



2020 Air Quality Annual Status Report (ASR)

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

June 2020

Test Valley Borough Council

Local Authority Officer	Matthew Robinson
Department	Housing and Environmental Health Service (Environmental Protection)
Address	Test Valley Borough Council, Beech Hurst, Weyhill Road, Andover, SP10 3AJ
Telephone	01264 368000
E-mail	envhealth@testvalley.gov.uk
Report Reference number	TVBC/ASR2020
Date	June 2020

Executive Summary: Air Quality in Our Area

Air Quality in Test Valley Borough Council

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

Due to the importance of the potential impact of poor air quality on health, Test Valley Borough Council (TVBC) is required to review and assess air quality within the Borough on a regular basis. This involves the production of an Annual Status Report by 30th June 2020 and is intended to maintain continuity in the Local Air Quality Management process. This report includes the results of on-going monitoring of air quality pollutants within the Borough where emissions from a range of sources could adversely impact sensitive receptors.

This Annual Status Report includes the results of nitrogen dioxide diffusion tube monitoring carried out in 2019. This has indicated trends that are either stable or downward at all 17 sites and there is no evidence that the Annual Mean concentration of nitrogen dioxide may exceed the specific Air Quality Objective of 40µg/m³. Based on the findings of this report, TVBC has found no evidence that the levels of any other relevant pollutants may exceed the specific Air Quality Objectives and therefore has not identified the need to designate any Air Quality Management Areas.

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

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

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

Although a review of planning applications received by TVBC during 2019 has not identified any new major sources of emissions within the borough, any proposed developments which may have possible significant implications for local air quality have been assessed. Proposed large scale developments where there is expected to be a significant air quality impact have been subject to formal air quality assessment as part of the planning process.

Actions to Improve Air Quality

TVBC takes its responsibilities for air quality very seriously and any proposals within the Borough are carefully assessed in accordance with the Local Plan. Development that would or could generate potentially significant levels of pollution will only be permitted if it can be demonstrated that there would not be any adverse impact on human health, the natural environment or general amenity.

TVBC has agreed to work with Southampton City Council to help achieve their aim to improve air quality in the Southampton Urban Area Agglomeration Zone. The Air Quality Plan for Southampton Urban Area was originally published in December 2015 and TVBC will be working with our neighbouring local authorities (Southampton City Council, Winchester City Council and Eastleigh Borough Council) to target sources of nitrogen dioxide in the Southampton Urban Area (UK0019).

TVBC will explore with Hampshire County Council (HCC) the possibility of identifying possible measures linking PM_{2.5} with public health and how the success of reduction measures could best be measured. These measures and any positive outcomes will then be reported in future Air Quality Annual Status Reports.

The southern part of the Test Valley Borough is encompassed by the Partnership for Urban South Hampshire (PUSH), Air Quality Impact Assessment, the results of a modelling exercise for within the analysis area for NO₂ PM₁₀ and PM_{2.5} have been analysed and modelled.

Conclusions and Priorities

- No exceedances of the current Air Quality Objectives have been identified.
- The overall trends in the data have shown a steady improvement in air quality - see Figure A.1

Test Valley Borough Council

- TVBC will continue to carefully consider future planning applications which may have the potential to impact air quality in Test Valley and within the vicinity of the Southampton Urban Area.
- The monitoring sites have been reviewed and new areas targeted in 2019.

Local Engagement and How to get involved

TVBC has posted information on the Council's website with regards to:

Air Quality:

<http://www.testvalley.gov.uk/housingandenvironmentalhealth/environmentalprotection/air-quality>

Sustainability:

<http://www.testvalley.gov.uk/aboutyourcouncil/corporatedirection/environmentandsustainability>

Travel Planning:

<https://www.testvalley.gov.uk/transportparkingandstreets/traffic-management/travelplans>

Cycling and Walking:

<http://www.testvalley.gov.uk/communityandleisure/cyclingwalking>

With updates with regards to new sustainable travel initiatives such as, bus services, walking and cycling provision and residents travel plans:

<http://www.testvalley.gov.uk/communityandleisure/workingwithcommunities/mylocalarea/alamein/augusta-park/east-anton-augusta-park-community-travel-plan>

<https://www.testvalley.gov.uk/communityandleisure/my-local-area-new/andover-downlands/picket-twenty/picket-twenty-resident-community-travel-plan-consu>

and,

<http://www.testvalley.gov.uk/communityandleisure/workingwithcommunities/mylocalarea/romsey-extra/abbotswood/travel-abbotswood>

Moreover, TVBC is working with partners to inform the public and special interest groups, such as taxi drivers, about the need to think about air quality, such as turning off their engines when idling. In other issues electric car charging points have been provided across the district.

Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in Test Valley Borough Council.....	i
Actions to Improve Air Quality.....	i
Conclusions and Priorities.....	ii
Local Engagement and How to get Involved.....	ii
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
2.1 Air Quality Management Areas.....	2
2.2 Progress and Impact of Measures to address Air Quality in Test Valley Borough Council	
2.3 PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations.....	9
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	9
3.1 Summary of Monitoring Undertaken.....	11
3.1.1 Automatic Monitoring Sites.....	11
3.1.2 Non-Automatic Monitoring Sites.....	11
3.2 Individual Pollutants.....	11
3.2.1 Nitrogen Dioxide (NO ₂).....	11
3.2.2 Particulate Matter (PM ₁₀).....	12
3.2.3 Particulate Matter (PM _{2.5}).....	12
3.2.4 Sulphur Dioxide (SO ₂).....	12
Appendix A: Monitoring Results	13
Appendix B: Full Monthly Diffusion Tube Results for 2019	20
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	22
Appendix D: Map(s) of Monitoring Locations and AQMAs	24
Appendix E: Summary of Air Quality Objectives in England	37
Glossary of Terms	38
References	39

List of Tables

Table 2.1 – Declared Air Quality Management Areas.....	3
Table 2.2 – Progress on Measures to Improve Air Quality.....	6

1. Local Air Quality Management

This report provides an overview of air quality in Test Valley Borough Council (TVBC) 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 TVBC 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.

TVBC currently does not have any AQMAs. The Council does utilise a number of local and regional plans and strategies in order to minimise and/or reduce potential impacts on air quality within the Borough. For example:

- Hampshire Local Plan (2011- 2031);
- Test Valley Borough Council Local Plan (2011 – 2029);
- Partnership for Urban South Hampshire Air Quality Impact Assessment (PUSH).

For reference, a map of TVBC's monitoring locations is available in Appendix D.

Table 0.1 – Declared Air Quality Management Areas

Test Valley Borough Council has not declared any Air Quality Management Areas.

2.2 Progress and Impact of Measures to address Air Quality in Test Valley Borough Council.

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

Commentary

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

1. Trends are clearly presented and discussed and a robust comparison with air quality objectives is provided.
2. The diffusion tube mapping is comprehensive and clearly demonstrates the monitoring network.
3. In regards to PM_{2.5} emissions results, the report could include links to Public Health outcomes Frameworks in future ASRs. For further guidance please refer to LAQM Technical Guidance 2016 (TG16).
4. Comments from the previous appraisal have been provided and addressed accordingly. This includes inclusion of more monitoring sites to identify new hotspots in the borough.

The opportunity has been taken to review the monitoring locations to ensure that significant trunk roads, main urban centres and residential area close to busy main traffic routes are being considered especially in light of major developments within the Borough.

TVBC 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 0.2.

More detail on these measures can be found in their respective Action Plans.

Copies of the main reference plans/strategies can be found via the web-links listed below:

[Local Transport Plan \(2011 – 2031\)](http://www3.hants.gov.uk/transport/local-transport-plan.htm)

<http://www3.hants.gov.uk/transport/local-transport-plan.htm>

[Test Valley Borough Council's Local Plan \(2011 – 2029\)](http://www.testvalley.gov.uk/planning-and-building/planningpolicy/local-development-framework)

<http://www.testvalley.gov.uk/planning-and-building/planningpolicy/local-development-framework>

and the latest update:

<http://www.testvalley.gov.uk/housingandenvironmentalhealth/environmentalprotection/air-quality>

TVBC's priorities for the coming year are to continue monitoring concentrations of nitrogen dioxide across the Borough, ensure that all proposed development is subject to scrutiny to ensure that compliance with Policy E8 of the Council's Local Plan and work with our neighbouring local authorities with regards to the non-compliance for nitrogen dioxide in the Southampton Urban Area Clean Air Zone.

The principal challenges and barriers to implementation that TVBC anticipates facing are that the main driver for air quality in the borough is traffic. Traffic management within the borough is largely beyond the control of TVBC, and is currently the responsibility of Hampshire County Council and Highways England.

