

TAUNTON DEANE BOROUGH COUNCIL



LAQM PROGRESS REPORT 2007

Combined Air Quality Review and Assessment and Air Quality Action Plan Progress Report

In accordance with Part IV of the Environment Act 1995, Local Air Quality Management

**Produced with assistance from the Air Quality Management Resource Centre,
University of the West of England, Bristol.**



Document Confirmation & Control Sheet

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1: Introduction to the Air Quality Progress Report

This Air Quality Progress Report forms part of the Local Air Quality Management (LAQM) system introduced by the Environment Act 1995 ('The Act') and subsequent Regulations. It is a requirement as part of the Act, and follows on from Taunton Deane Borough Council's Updating and Screening Assessment (USA) published in 2006.

The overall aim of this document is to report upon the ongoing implementation of Local Air Quality Management in Taunton Deane Borough Council's administrative area, and progress made in maintaining concentrations below the air quality objectives. Progress Reports have been introduced into the LAQM system following a detailed evaluation of the first round (Round 1) of the local authority Review and Assessment process. Progress Reports are to be prepared in years when Taunton Deane Borough Council is not undertaking an Updating and Screening Assessment or a Detailed Assessment. It is intended that this Progress Report should assist Taunton Deane Borough Council in the following ways:

- Maintaining a profile for LAQM within Taunton Deane Borough Council;
- Providing a means for communicating air quality information to Council Members and the public;
- Maximising the usefulness and interpretation of the monitoring effort being carried out by Taunton Deane Borough Council;
- Maximising the value of the investment in monitoring equipment;
- Making the next round of Review and Assessment easier, as there will be a readily available up-to-date source of information;
- Assisting Taunton Deane Borough Council to respond to requests for up-to-date information on air quality;
- Providing information to assist with other policy areas, such as transport and land-use planning;
- Providing a ready source of information on air quality for developers carrying out environmental assessments for new schemes;
- Demonstrating progress with implementation of any Air Quality Action Plans or a Local/Regional Air Quality Strategy, and
- Providing a timely indication of the need for further measures to improve air quality, rather than delaying until the next full round of Review and Assessment.

Copies of this Progress Report have been sent to the Secretary of State, Environment Agency, the Highways Agency and other local authority departments for information and copies of the report have been made available to the public and local stakeholders.

1.1: Overall aims of a combined R&A and AQAP Progress Report

This Progress Report has two main aims, as follows:

- To report on progress being made with the implementation of Local Air Quality Management in Taunton Deane Borough Council; and
- To report on progress in achieving, or maintaining concentrations below the air quality objectives.

New monitoring data within Taunton Deane Borough Council and new developments that might affect local air quality are the focus of the Review and Assessment section of this report, and are the minimum requirements for Review and Assessment progress reporting purposes. Progress in implementing the actions outlined in Taunton Deane Borough Council's AQAP are the focus of the AQAP section of this report, and are the minimum requirements for AQAP progress reporting purposes. Each is considered in turn, using the Progress Report Checklist made available by government on their air quality Review and Assessment Website (<http://www.uwe.ac.uk/aqm/review/index.html>).

1.2: Introduction to Taunton Deane

Taunton Deane is a mixed urban and rural district within Somerset, covering 178 square miles and serving a population of just over 100,000. There are approximately 45,000 dwellings and 4,000 businesses within the Borough. Taunton Deane Borough Council is bordered by the authorities of West Somerset (north-west), Sedgemoor (north-east), South Somerset (south-east), Mid Devon (south-west) and East Devon (south) (Figure 1). The population of Taunton Deane is predominantly based in the three largest market towns of Taunton, Wellington and Wiveliscombe. Although Taunton Deane is primarily a rural authority it does have a substantial road network including the M5 and numerous A-roads.

