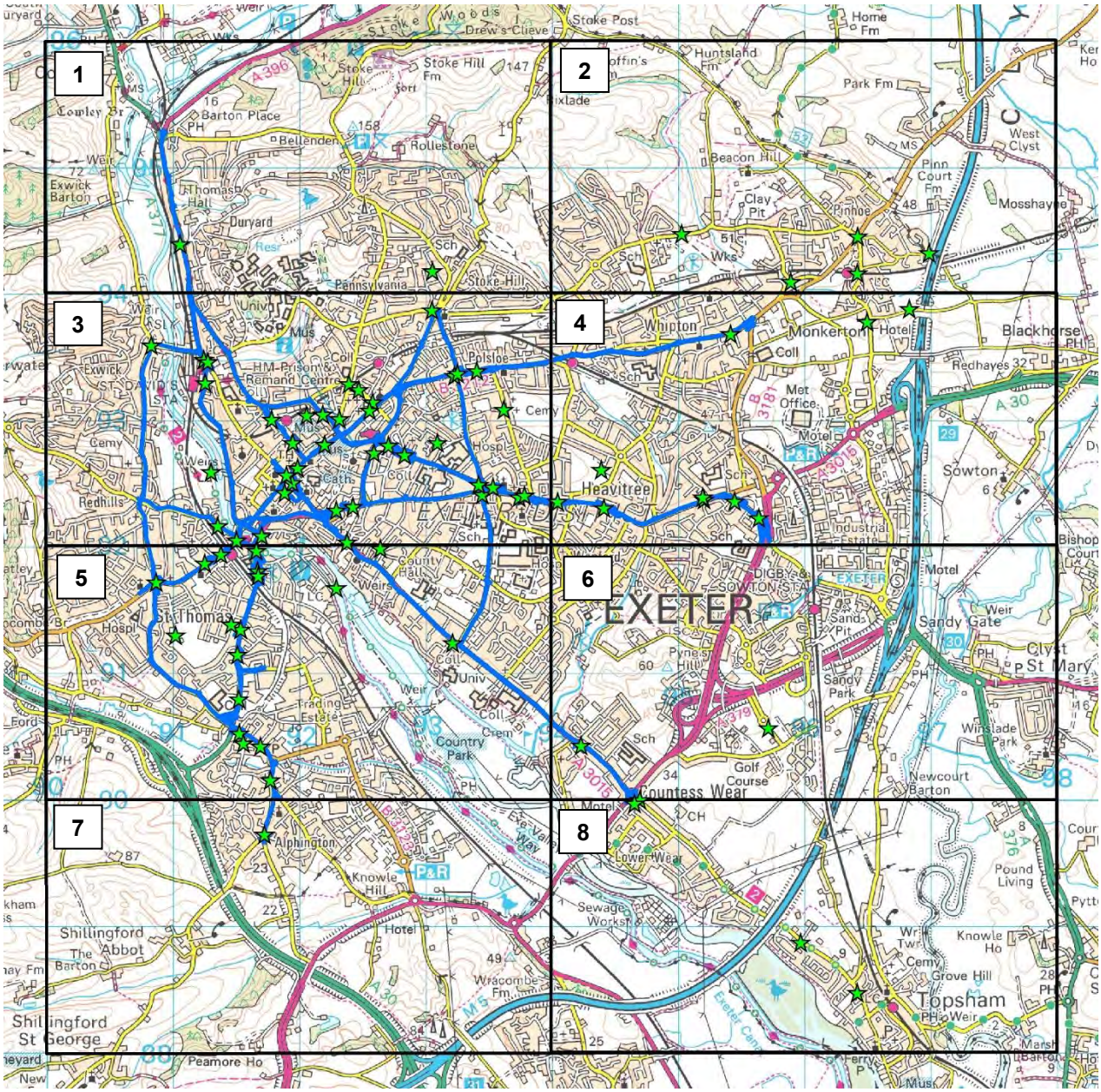
Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration ($\mu g/m^3$)		
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
South Street	2.5	6.5	11.4	28.5	24.5
Magdelen Street	2.0	8.0	14.0	28.9	24.1

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

The monitoring locations and 2019 data can also be viewed using an online map here.