Table 0.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	NO2			Southampton City Council	Ongoing	2017-2020	Compliance by 2020		Partnership working agreed	2020	
2	PM2.5			Test Valley Borough Council	2017/18	2018-2020	TBC		Initial discussions held	2020	
3	Bargain Farm and Nursling Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	Test Valley Borough Council	Completed	TBC	Site allocated in Borough Local Plan 2011 -2029 Policy T3	Reduction in Pollutant / Emission from Measure	Feasibility study completed	TBC	
4	Car Sharing for Travel to work and for visits	Alternatives to private vehicle use	Car & lift sharing schemes	Test Valley Borough Council	Completed 2002	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	
5	Grateley and Andover Railway Station	Alternatives to private vehicle use	Rail based Park & Ride	Test Valley Borough Council	Completed	Completed	Increase in the number of passengers using the facility	Reduction in Pollutant / Emission from Measure	Andover and Grateley parking capacity increased	Summer 2017	
6	Salary Sacrifice for Bicycles	Alternatives to private vehicle use	Other	Test Valley Borough Council	Completed 2012	Ongoing		Reduction in Pollutant / Emission from Measure	29 people on the scheme to date	Ongoing	
7	New Car Purchase Scheme	Alternatives to private vehicle use	Other	Test Valley Borough Council	Completed 2014	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	
8	Risk based charging for permits	Environmental Permits	Other measure through permit systems and economic instruments	Test Valley Borough Council		Ongoing	Maximise the number of low risk permitted sites	Reduction in Pollutant / Emission from Measure	44 out of 45 permitted processes with low risk scores	Ongoing	
9	Andover Airfield Business Park	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	Test Valley Borough Council	Completed 2010	TRO on unsuitable route introduced	TRO implemented	Reduction in Pollutant / Emission from Measure		Ongoing	
10		Policy Guidance and Development Control	Sustainable Procurement Guidance	Test Valley Borough Council	Completed 2012	Ongoing		Reduction in Pollutant / Emission from Measure	Updated January 2017	Ongoing	
11	Zero Emissions Vehicles	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	Test Valley Borough Council	Completed 2015	7 electric vehicles and 11 electric plant items now within the Councils fleet		Reduction in Pollutant / Emission from Measure	Updated June 2018	Ongoing	

12	Electric Vehicle recharging points	Promoting Low Emission Transport	Other	Test Valley Borough Council	Completed 2015	2 EV charging points installed at Romsey Sports centre. Feasibility study to ascertain possible locations for more EV charging points		Reduction in Pollutant / Emission from Measure	18 additional charging points have been installed in TVBC car parks in Romsey and Andover in 2019.	Ongoing	
13	Taxi Licensing	Promoting Low Emission Transport	Taxi Licensing conditions	Test Valley Borough Council	Completed 2014	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	Reviewed regularly
14	TVBC staff working from home	Promoting Travel Alternatives	Encourage / Facilitate home-working	Test Valley Borough Council	Ongoing			Reduction in Pollutant / Emission from Measure		Ongoing	Home working facilities have been accelerated in response to the Covid-19 pandemic
15	Travel Plan	Promoting Travel Alternatives	Promote use of rail and inland waterways	Test Valley Borough Council	Travel Plan updated in 2015	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	Reviewed annually
16	Promote rail services for personal and work journeys	Promoting Travel Alternatives	Promote use of rail and inland waterways	Test Valley Borough Council	Travel Plan updated in 2015	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	
17	Cycling events and activities within the Borough and nearby - e.g. Bike Week	Promoting Travel Alternatives	Promotion of cycling	Test Valley Borough Council		Ongoing	Events/activity monitored	Reduction in Pollutant / Emission from Measure		Ongoing	
18	Walking as a sustainable means for travel for staff and residents or short journeys within the settlements of Andover and Romsey	Promoting Travel Alternatives	Promotion of walking	Test Valley Borough Council	Completed 2002	Ongoing	Participation monitored	Reduction in Pollutant / Emission from Measure		Ongoing	
19	Walk to school' schemes	Promoting Travel Alternatives	Promotion of walking	Hampshire County Council	Completed 2000	Ongoing	Participation monitored	Reduction in Pollutant / Emission from Measure		Ongoing	
20	Community travel plans for large mixed use developments have been secured, promoted delivers by the council	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Test Valley Borough Council and Hampshire County Council	Completed 2001	Ongoing			Several travel plans approved including new neighbourhoods in Andover, large residential areas in Romsey and Nursling and Employment sites in Andover and Nursling.	Ongoing	
21	Walking and Cycling guides have been produced for Test Valley and Andover and Romsey	Public Information	Via leaflets	Test Valley Borough Council	Completed 2005. Updates to Romsey leaflet being planned	Ongoing		Reduction in Pollutant / Emission from Measure	An updated walking and cycling map for Romsey was produced in 2019 through Romsey Future.	Ongoing	
22	The above guides are also available in the TVBC website	Public Information	Via the Internet	Test Valley Borough Council	Completed 2010	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	

23	Major Residential Development in Andover and Romsey providing new infrastructure to provide priority (bus only underpass arch and bus gates)	Transport Planning and Infrastructure	Bus route improvements	Test Valley Borough Council	Bus only underpass completed in Andover the rest is ongoing.			Reduction in Pollutant / Emission from Measure		Ongoing	
24	There are two high quality bus partnerships in Test Valley on high frequency bus routes linking urban areas	Transport Planning and Infrastructure	Bus route improvements	Test Valley Borough Council	Completed 2001	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	
25	Supplementary planning document: Cycle Strategy adopted by the council	Transport Planning and Infrastructure	Cycle network	Test Valley Borough Council	Reviewed and updated in 2015	Ongoing		Reduction in Pollutant / Emission from Measure	Updated 2015	Ongoing	
26	Certificate of Professional Competence Training for staff	Vehicle Fleet Efficiency	Driver training and ECO driving aids	Test Valley Borough Council	Completed	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	
27	Regular Emissions testing of Council Vehicle Fleet	Vehicle Fleet Efficiency	Driver training and ECO driving aids	Test Valley Borough Council	Completed	Ongoing		Reduction in Pollutant / Emission from Measure		Ongoing	

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. According to 2018 data from PHE, the fraction of mortality attributable to particulate air pollution in the Test Valley area is 5.2% (Source: <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/>). This level is better than the average for the South East region (5.6%) and the same as the England overall average.

Although TVBC does not currently monitor for Particulate Matter, current data indicates that PM_{2.5} varies across the borough with background concentrations of between 8.94µg/m³ and 12.16µg/m³ (Source: <https://uk-air.defra.gov.uk/data/laqm-background-home>). At present, there is no Air Quality Objective for PM_{2.5}.

TVBC is taking the following measures to address PM_{2.5}:

Key sources of PM_{2.5} include road traffic and industrial emissions and whilst TVBC only has a limited role in road traffic management it will continue to work with Hampshire County Council and Highways England in addition to Hampshire County Council's Public Health team and Public Health England to reduce PM_{2.5} emissions wherever possible.

Table 2.2 includes a list of measures which not only have the potential to reduce concentrations of PM_{2.5} but are likely to have a positive impact on other atmospheric pollutants including nitrogen dioxide and PM₁₀.

Defra's appraisal of last year's Annual Status Report concluded that TVBC should collaborate with the Public Health England in respect of PM_{2.5} in order to identify potential areas of concern within the Borough where air quality might have a direct link with the incidence of asthma. TVBC is part of a countywide group who are looking at moving forward on this issue.

TVBC's priorities for the coming year are:

1. To continue working with our neighbouring local authorities of Southampton City Council, Winchester City Council and Eastleigh Borough Council in respect of the Southampton Urban Area.
2. To work with Hampshire County Council's Public Health team and Public Health England - South East in order to identify additional measures to improve air quality.

The principal *challenges* and *barriers* to implementation that TVBC anticipates facing in relation to its priorities are:

- i. Traffic management within the borough is largely beyond the control of TVBC, and is currently the responsibility of Hampshire County Council and Highways England.
- ii. It is currently prohibitively expensive for a borough such as TVBC to directly measure concentrations of PM_{2.5}.

Whilst the measures set out in Table 2.2 will help to contribute towards continuing compliance with current Air Quality Objectives, TVBC anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance for nitrogen dioxide in the Southampton Urban Area.

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.

TVBC does not currently have any automatic (continuous) monitoring sites.

3.1.2 Non-Automatic Monitoring Sites

TVBC undertook non- automatic (passive) monitoring of Nitrogen Dioxide at 17 sites during 2019.

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 bias⁴, “annualisation” (where the data capture falls below 75%), and distance correction⁵. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³. 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 (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

⁴ <https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

⁵ Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

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

Error! Reference source not found. in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

There have been no exceedances of the air quality objectives .

3.2.2 Particulate Matter (PM₁₀)

TVBC does not monitor for PM₁₀ or for PM_{2.5}

3.2.3 Sulphur Dioxide (SO₂)

TVBC does not monitor for SO₂

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

Test Valley Borough Council does not have any Automatic Monitoring Sites

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
1	Winchester Road - East	Roadside	436129	121398	NO ₂	NO	0	1	NO	1.5
2	Duttons Road	Roadside	435376	121786	NO ₂	NO	0	1.5	NO	2
3	Palmerstons Street - West	Roadside	435474	121089	NO ₂	NO	0	1.3	NO	2
4	Romsey (A27) Bypass	Roadside	434927	120689	NO ₂	NO	0	3	NO	2
5	Palmerstons Street - East	Roadside	435473	121125	NO ₂	NO	0	2	NO	1.8
6	Winchester Road - West	Roadside	436075	121387	NO ₂	NO	0	1.5	NO	2
7	Alma Road (South)	Roadside	435597	121244	NO ₂	NO	0	2	NO	2
8	Alma Road (North)	Roadside	435630	121403	NO ₂	NO	0	2.6	NO	2
9	Chilworth Road	Roadside	441760	118091	NO ₂	NO	0	1	NO	2
10	Nursling Street, Nursling	Roadside	436991	116319	NO ₂	NO	0	0.5	NO	2
11	North Baddesley	Roadside	439617	119978	NO ₂	NO	0	2	NO	1.5
12	Kings Somborne	Roadside	435869	130958	NO ₂	NO	0	1.5	NO	1.5
13	Weyhill (A342), Andover	Roadside	432084	146585	NO ₂	NO	0	2.5	NO	1.5

Test Valley Borough Council

14	Humberstone Road (East)	Roadside	436498	144936	NO ₂	NO	0	1.5	NO	2
15	Little Ann (A343)	Roadside	433514	143078	NO ₂	NO	0	2	NO	2
16	Nursling (A3057)	Roadside	437747	116652	NO ₂	NO	0	1.5	NO	1.5
17	New Street, Andover	Roadside	436682	146683	NO ₂	NO	0	1.5	NO	2.4