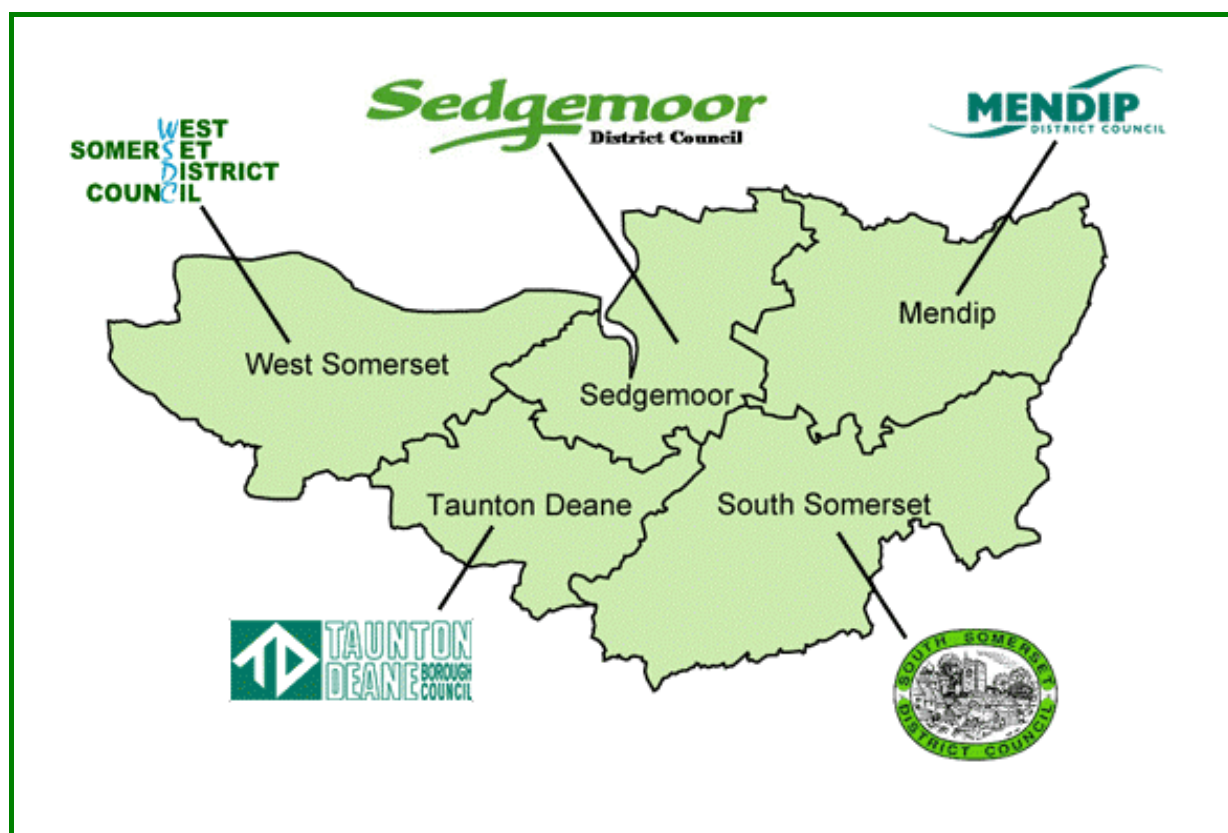
1.3: Status of LAQM in Taunton Deane Borough Council

Taunton Deane Borough Council's 2006 Updating and Screening Assessment concluded that a Detailed Assessment would not be required for any pollutant. As a result of this, Taunton Deane Borough Council has submitted this Review and Assessment Progress Report for 2007. Additionally, an Air Quality Action Plan Progress Report (AQAP-PR) is included to provide an update of progress with actions in Taunton Deane Borough Council's Air Quality Action Plan (AQAP).

Taunton Deane Borough Council has two current Air Quality Management Areas (AQMA), both declared in January 2003. Both the East Reach AQMA (centre of Taunton) and the Henlade AQMA (on the A358) were declared for exceedences of the annual mean nitrogen

dioxide objective of $40\mu\text{g}/\text{m}^3$ due to transport sources (Figure 4 and Figure 5, Appendix 1). The Council submitted a Further Assessment (Stage 4) to Defra in March 2005 that concluded that the AQMAs were justified as declared. In 2005, Taunton Deane Borough Council produced an Air Quality Action Plan for both the East Reach and Henlade AQMAs. Further information on air quality management in Taunton Deane Borough Council can be viewed at: http://www.tauntondeane.gov.uk/tdbc sites/envh/envh_airpol/index.asp. A electronic copy of Taunton Deane Borough Council's Air Quality Action Plan can be viewed at: <http://www.tauntondeane.gov.uk/Forms/EnvHealth/Air Quality ACTION PLAN.pdf>

Figure 1: Map of Taunton Deane and surrounding regions.