Monitoring location = ★
AQMA = ▬



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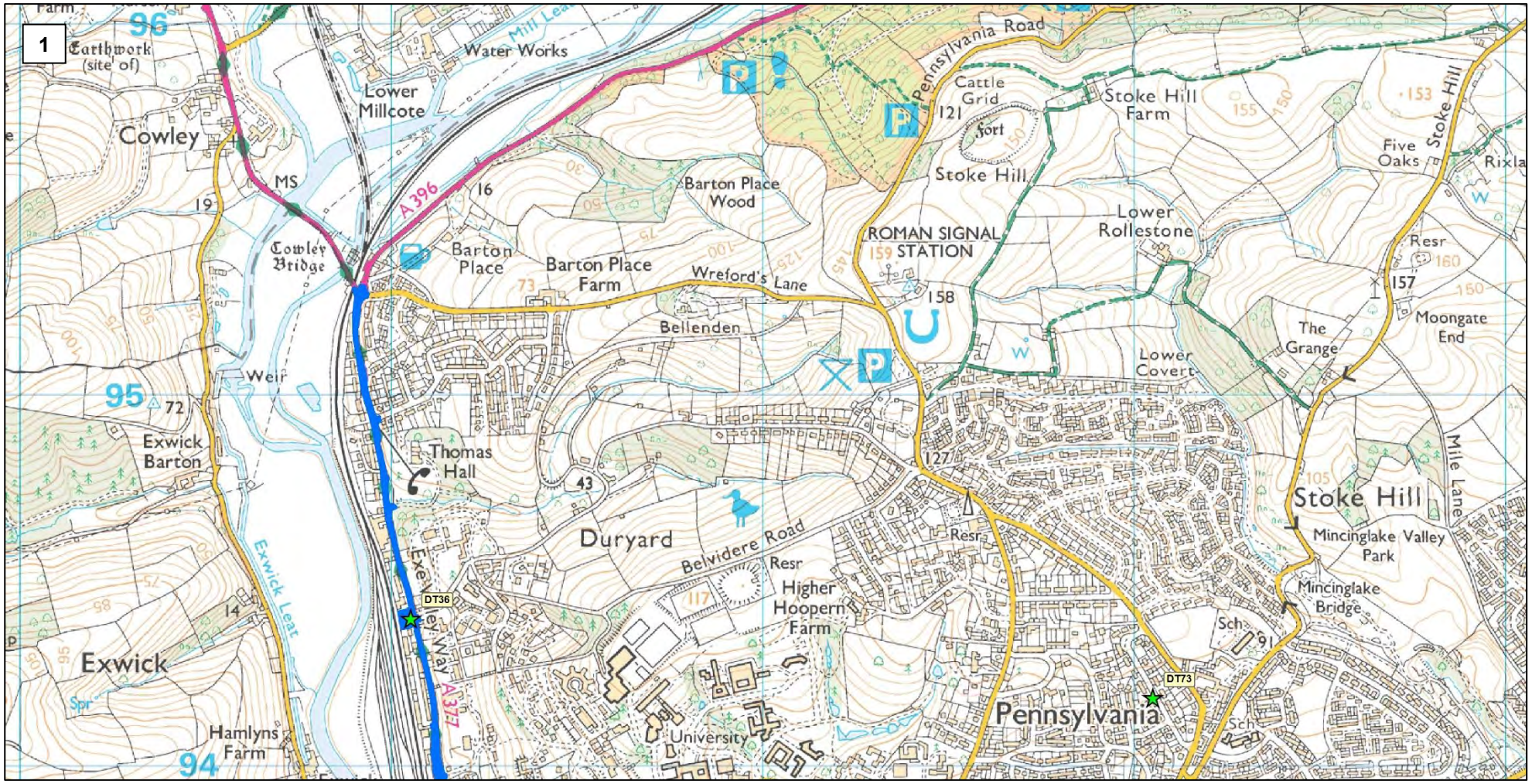