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2015	2016	2017	2018	2019
3	Roadside	Diffusion Tube	100	92	34.2	33.5	30.7	29.3	30.14
6	Roadside	Diffusion Tube	100	92	27	28.5	26.3	26.6	27.85
7	Roadside	Diffusion Tube	98	100	26.5	26.5	26.4	26.6	24.41
8	Roadside	Diffusion Tube	100	100	26.5	26.4	26.6	25.9	25.11
9	Roadside	Diffusion Tube	100	100	26.5	26.4	26.6	30.0	30.34
13	Roadside	Diffusion Tube	98	100	26.5	26.5	26.4	26.6	16.77

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2015	2016	2017	2018	2019
1	Roadside	Diffusion Tube	100	-	-	-	-	-	35.28
2	Roadside	Diffusion Tube	100	-	-	-	-	-	24.51
4	Roadside	Diffusion Tube	92	-	-	-	-	-	22.51
5	Roadside	Diffusion Tube	83	-	-	-	-	-	25.35
10	Roadside	Diffusion Tube	92	-	-	-	-	-	29.09
11	Roadside	Diffusion Tube	100	-	-	-	-	-	30.59

12	Roadside	Diffusion Tube	92	-	-	-	-	-	16.53
14	Roadside	Diffusion Tube	100	-	-	-	-	-	16.53
15	Roadside	Diffusion Tube	100	-	-	-	-	-	24.26
16	Roadside	Diffusion Tube	100	-	-	-	-	-	26.75
17	Roadside	Diffusion Tube	83	-	-	-	-	-	35.43

- Diffusion tube data has been bias corrected (confirm by selecting in box)
- Annualisation has been conducted where data capture is <75% (confirm by selecting in box)
- 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 (confirm by selecting in box)

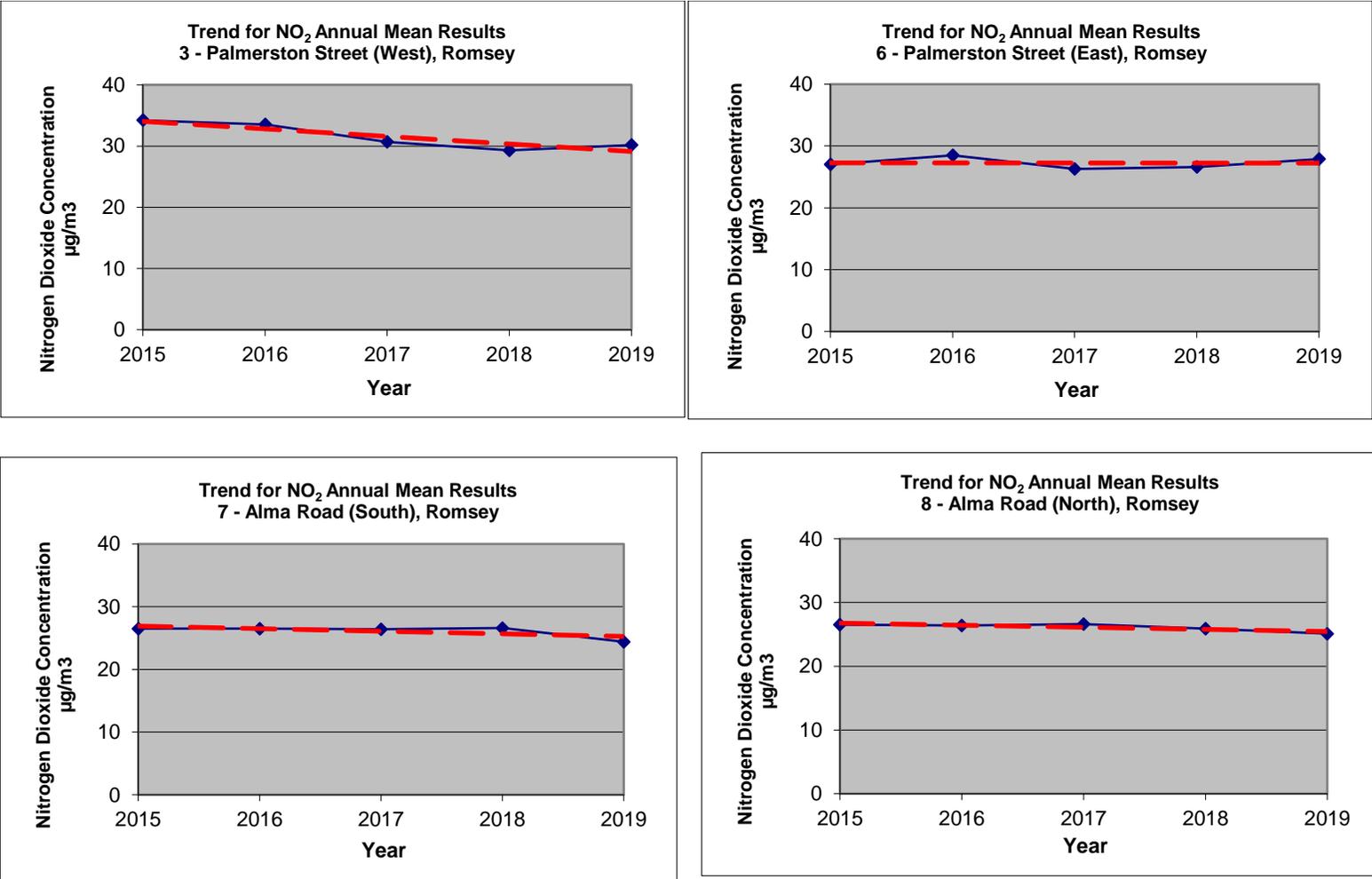
Notes:

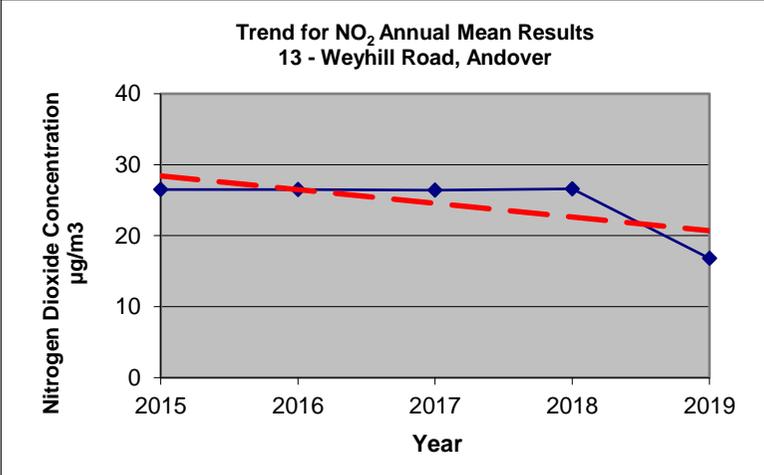
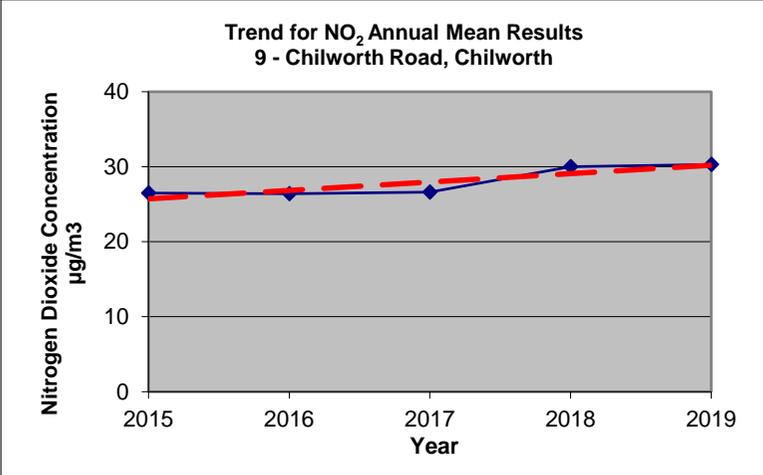
Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
- (3) Means 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.
- (4) 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 NO₂ Concentrations





Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO₂ Monthly Diffusion Tube Results - 2019

Site ID	NO ₂ Mean Concentrations (µg/m ³)													Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (factor) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾	
1	50.8	55.8	47.5	48.2	40.8	46.8	40.8	41.2	50	27.8	52	48.1	45.82	35.28	35.28	
2	37.7	32.5	28.5	31.7	28.9	32.5	27.8	27	33.9	29.8	40.1	31.5	31.83	24.51	24.51	
3	38.9	40.8	40.2	Missing	37.4	33.1	34.9	38.7	41.6	30.1	46.1	48.7	39.14	30.14	30.14	
4	32.6	37.1	24.9	27.7	24	Missing	22.4	25.4	30.7	30.8	33.7	32.2	29.23	22.51	22.51	
5	Missing	42.6	37.5	34.2	30.4	Missing	27.1	19.3	31.9	29	42.9	34.3	32.92	25.35	25.35	
6	Missing	35.3	29.3	39	28.2	31.4	30.2	30.1	42.1	39.2	49.8	43.3	36.17	27.85	27.85	
7	45.1	32.1	30.8	30.2	28.5	27.4	26.5	25.9	30.6	26.9	41.6	34.8	31.70	24.41	24.41	
8	38.8	29.8	30.4	35.6	28.1	30.1	26.1	23.7	37	30.8	42.5	38.5	32.62	25.11	25.11	
9	45.2	55.2	35.4	39.5	32	35.1	35.4	34.5	39.9	36	43.3	41.3	39.40	30.34	30.34	
10	40.7	34	30.9	31.7	38.3	34.8	31.3	Missing	42.2	44.9	44.5	42.2	37.77	29.09	29.09	
11	45.6	50.7	40.6	32	34.4	33.7	34	33.3	43.5	39.2	45.7	44.1	39.73	30.59	30.59	
12	24.1	23.4	20.6	19	16.7	Missing	15.9	16.3	25.9	21.9	28.5	23.9	21.47	16.53	16.53	
13	25.8	18.8	21.9	26.1	18.5	18.9	16.7	15.4	26.3	19.6	31.2	22.2	21.78	16.77	16.77	
14	31.8	20.5	21	24.4	16.5	18.7	13.4	12.1	24.3	21	31.3	22.6	21.47	16.53	16.53	

Test Valley Borough Council

15	38.4	35.5	30.7	29.7	24.4	26.1	23.7	24.8	39.5	32.3*	44.1	29.7	31.51	24.26	24.26
16	50.1	38.2	43.9	32	29.4	31.1	23.9	23.9	35.7	32.5	44.2	32	34.74	26.75	26.75
17	60.6	41.6	45.1	Missing	Missing	43	38.8	30.1	50.4	43.7	63.3	43.5	45.82	35.28	35.28

- Local bias adjustment factor used (confirm by selecting in box)
- National bias adjustment factor used (confirm by selecting in box)
- Annualisation has been conducted where data capture is <75% (confirm by selecting in box)
- Where applicable, data has been distance corrected for relevant exposure in the final column (confirm by selecting in box)

Notes:

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

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

New or Changed Sources of Pollution

TVBC has not identified any significant changes to current sources of pollution or identified any new significant sources of pollution since the publication of the Council's 2019 Air Quality Annual Status Report.