2: Review and Assessment Progress Report

Table 1 provides an indication of what is expected of local authorities in their Review and Assessment Progress Reports.

Table 1: Minimum reporting requirements.

Monitoring data	The minimum requirement is to report monitoring data and trends over recent years. To maximise the value of air quality monitoring, careful attention should be paid to the type of equipment used and the locations where the monitors are placed, as well as the QA/QC and data verification procedures.
New developments	A consideration of new development with the potential to affect local air quality (mainly through the generation of traffic), such as residential developments, industrial processes, retail premises, roads and quarries.

In addition to the minimum requirements, the government recommends that local authorities report upon a number of additional elements in their Progress Reports. These additional elements are listed in Table 2.

Table 2: Recommended additional reporting requirements.

Additional monitoring data	Projecting the measured concentrations forward to the objective years is helpful in providing early indication of likely exceedences that may not have been previously identified. Local authorities may also find it helpful to report on their monitoring for pollutants not covered by the regulations, e.g. ozone, polycyclic aromatic hydrocarbons (PAH), as well as other air quality data, i.e. odour complaints, dust deposition, radiation monitoring.
Local or Regional Air Quality Strategies	Government guidance strongly recommends that all authorities, particularly those without AQMAs but who have areas close to the exceedence levels, should consider drawing up a local air quality strategy. Progress Reports provide the opportunity for local authorities to report on the development of local or regional strategies. Local authorities should report upon the extent to which the local authority has developed or implemented an air quality strategy, how to access the strategy and when the strategy is to next be reviewed (as appropriate).

Planning policy	Any relevant updates on planning policies that relate specifically to air quality. Policies such as the Local Development Framework (formerly Local Plans) determine the local authority approach to the relationship between planning and air quality, with new developments judged against these policies. Reference to any supplementary planning guidance to address air quality matters should be referenced.
Planning applications	A list of planning applications that have the potential to affect local air quality should be provided. The land-use planning system is recognised as playing an integral part in improving air quality. This requires close co-operation between planners and environmental health officers. Some local authorities have developed procedures to help ensure that planning applications that might have impacts on air quality are forwarded to the Environmental Health department for comment. Updating and Screening Assessments and Detailed Assessments should take account of planning applications that have been approved only. Progress Reports, however, provide the opportunity to log planning applications for new developments to give a picture of areas where changes may take place and where combined impacts from several developments may become important. The information provided should therefore include a list of any major developments under consideration that might affect air quality. Such a list could be based on those applications for which an air quality assessment has been provided or for which an air quality assessment has been requested.
Local Transport Plans and Strategies	Progress on implementing those elements of the Local Transport Plan (LTP) that might affect air quality should be provided. Measures to improve air quality on a local scale are closely related to the LTP. Local authorities should reference those measures within the LTP that relate specifically to bringing about air quality improvements. Local authorities should also report on any other measures aimed at addressing transport-related air quality issues that have not been (or will not be) reported in the LTP Annual Progress Report.

2.1: Review and Assessment Progress Report – Minimum Requirements

This chapter in conjunction with the report appendices provides the necessary information to fulfil the minimum requirements of Taunton Deane Borough Council's Review and Assessment Progress Report.

2.1.1: Monitoring in Taunton Deane Borough Council

This report provides a summary of all available monitoring undertaken in 2006 in a format suitable for comparison with the relevant air quality objectives. Taunton Deane Borough Council currently manages:

- Two automatic monitoring sites: The Deane House site monitors Nitrogen Dioxide, Sulphur Dioxide and Ozone (urban background). The Wellington Road Mobile automatic site monitors Nitrogen Dioxide and PM₁₀ (roadside). Table 14, Figure 6 and Figure 7, Appendix 1 provides further information on the monitoring locations.
- Additionally Taunton Deane Borough Council monitored Nitrogen Dioxide concentrations at 42 sites (including a triplicate co-location study at the Wellington Road automatic analyser) using diffusion tubes in 2006. Table 14, Figure 6 and Figure 7, Appendix 1 provides further information on the monitoring locations.