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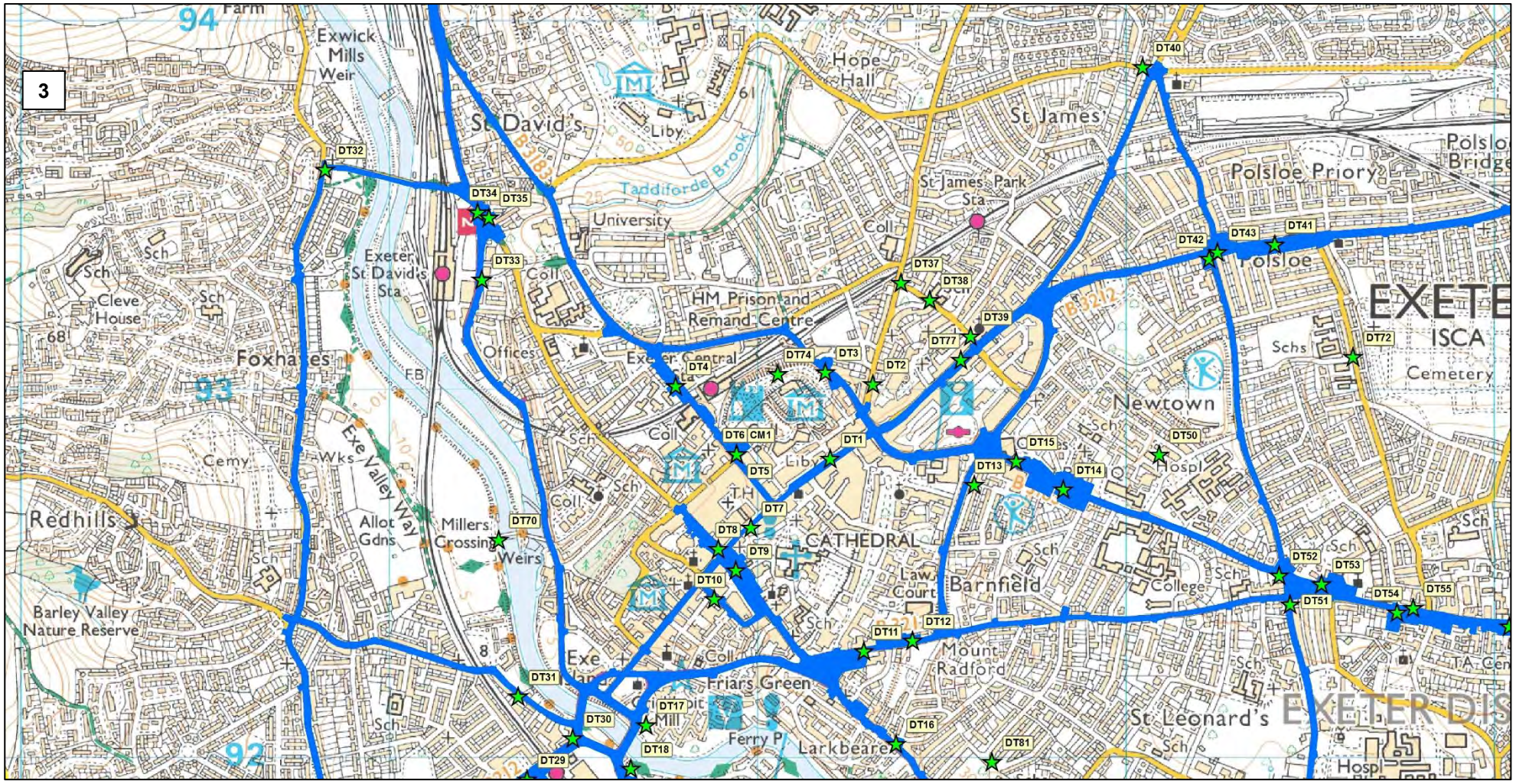

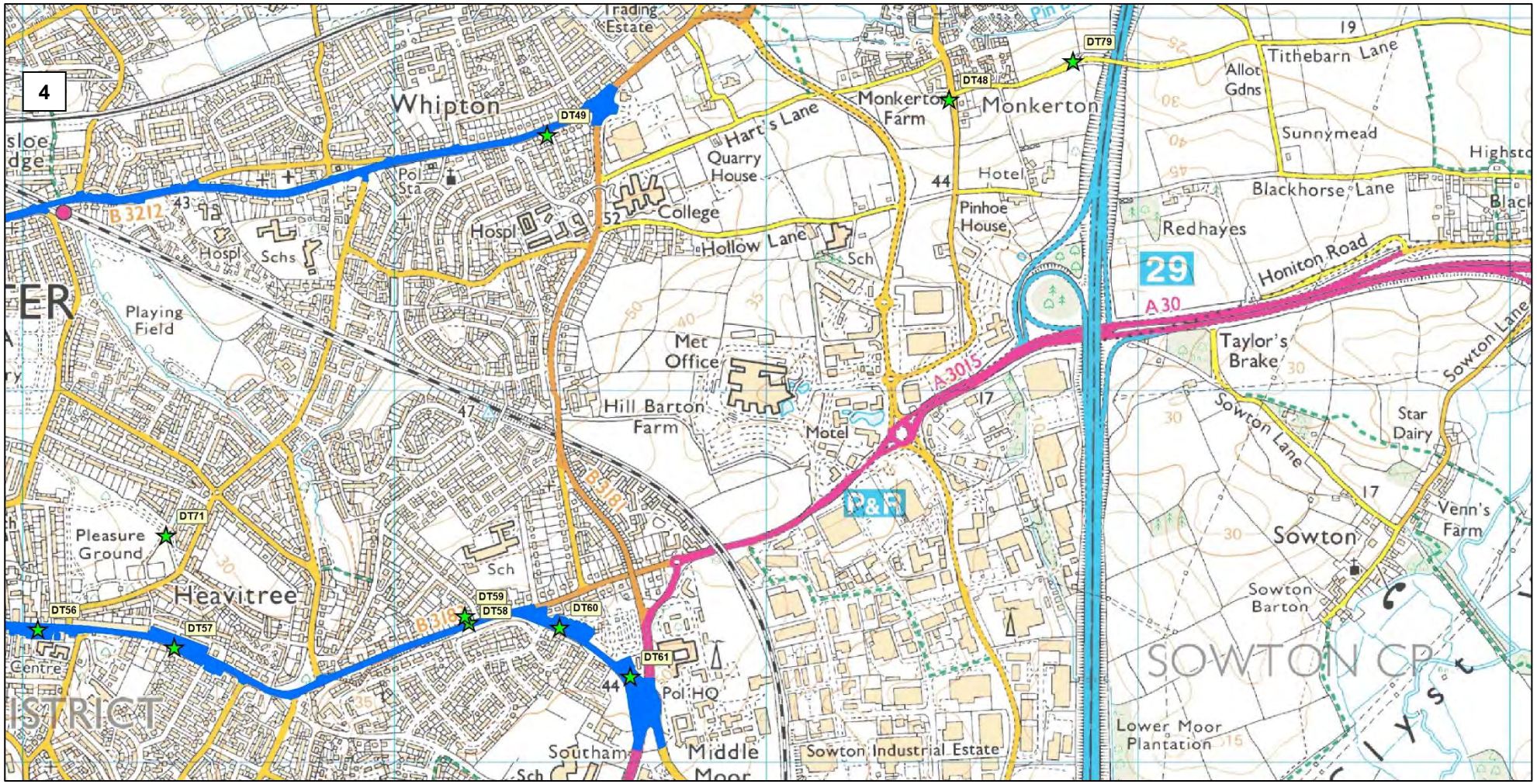