Dispersion Modelling

TVBC is involved in the Partnership for South Hampshire (PUSH Partnership) with 11 Local Authorities modelling for NO_x, PM₁₀, PM_{2.5} and NH₃.

Evidence Gathering

TVBC is currently not collecting evidence in support of measures to prepare an Air Quality Action Plan.

Quality Assurance/Quality Control of diffusion tube monitoring

TVBC can confirm that as far as reasonably practicable, all 17 diffusion tubes are located in accordance with the guidance set out in the February 2008 AEA Energy & Environment report.

A copy of the "Summary of Precision Results for Nitrogen Dioxide Diffusion Tube Collocation Studies, by Laboratory" was downloaded from:

<https://laqm.defra.gov.uk/assets/tubeprecision2016version0317finalfullv2.pdf>.

Of the 27 studies which used ESG (50% TEA in Acetone) diffusion tubes during 2016, 26 studies indicated 'Good' precision and 1 indicating 'Poor' precision.

Diffusion Tube Bias Adjustment Factors

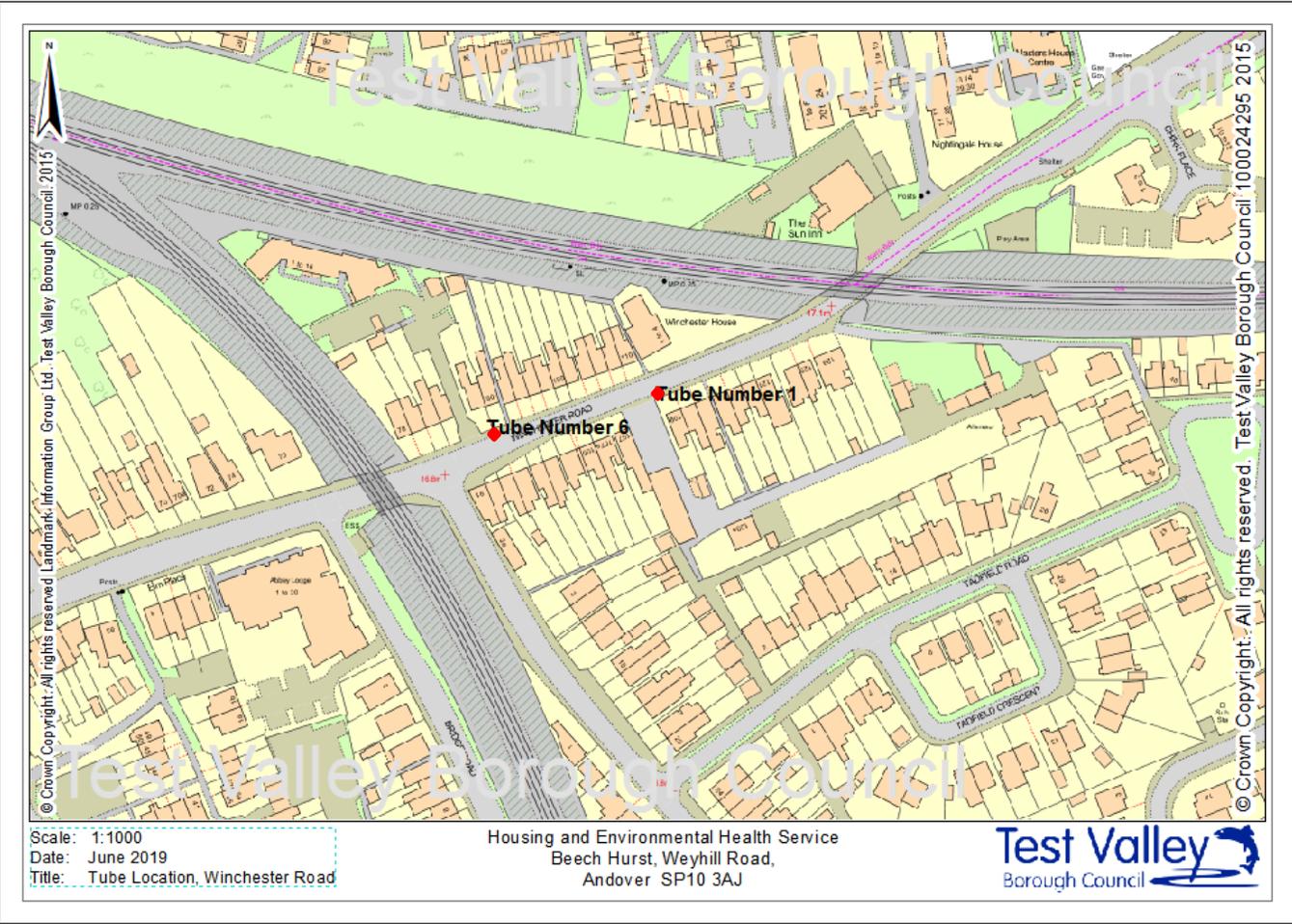
The diffusion tubes used by TVBC are supplied and analysed (50% TEA in Acetone) by Environmental Scientifics Group (ESG) laboratories, Didcot, Oxfordshire. The bias adjustment factor of **0.77** for our 2019 diffusion tubes was obtained from the following website:

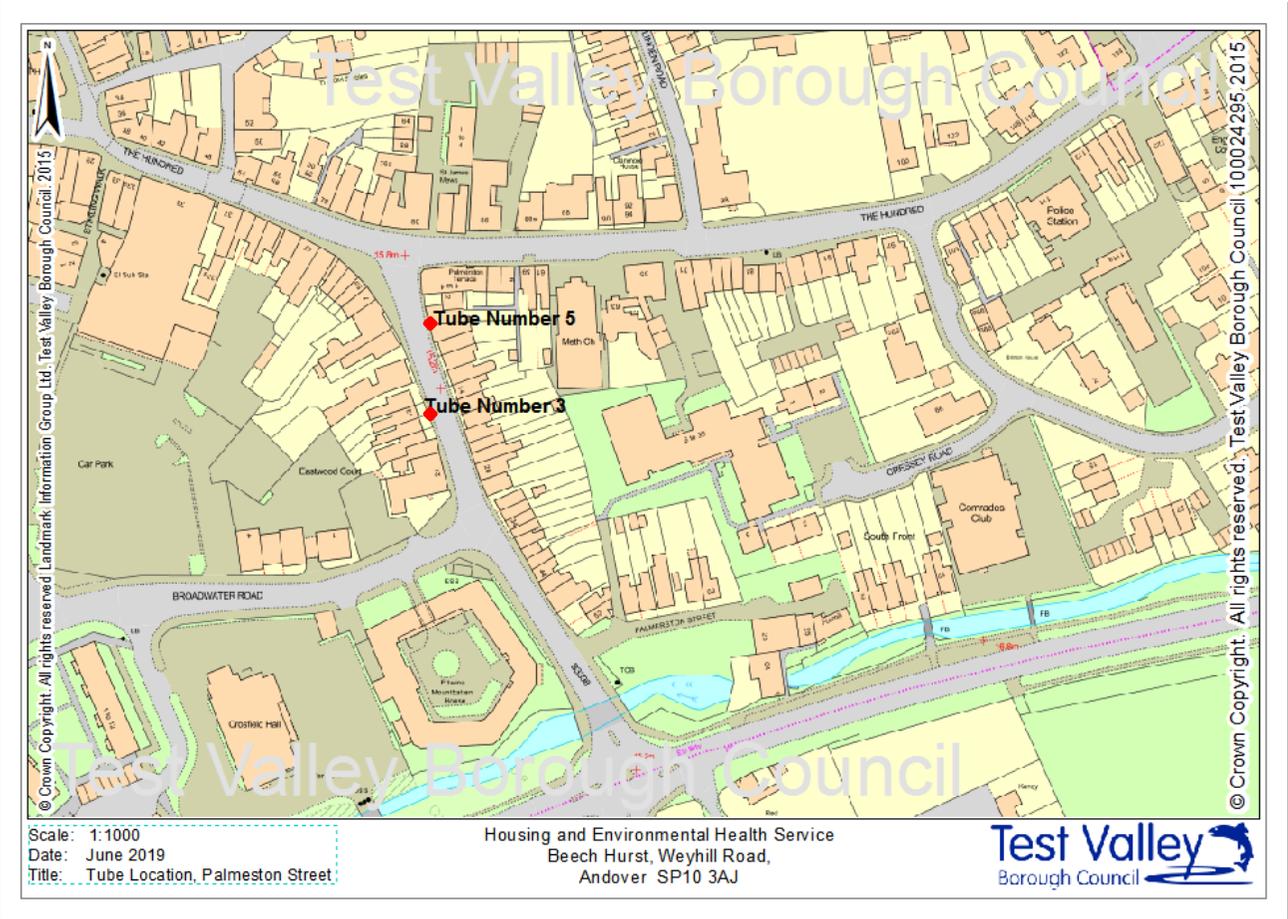
<https://laqm.defra.gov.uk/assets/databasediffusiontubebiasfactorsv0317v2.xls>.