The nitrogen dioxide diffusion tubes are 50% TEA in water supplied and analysed by Gradko International Ltd. The tubes at all locations throughout the Taunton Deane Borough Council area have a monthly exposure period. The Review and Assessment Helpdesk Spreadsheet bias adjustment factor of 0.96 was utilised rather than the co-location study at Wellington Road bias adjustment factor of 1.13. Further information on the choice of bias adjustment factors and a description of the QA/QC procedures can be found in Appendix 1.

The following information has been included:

- Summary tables and figures of monitoring concentrations that allow a comparison with the air quality objectives (see Table 10 to Table 13 and Figure 8 to Figure 10, Appendix 1)
- Maps illustrating the monitoring locations (Figure 6 and Figure 7, Appendix 1)
- Plots illustrating trends in monitored concentrations, e.g. comparative plot of annual mean nitrogen dioxide concentrations (Figure 11 and Figure 12, Appendix 1).

2.1.2: Monitoring data summary – diffusion tubes

- Taunton Deane Borough Council currently manages 44 nitrogen dioxide diffusion tubes at 42 locations (one triplicate co-location study) in their administrative area.
- All concentrations quoted and conclusions are based on the 0.96 nitrogen dioxide diffusion tube bias adjustment factor.
- **Henlade AQMA:** No exceedence of the annual mean objective - Henlade East ($35.2\mu\text{g}/\text{m}^3$) and Henlade West ($34.3\mu\text{g}/\text{m}^3$). Monitoring data since 2004 has indicated that the nitrogen dioxide annual mean objective of $40\mu\text{g}/\text{m}^3$ would be achieved in the Henlade AQMA. It is recommended that Taunton Deane Borough Council continue to monitor at these locations and should their 2007 monitoring data indicate compliance with the objective, the authority should proceed to a Detailed Assessment with a view to revocation of the Henlade AQMA.
- **East Reach AQMA:** Diffusion tube monitoring indicates one exceedence of the annual mean objective - East Reach Lights ($42.1\mu\text{g}/\text{m}^3$). The AQMA as declared is still justified at East Reach.
- **Outside of the two existing AQMAs:** There were no exceedences of the nitrogen dioxide annual mean objective of $40\mu\text{g}/\text{m}^3$ based on diffusion tube monitoring outside the existing AQMAs.

2.1.3: Monitoring data summary – automatic monitoring

- Taunton Deane Borough Council does not monitor for Carbon Monoxide, Benzene, 1,3-butadiene or Lead.
- **Nitrogen Dioxide (NO_2):** The two automatic nitrogen dioxide analysers (located at Deane House and Wellington Road) did not indicate an exceedence of the annual mean objective of $40\mu\text{g}/\text{m}^3$ or a breach of the 1-hour nitrogen dioxide objective (Table 11 and Table 13, Appendix 1). However, there was poor data capture at both analysers. Data capture was poor for the Deane House analyser due to the air conditioning in the cabinet permanently breaking down at the end of 2006. As it was such a specialised unit it has taken a long time to get a bespoke unit re-fitted in the cabinet. Data capture was poor for the Wellington Road MAQU as it was moved from its previous location at the beginning of 2006 and there have been technical difficulties with pumps and the air conditioning unit. It is recommended that the QA/QC methodology be reviewed in order to improve the performance of the analysers.
- **Particulates (PM_{10}):** The automatic PM_{10} analyser (located at Wellington Road) does not indicate an exceedence of the annual mean objective of $40\mu\text{g}/\text{m}^3$ or a breach of the 24-hour PM_{10} objective (see Table 12, Appendix 1).

- **Sulphur Dioxide (SO₂):** The automatic sulphur dioxide analyser (located at Deane House) does not indicate a breach of the 24-hour, 1-hour and 15-minute sulphur dioxide objectives (Figure 8, Figure 9 and Figure 10, Appendix 1).

Table 3: New monitoring summary for Taunton Deane Borough Council (2006).