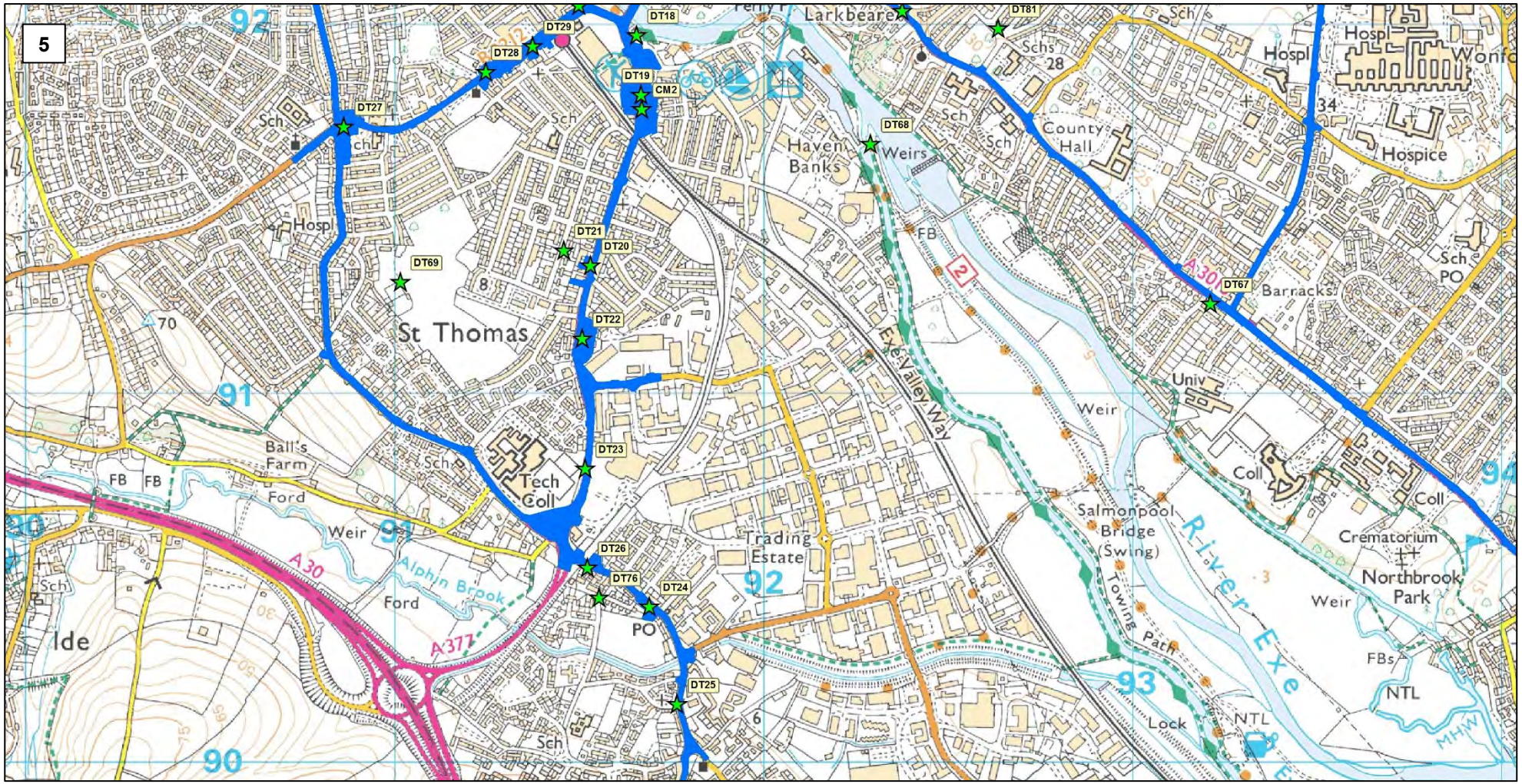

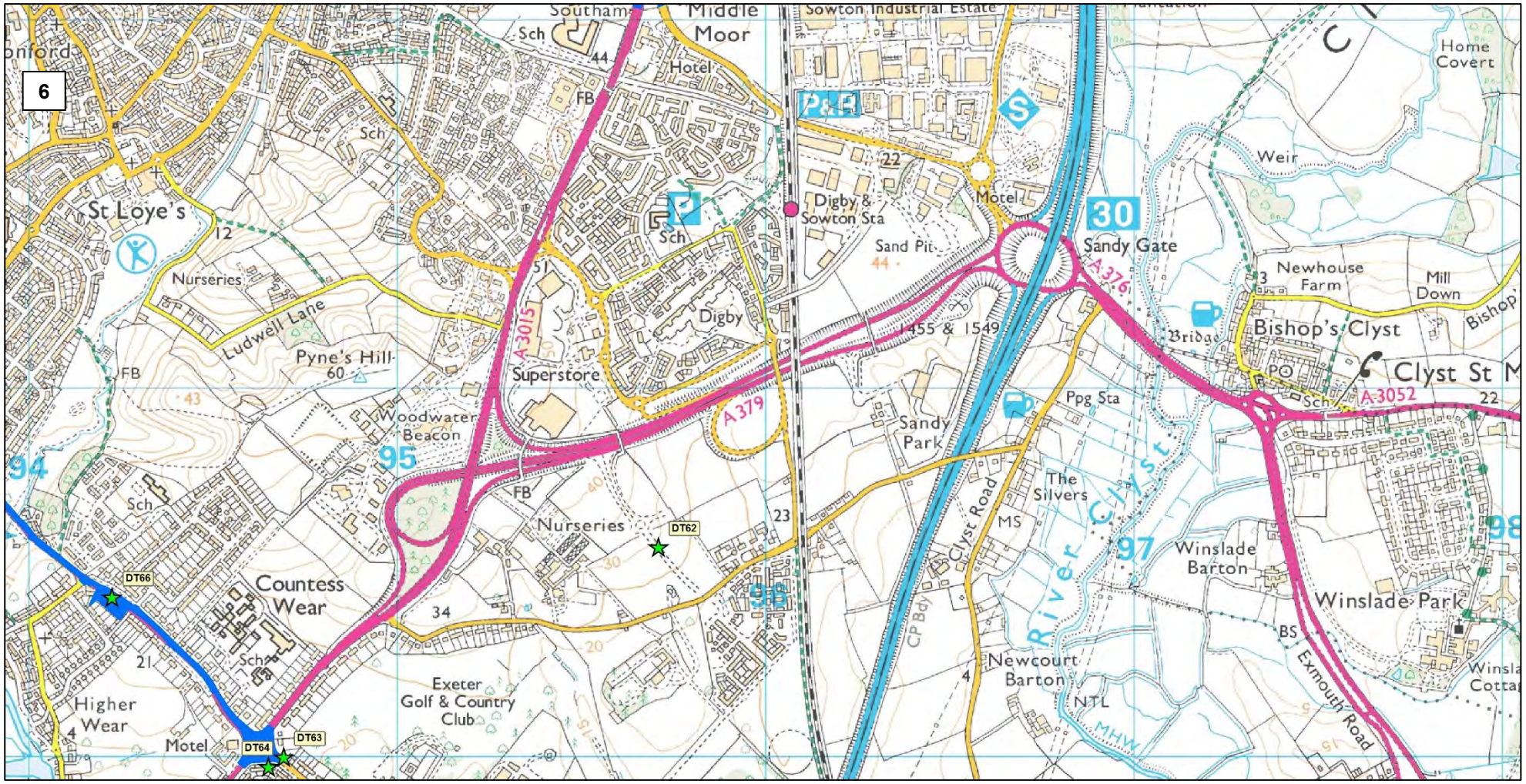

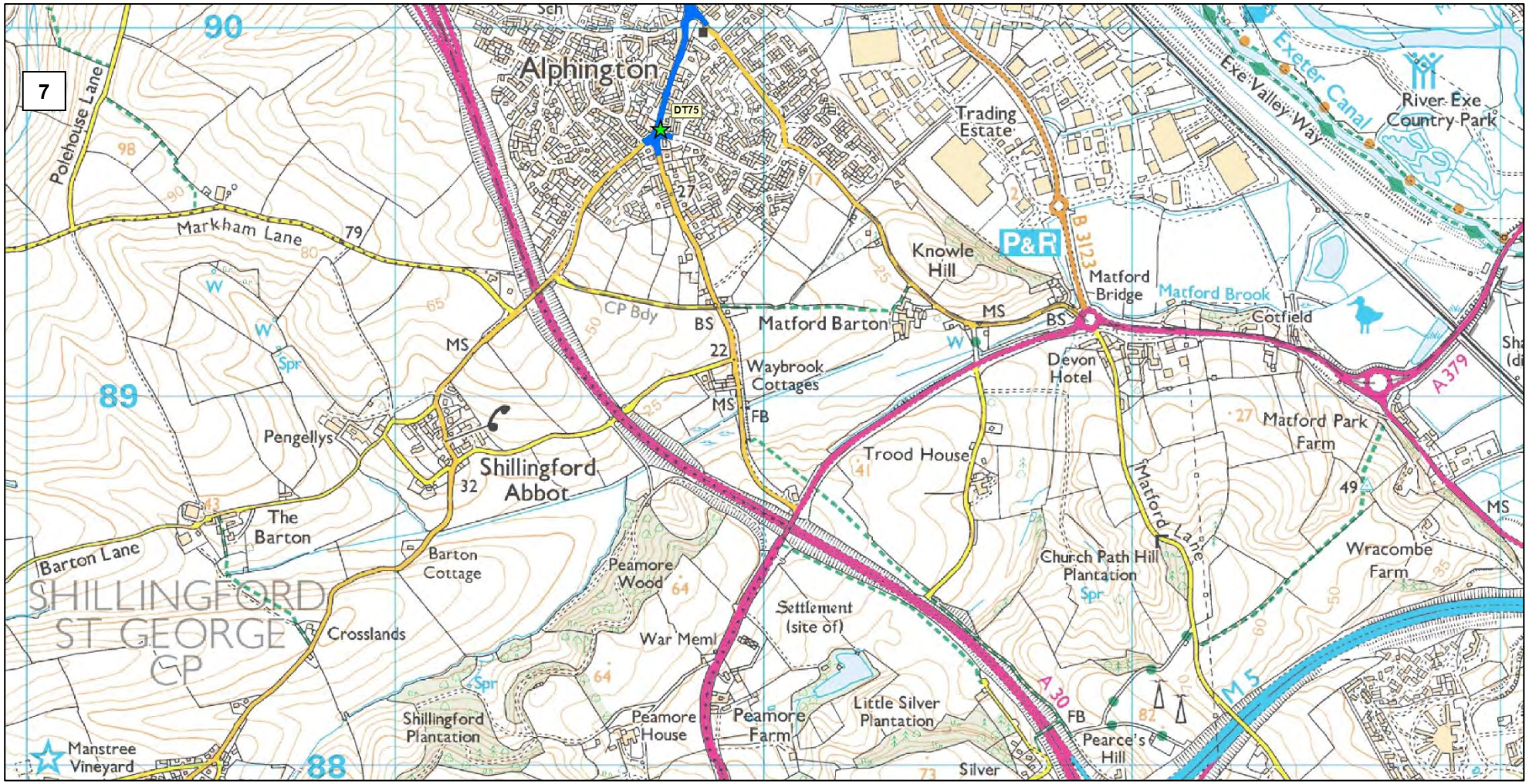