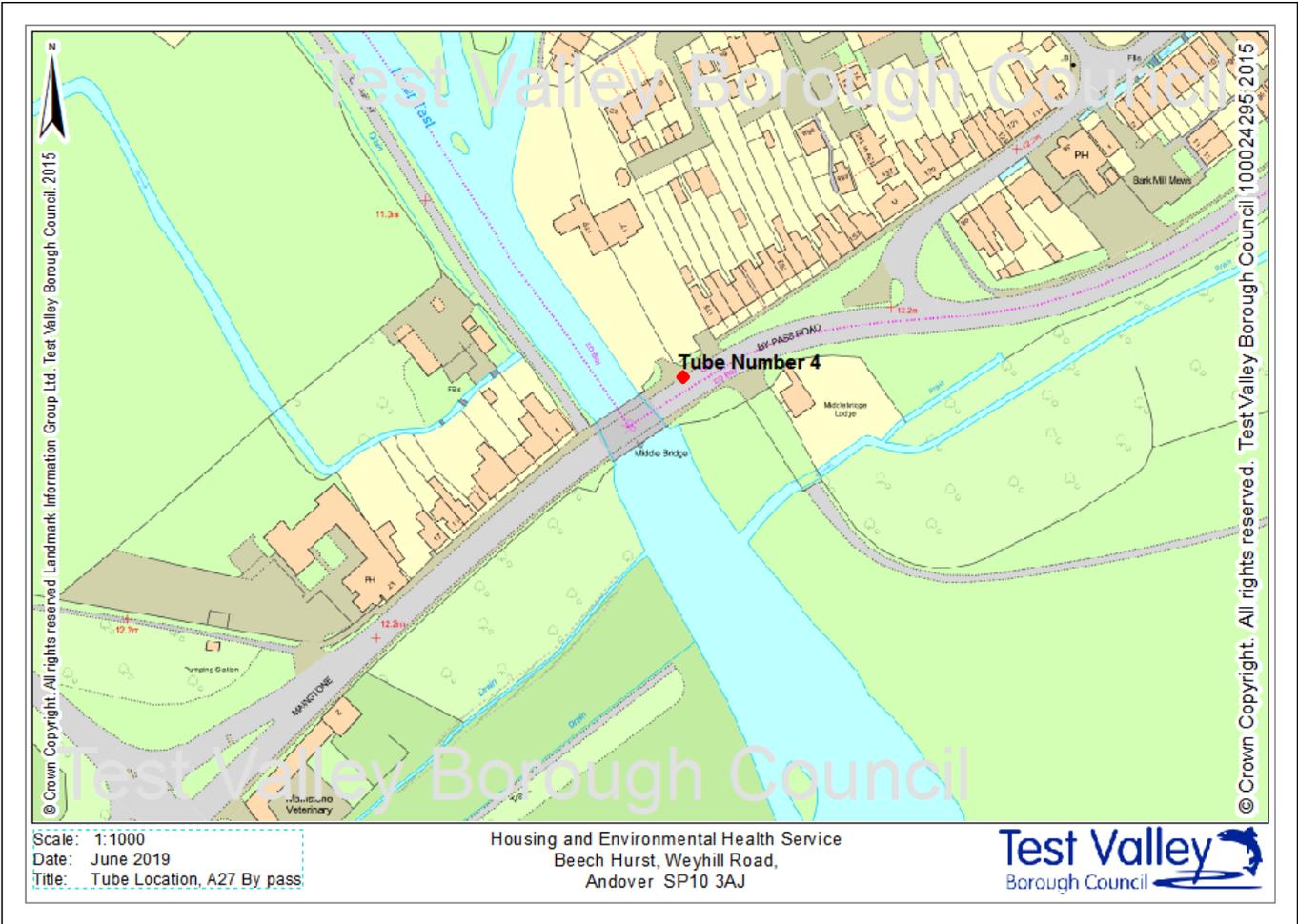
NO₂ Fall-off with Distance Calculator

TVBC's diffusion tube locations are representative of public exposure.

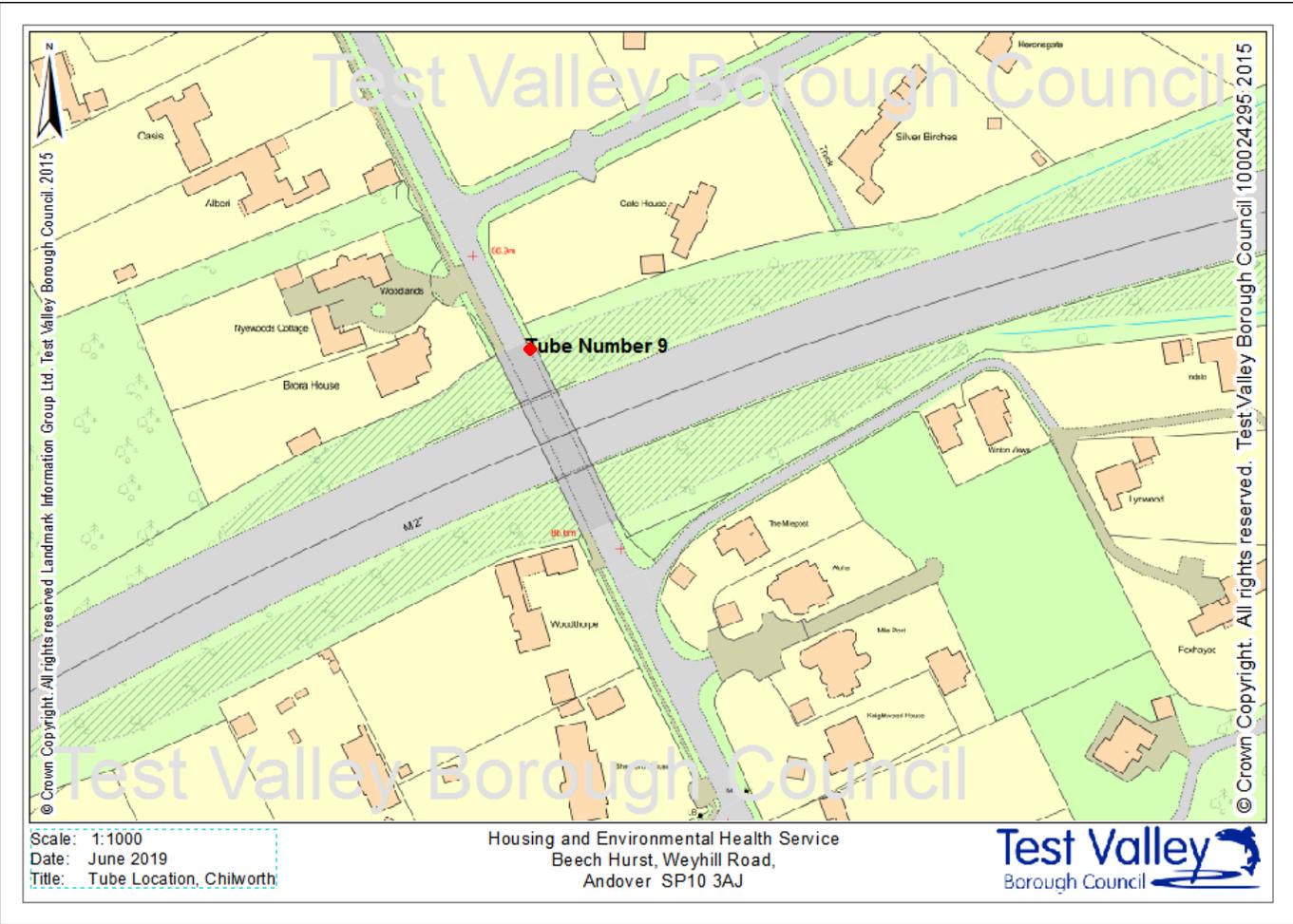
Appendix D: Map(s) of Monitoring Locations and AQMAs