Carbon monoxide (CO)	Taunton Deane Borough Council does not carry out any Carbon Monoxide monitoring. Their 2006 Updating and Screening Assessment did not identify any issues for this pollutant.
Benzene	Taunton Deane Borough Council does not carry out any Benzene monitoring. Their 2006 Updating and Screening Assessment did not identify any issues for this pollutant.
1,3-butadiene	Taunton Deane Borough Council does not carry out any 1,3-butadiene monitoring. Their 2006 Updating and Screening Assessment did not identify any issues for this pollutant.
Lead (Pb)	Taunton Deane Borough Council does not carry out any Lead monitoring. Their 2006 Updating and Screening Assessment did not identify any issues for this pollutant.
Nitrogen dioxide (NO₂)	Taunton Deane Borough Council currently manages 44 NO ₂ diffusion tubes and 2 automatic analysers. One diffusion tube exceeded the annual mean objective, East Reach Lights, inside the East Reach AQMA. Since 2004, nitrogen dioxide concentrations within the Henlade AQMA have been below the annual mean objective. Should 2007 concentrations also comply with the annual mean objective it is recommended that Taunton Deane Borough Council should proceed to a Detailed Assessment with a view to revocation of the Henlade AQMA.
Particulates (PM₁₀)	Taunton Deane Borough Council undertakes PM ₁₀ monitoring at Wellington Road. There were no exceedences identified during 2006. A Detailed Assessment will not be required.
Sulphur dioxide (SO₂)	Taunton Deane Borough Council undertakes SO ₂ monitoring at Deane House. There were no exceedences identified during 2006. A Detailed Assessment will not be required.

2.2: New local developments

This section considers any new developments and changes that have taken place, or are proposed, that may affect air quality. Such developments are logged so that they can be considered more thoroughly during the next full round of Review and Assessment. Table 4 provides details of relevant new developments in Taunton Deane Borough Council.

Table 4: New local developments in Taunton Deane Borough Council.

New Part A/A2	No new Part A/A2 processes have been identified that will significantly influence local air quality.
New Part B	No new Part B processes have been identified that will significantly influence local air quality
New retail development	No new retail developments have been identified that will significantly change traffic flows in the area or influence local air quality
New road scheme	No new road schemes have been developed that will significantly change traffic flows in the area or influence local air quality
New mineral development	No new mineral developments have been identified that will significantly change traffic flows in the area or influence local air quality
New landfill development	No new landfill developments have been identified that will significantly change traffic flows in the area or influence local air quality
New mixed-use development	No new mixed-use developments have been identified that will significantly change traffic flows in the area or influence local air quality

2.2.1: New development summary

No new developments have been identified that will significantly change traffic flows in the authority or influence local air quality. Taunton Deane Borough Council will continue to keep a watching brief on any changes to existing developments and/or the introduction of new developments.

2.3: Review and Assessment Progress Report - Recommended Additional Elements

This section of the Review and Assessment Progress Report includes further information on the recommended additional elements such as progress made in respect of a County-wide Air Quality Strategy, Somerset County Council Local Transport Plan and other elements.

2.3.1: Additional Monitoring Data

Taunton Deane Borough Council monitors Ozone concentrations at their automatic monitoring site at Deane House, Taunton. This urban background site has been monitoring Ozone since 2003. Table 5 below outlines any exceedences of the 8-hour rolling mean objective of $100\mu\text{g}/\text{m}^3$ not to be exceeded more than 10 times per annum.

Table 5: Exceedences of the Ozone objective at Deane House automatic monitor.

Year	Exceedence of 8-hour mean ($100\mu\text{g}/\text{m}^3$ – 10 times per annum)
2003	6
2004	0
2005	3
2006	21

2.3.2: Air Quality Action Plans

Please see Section 3, for the Air Quality Action Plan Progress Report

2.3.3: Somerset Air Quality Strategy

Taunton Deane Borough Council in conjunction with the other Somerset local authorities and Somerset County Council are currently preparing a Somerset County-wide Air Quality Strategy. A steering group has been convened to draft the strategy that will be published for consultation by September 2007. Taunton Deane Borough Council will report on the Strategy and the consultation process in their next Review and Assessment Progress Report (2008).