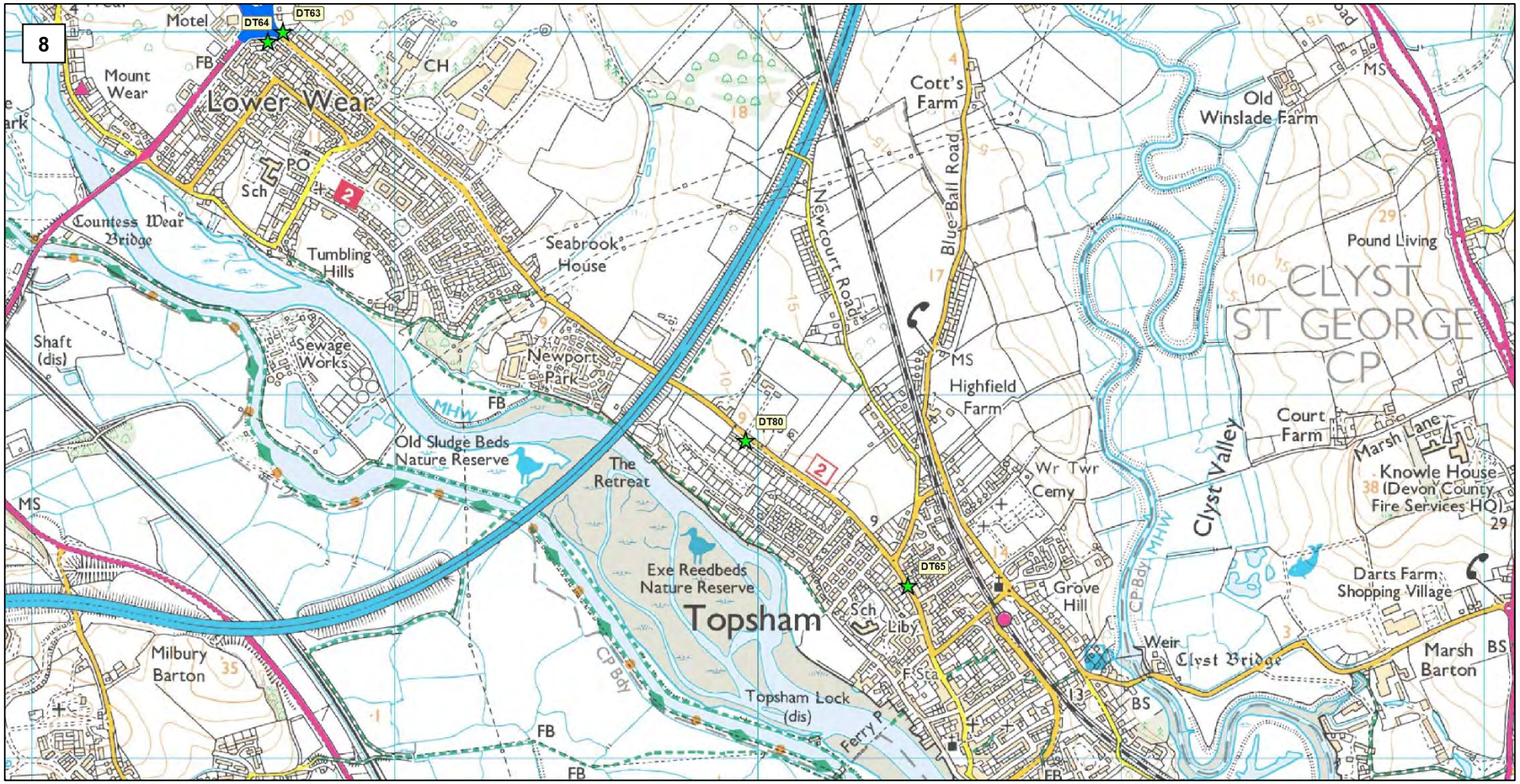

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean
Ozone (O_3)	100 µg/m3 not to be exceeded more than 10 times a year	8-hour mean

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
O_3	Ozone
DCC	Devon County Council
ECC	Exeter City Council
GESP	Greater Exeter Strategic Plan
ECF	Exeter City Futures
SELDP	Sport England Local Delivery Pilot

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Tube precision spreadsheet

Devon Local Transport Plans.