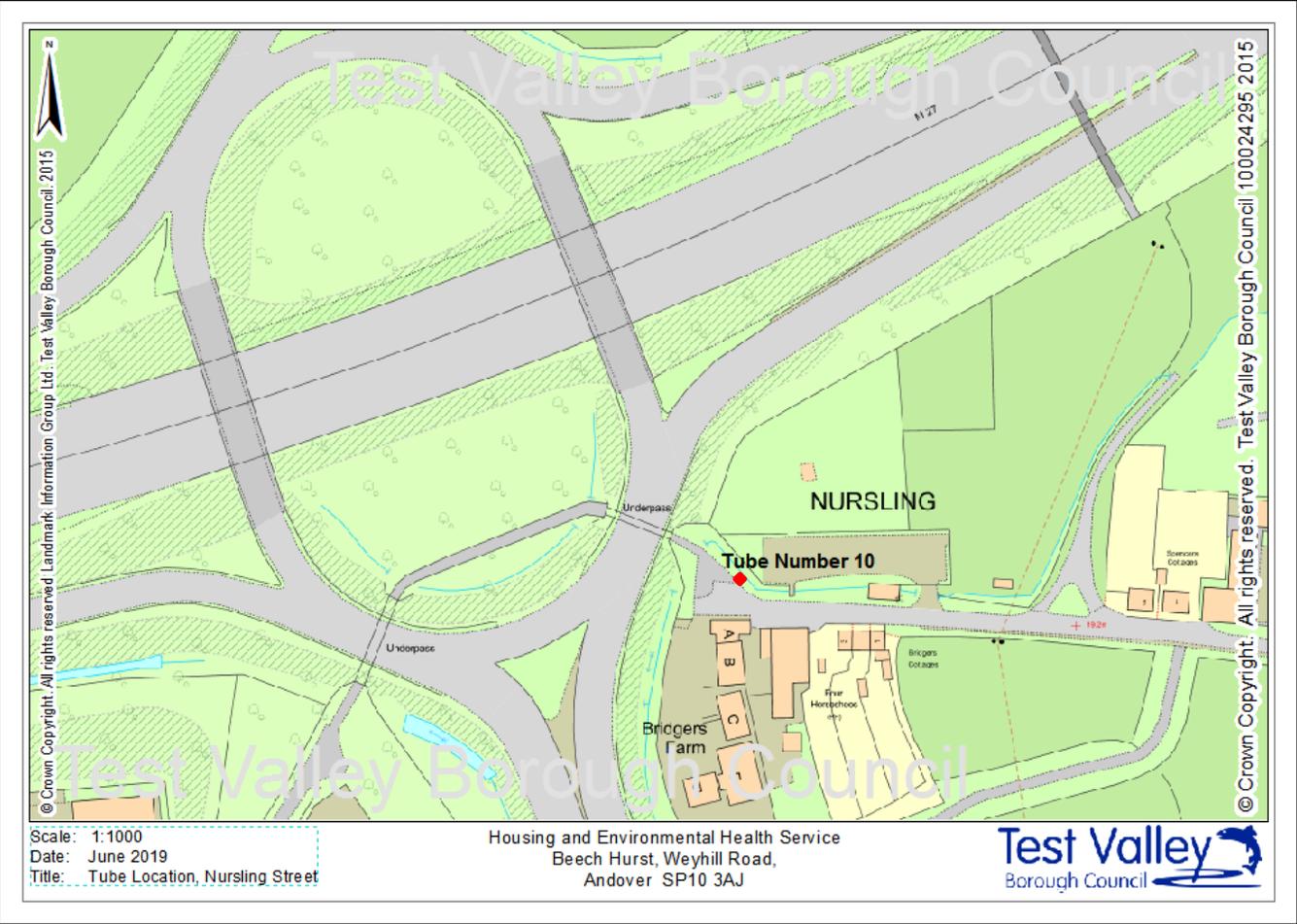


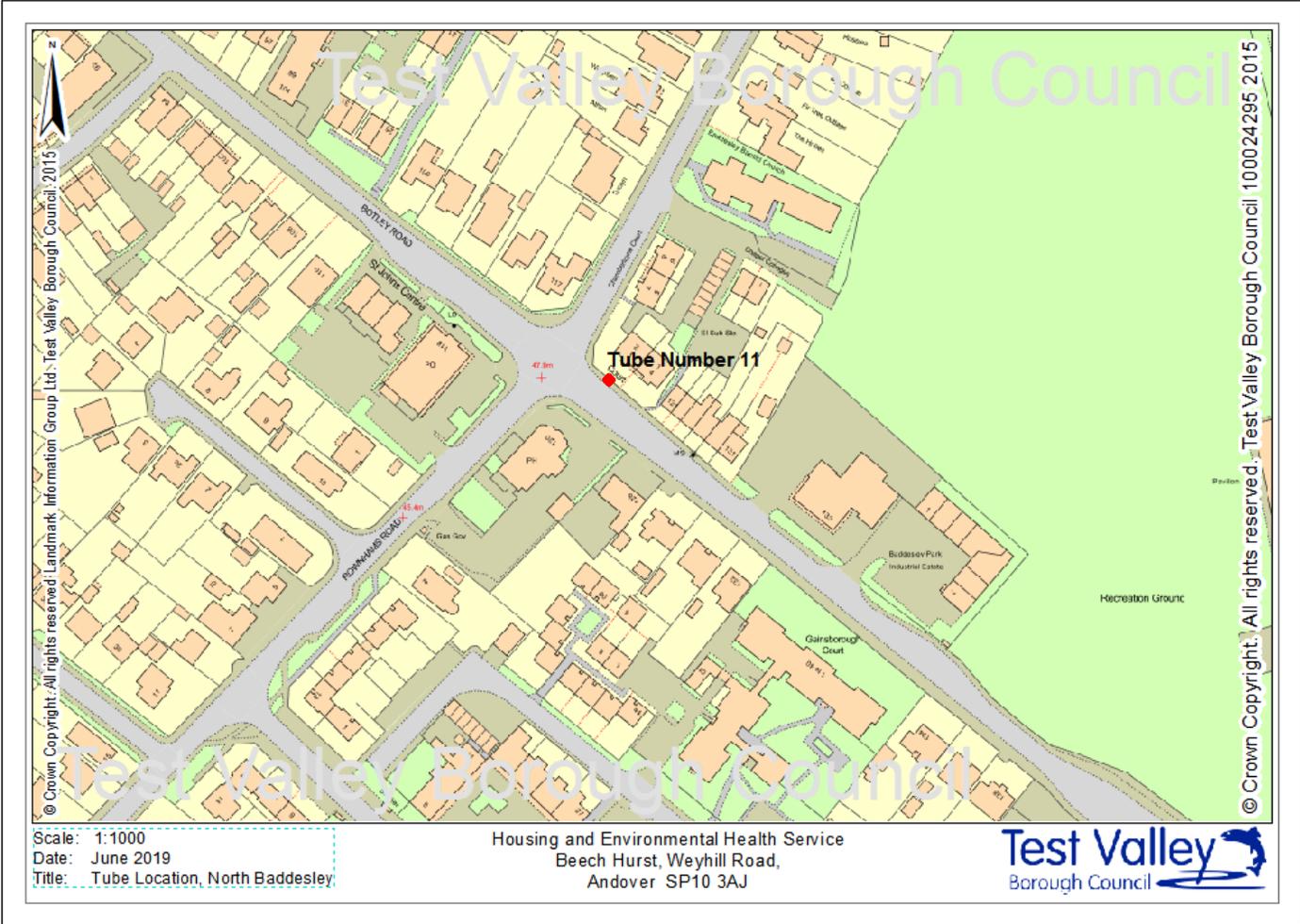


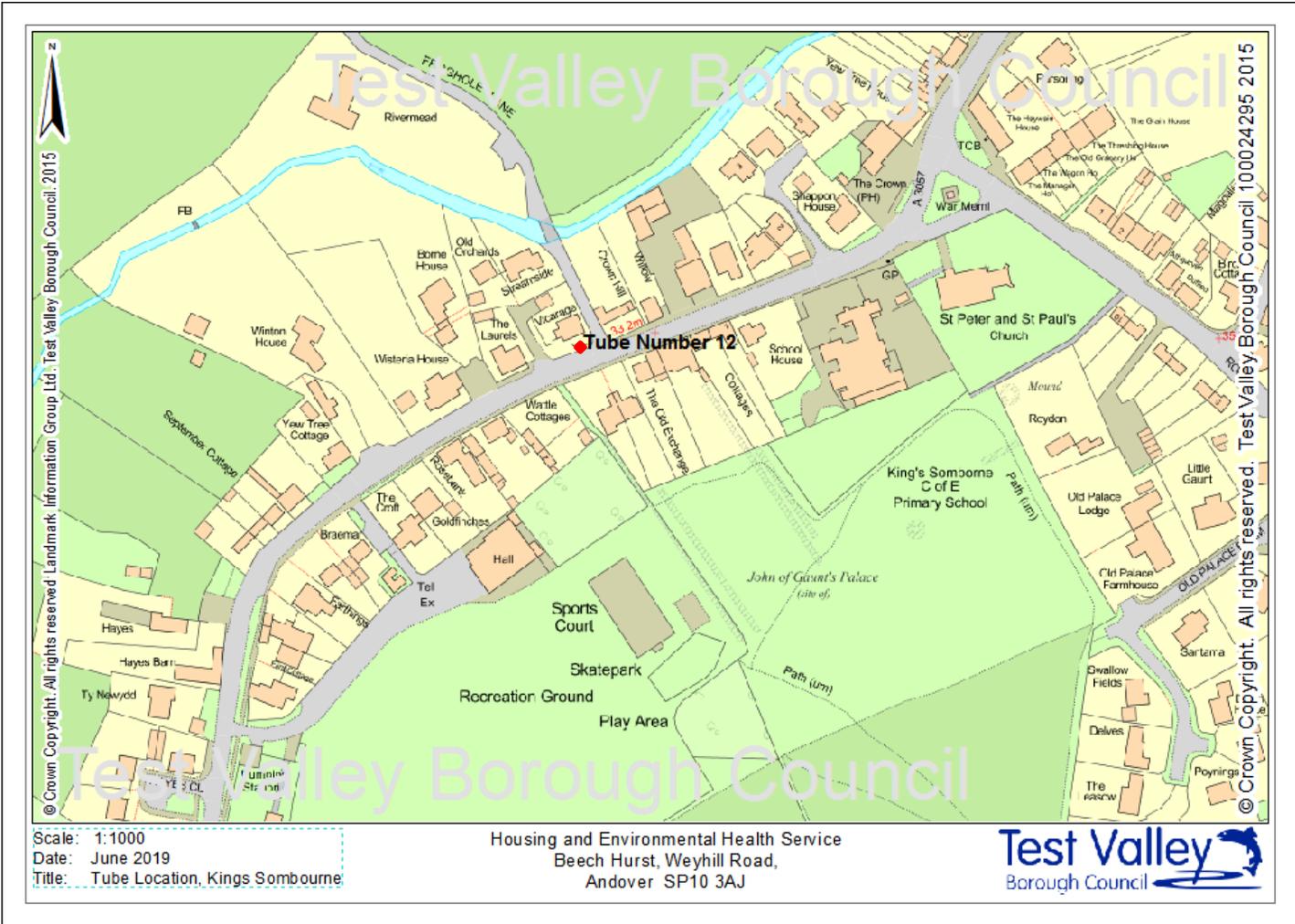


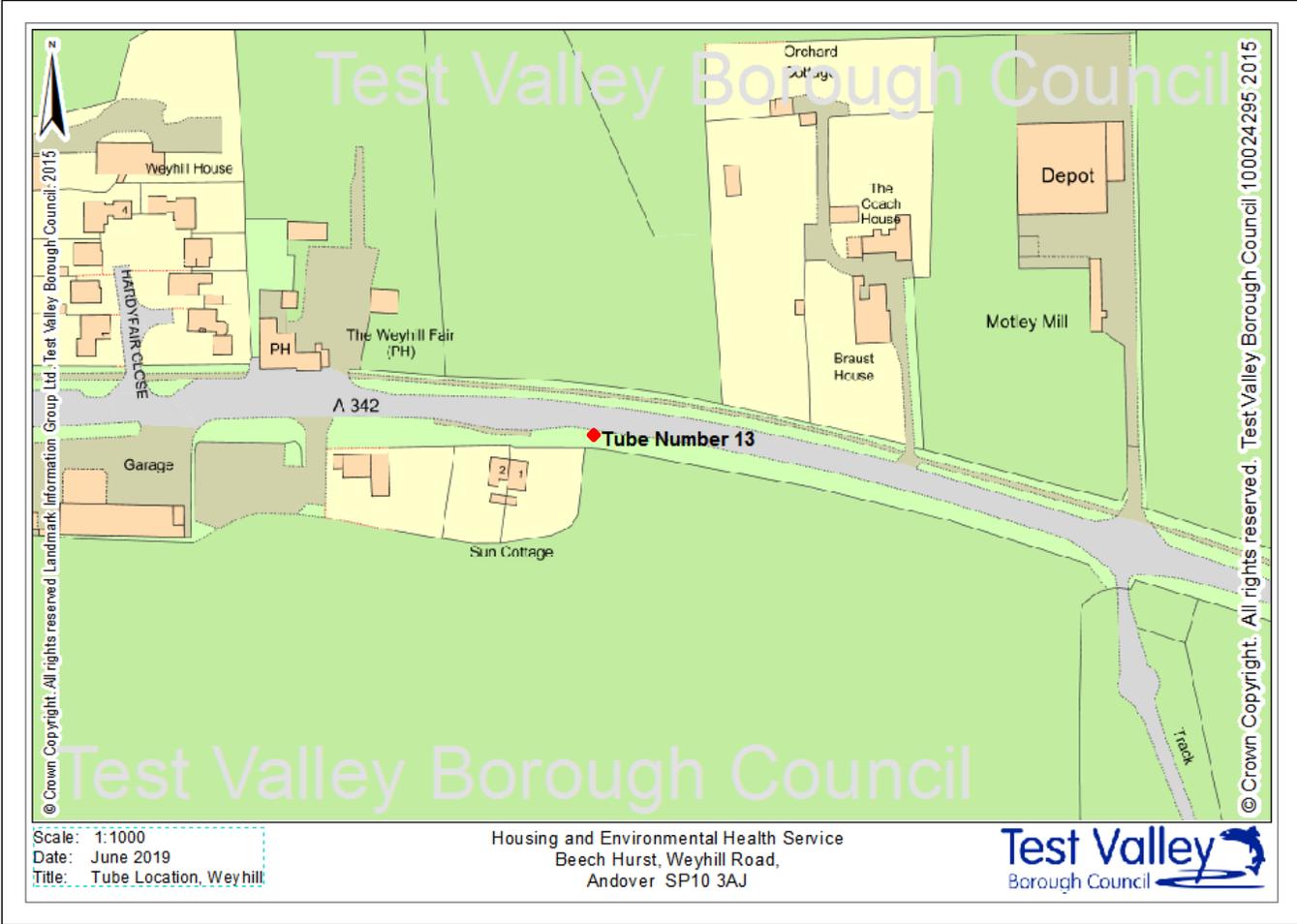


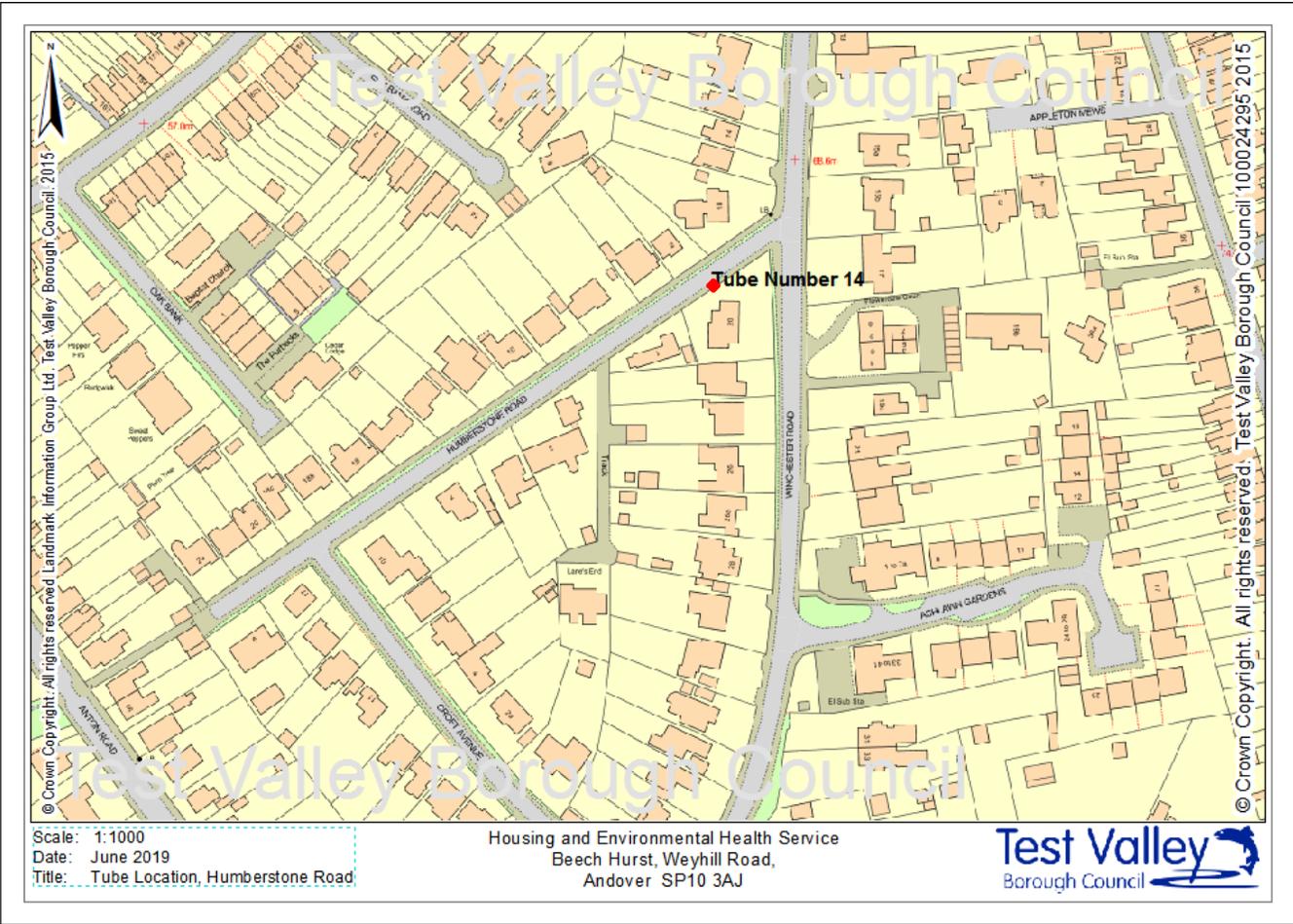


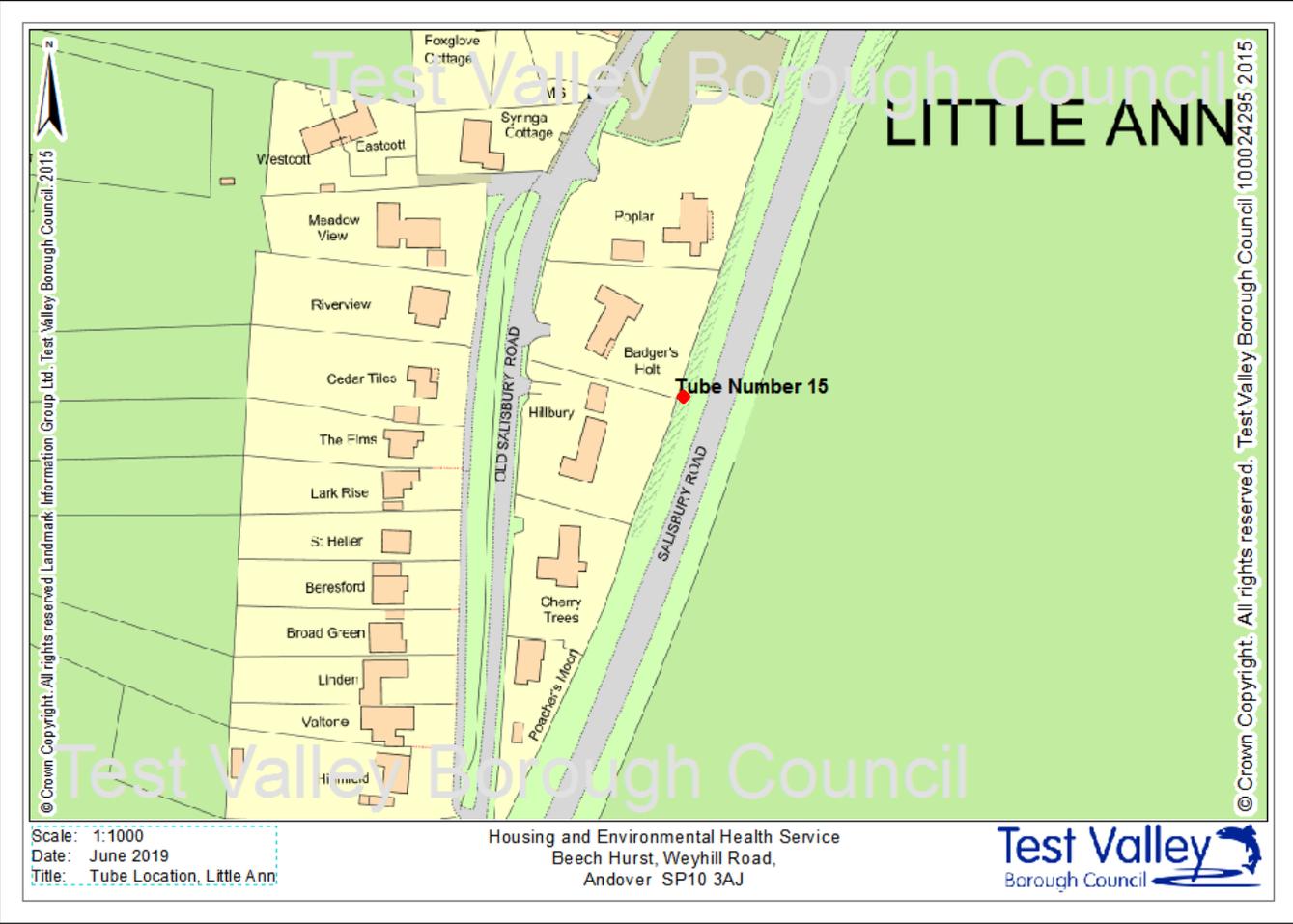


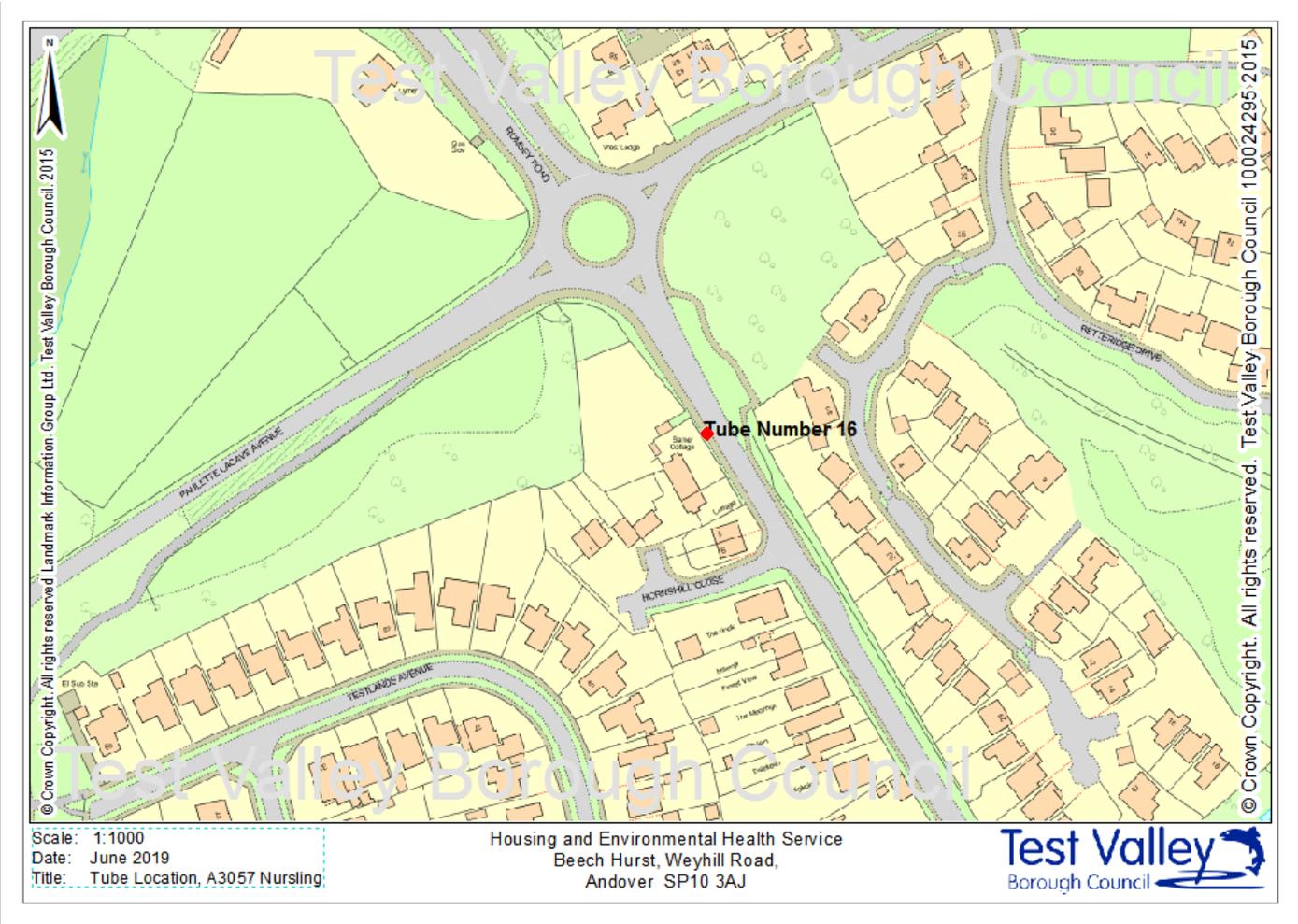


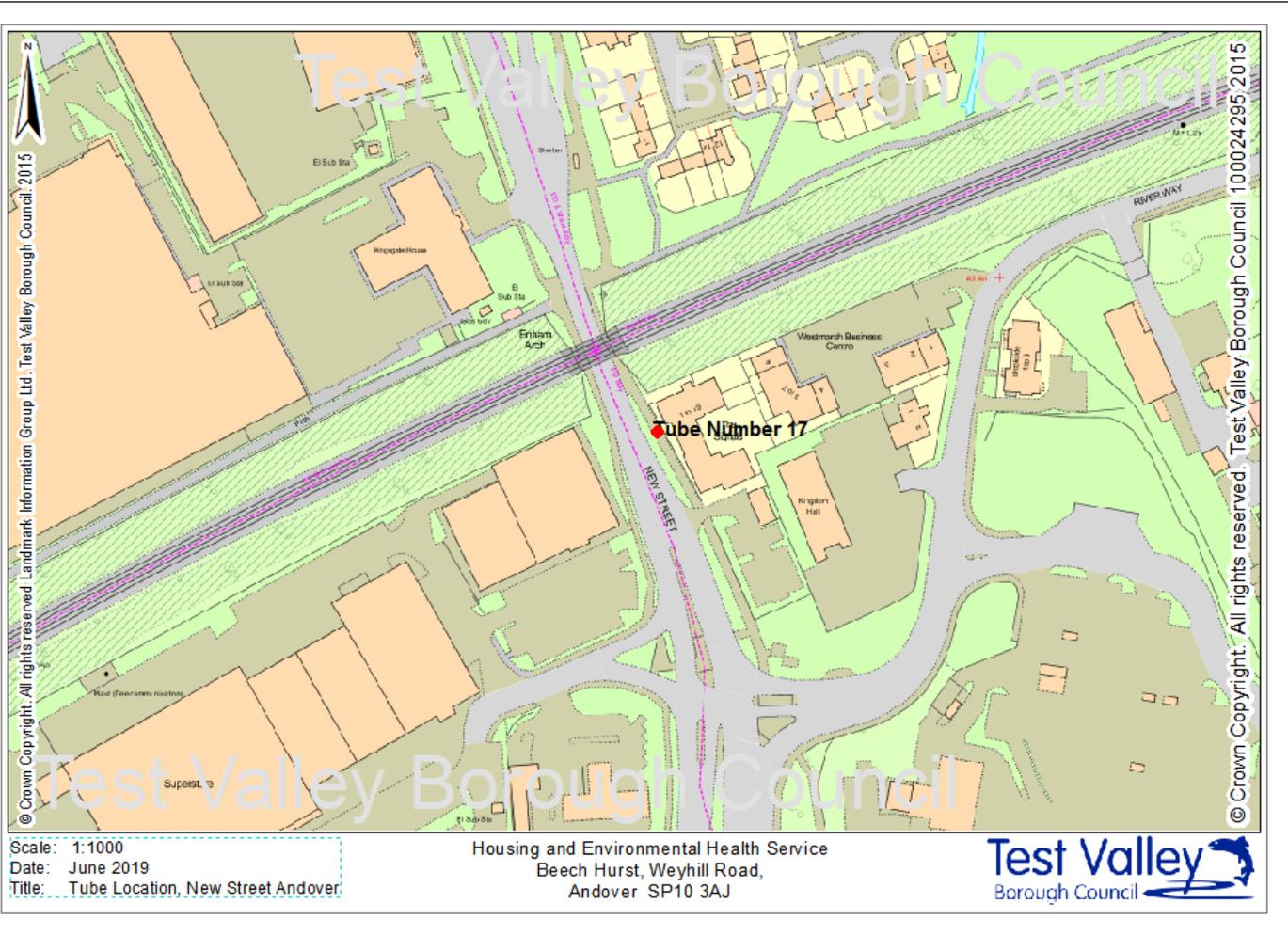












Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁶	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	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
	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
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁶ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

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
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (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

References

Defra (April 2016), Part IV of the Environment Act 1995, Local Air Quality Management – Policy Guidance (PG16)

Defra (April 2016), Part IV of the Environment Act 1995, Local Air Quality Management – Technical Guidance (TG16)

Defra (December 2015), Air Quality Plan for the achievement of EU air quality limit value for nitrogen dioxide (NO₂) on Southampton Urban Area (UK0019)

AEA Energy & Environment (February 2008), Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance for Laboratories and Users, AEAT/ENV/R/2504 - Issue 1a