2.3.4: Taunton Deane Borough Council Planning Policy

The adopted Taunton Deane Local Plan (2004) and the emerging Local Development Framework documents apply the principles of government policy such as PPG13 (Transport) that seeks to ensure locational decisions are based on reducing the need to travel, especially by private car. This is reflected in policies such as EC10 of the Local Plan that applies the sequential approach to major retail, commercial leisure and office type uses (i.e. town centre first). Improving air quality through locational decisions is also reflected by major allocations

such as Monkton Heathfield (policy T8) and Norton Fitzwarren (policy T4) proposing major mixed use residential, employment and community facilities (i.e. high degree of self containment to reduce the need to travel).

2.3.5: Taunton Deane Borough Council Planning Applications (2006)

Taunton Deane Borough Council operates procedures to help ensure that planning applications that might have impacts on air quality are forwarded to the Environmental Health Department for comment. Planning applications considered in 2006 include:

- **43/2006/073** – Erection of an industrial unit at Plot 19, Ryelands Farm Industrial Estate, Bagley Road, Rockwell Green, Wellington.
- **38/2006/047** – Change of use and conversion of building to 75 apartments, retention of office space to frontage, roof extension, external alterations and associated facilities at Telephone House, The Crescent, Taunton as amplified by an additional design statement received 15th March 2006.
- **07/2006/003** – Change of use of agricultural buildings to B1 Industrial use at Land and Buildings formerly known as Gardiners Hall Farm, Bradford on Tone as amended by agents letter dated 10th March 2006 and wildlife survey received 10th July 2006.
- **49/2006/008** – Erection of 14 residential units with associated parking, garages and amenity space, demolition of Old Brewery Buildings and the Old Hancock Brewery, Golden Hill, Wiveliscombe.
- **44/2006/008** – Erection of 50 bed elderly mentally infirm home together with associated parking, landscaping and upgrading drainage system, Chelston Park Residential and Nursing Home, West Buckliand Road, Wellington.
- **38/2006/362** – Redevelopment comprising erection of 21 houses, conversion of listed building to two dwellings and conversion of main building to offices at former Scat Annexe, Staplegrove Road, Taunton as amended by applicants letter dated 31st October 2006 and attached plan No's 755/35, 765/20/01, ABD SPP/1228/2 and letter dated 6th November 2006 with accompanying plans No's 765/35A and 765/03D, agents letter dated 30th November, 2006 and attached plan No's. 1051.05.09.24803B, 24804C, 24802M and Plan No 765/01N received on the 30th December 2006 and letter dated 1st March 2007 and attached plan No's 765/03E and 765/21/01.
- **27/2006/015** - Erection of a horticultural nursery at land south of Harris's Farm, Hillcommon, as amended by agents letter and drawings No's HLCEM/03 REV B, 04 REV B, 05 REV B, 06 REV B, 07 REV B, 08 REV B, 10 REV B received on 12th September 2006 and badger survey submitted 19th September 2006 and further

amended by applicants email dated 19th September 2006 and drawings No 18274/001/5K01A and email dated 29th September 2006.

- **25/2006/018** – Demolition of building and erection of a 57 residential retirement apartments and renovation of two cottages to form one residential cottage and one Wardens Cottage at Beauford Park and Fitzwarren House, Norton Fitzwarren, Taunton, as amended by letter dated 5th September 2006 and further amplified by letter dated 7th September 2006 and as amended by letter dated 26th September 2006 with accompanying drawings No's 0550.L01.01H and 0550.L01.00, letter dated 27th September 2006 with accompanying drawings No's 0550.L04.01E, 02E, 03D and 07A, wildlife survey report received on 29th September 2006 and email from agent dated 29th September 2006.
- **46/2006/006** – Erection of 36 (30 two bed and 6 three bed) affordable homes, 36 parking spaces and associated road works at land adjacent to Cob Castle and Castle Cottages, Ham, Chelston, as amended by letters dated 14th July 2006 with accompanying drawings No's 1085/1A and 3A.
- **46/2006/009** – Erection of industrial unit park at Monument View, Summerfield Avenue, Chelston Business Park, Chelston, Wellington as amended by email dated 12th July 2006 with accompanying drawings No's D015/06/112A, and as amended by email dated 1st September 2006 with accompanying drawing No. D014/06/55/104L and email dated 19th September 2006 with accompanying drawing No. D015/06/5114A.
- **38/2006/198** – Demolition of dwelling and commercial garage buildings and erection of 24 flats with associated parking at Eastwick Farm House and Eastwick Cottage, Eastwick Road, Taunton, as amended by agents letter dated 26th June 2006 and attached plans No's 5130-07-04, 5130-E-03, 5130-E-04.
- **43/2006/057**- Erection of 11 one bed dwellings on land to the rear of Sans Ombre and Garden House, White Hart Lane, Wellington as amended by emails dated June 2006 and 5th July 2006 and agents letter and accompanying plans 002A, 003A and 004A received 31st July 2006.
- **49/2006/018** – Erection of 20 dwellings, widening of existing road, formation of new access and new field access with associated works at land north of Plain Pond, Wiveliscombe as amended by letter dated 23rd May 2006 with accompanying drawing No's 406/10G and amplified by letter dated 17th may 2006 with accompanying landscape appraisal revision A.
- **25/2006/020** – Development comprising employment, residential (389 dwellings), and village centre (incorporating health care facilities, two village shops, retail unit and

public house), part construction of Norton Fitzwarren Relief Road and provision of infrastructure and services, former cider factory, Norton Fitzwarren.

- **08/2006/009** – Provision of access roads to new household waste recycling centres, composting site, materials recycling facility, glass bays and transfer station. New surfaced footpath and cycleway including fencing gates, signs and speed ramps at Crown Industrial Estate, Taunton.

The following two applications at Tolland are currently under appeal, the decision is due within the next 5 weeks from the Secretary of State:

- **41/2006/007** – Erection poultry building at Glebe Farm, Tolland, Phase 1.
- **41/2006/008** – Erection poultry building at Glebe Farm, Tolland, Phase 2.

2.3.6: Somerset County Council Local Transport Plan

Chapter 6 of Somerset County Council's Local Transport Plan (LTP2) sets out the evidence base and strategy for dealing with congestion and air pollution. The Congestion and Pollution Control Strategy has three primary objectives:

- Reduce the growth of congestion and pollution and improved health;
- Protect and enhance the built and natural environment; and
- Support sustainable economic growth in appropriate locations.

The key issues for Taunton urban centre are summarised in Table 6. The AQAP developed for the two Taunton Deane Air Quality Management Areas has been subsumed into the Somerset County Council LTP2. Table 7 outlines the targets relating to congestion and air pollution in Somerset County Councils LTP2.

Table 6: Key issues and implications for Taunton urban centre

Key Issues	Implications for Strategy
Significant planned urban extensions and town centre re-development as a regionally significant settlement	New developments should be accessible by a range of transport modes, major opportunities for town-centre re-development to open up new walking and cycling routes. Longer-term re-development of car-parks will enable parking to be re-located to improve traffic flow.
Many people driving across the town are making short trips	A clear emphasis on walking and cycling, backed up by high-profile marketing to take advantage of this opportunity.
Large demand for travel to Taunton from outside the town as it is a key service centre. Public transport connections are currently poor	Park and ride already open to the west of Taunton, proposed new site to the east. Passenger transport strategy to provide services such as 'Yeovil fast bus' linking Yeovil to Taunton as well as improving core bus routes from other settlements.
Strong functional links with Bridgwater and Wellington	Improve public transport connections in conjunction with new developments in North Taunton and South Bridgwater.
Parking charges are low compared to similar towns nationally	Work with District Council to increase 'Demand Management' through increasing long-stay parking charges. Workplace charging and road pricing not considered to be proportional response to the problem.
Further scope to increase the efficiency of the network through better traffic management	Continuing our LTP1 programme of modernising and optimising traffic signals and developing new proposals in line with the traffic management act.
More people walk and cycle to work than the national average	Promotion of walking and cycling in Taunton given specific emphasis as further scope to increase levels.
There is a variable picture for walking to school	School travel plans to identify opportunities to increase walking and cycling to school.
Air Quality Management Areas have been declared and are likely to be extended	Schemes targeted at specific air quality problems to be prioritised within the implementation programme.

(Adapted from Chapter 6, Table 6.5, Somerset County Council, LTP)

Table 7: Key targets relating to congestion and pollution (Somerset CC LTP)

Indicator	Description	Baseline Data	Target or Outcome
BVPI 102	Bus patronage	2003/04: 6,356,664	7.5% increase including Demand Responsive Transport by 2010/11
BVPI 104	Satisfaction with local bus services	2003/04: 51%	58% by 2009/10
LTP2	Change in area wide traffic mileage	2004: 4,132 million vehicle kms	Total growth to not exceed 7.2% by 2010/11
LTP3	Cycling trips	2004.05: 889,074	10% increase by 2010/11
LTP4: Mode share journey to school	Share of journey to school by car (primary & secondary)	2003/04: 33%	Not more than 28% by 2010/11
LTP5: Bus punctuality	% of buses starting route on time	2005/06: 95%	Maintain at 95%
	% of buses on time at intermediate timing points	2005/06:TBI	TBI
	% of buses on time at non-timing points	2005/06: TBI	TBI
	Mean excess waiting time on frequent service routes	2005/06:TBI	TBI
LTP8: Air Quality	NO ₂ concentration at AQMAs	2004/05: 42.5µg/m ³	40µg/m ³ by 2010/11
LPI2: Mode share journey to work	Single occupancy vehicle use	2001:54.2%	50% by 2010
LPI6	Pedestrian activity in TauntonTown.	TBI Baseline to be set in June 2006 and target set on benchmarking of final LTPs	TBI
LPI5: Congestion	Mean vehicle delay in Taunton	2001/02: 1093 pcu/hr	2414 pcu/hr by 2010/11

TBI: Data to be included following surveys in 2006. (adapted from Chapter 6, Table 6.9, Somerset County Council, LTP)

Table 8: Summary of the recommended additional elements with respect to air quality progress reporting in Taunton Deane Borough Council.

Additional monitoring data	Taunton Deane Borough Council monitors Ozone at its automatic monitoring station at Deane House. In 2006 there were 21 exceedences of the 8-hour rolling mean objective of $100\mu\text{g}/\text{m}^3$.
Action Plans	See Section 3
Local or Regional Air Quality Strategies	Taunton Deane Borough Council is currently working with the Somerset local authorities in the development of a County-wide Air Quality Strategy.
Planning policy	The adopted Taunton Deane Local Plan (2004) and the emerging Local Development Framework documents apply the principles of government policy such as PPG13 (Transport) that seeks to ensure locational decisions are based on reducing the need to travel, especially by private car.
Planning applications	Taunton Deane Borough Council's planning applications of note in 2006 were relatively minor and are not considered to influence local air quality or introduce relevant exposure into existing areas of poor air quality. Taunton Deane Borough Council will keep a watching brief on all new developments and planning applications that may influence local air quality.
Local Transport Plan	Taunton Deane Borough Council's Air Quality Action Plan has been subsumed into Somerset County Council's Local Transport Plan (LTP2). A suite of targets and indicators has been set for air quality within the region as part of a Congestion and Pollution Strategy.

2.4: Review and Assessment Progress Report Conclusions

There are no issues concerning carbon monoxide, 1,3-butadiene, benzene, lead, particulates (PM₁₀) and sulphur dioxide in Taunton Deane Borough Council's administrative area.

From the evidence provided in this report, one diffusion tube site indicated an exceedance of the nitrogen dioxide annual mean objective of 40µg/m³ within the East Reach AQMA. The AQMA as declared is still justified.

Since 2004, nitrogen dioxide concentrations within the Henlade AQMA have been below the annual mean objective (including 2006 data). Should 2007 concentrations also comply with the annual mean objective it is recommended that Taunton Deane Borough Council should proceed to a Detailed Assessment with a view to revocation of the Henlade AQMA

Trends in nitrogen dioxide were investigated for the diffusion tube sites in the East Reach and Henlade AQMAs for 2003-2006. Nitrogen dioxide concentrations have remained relatively constant since 2003 in the East Reach AQMA, dropping slightly since 2003. Nitrogen dioxide concentrations have dropped and remained below the annual mean objective of 40µg/m³ since 2004 in the Henlade AQMA (Figure 11).

Trends in nitrogen dioxide were investigated for a select number of diffusion tube sites outside the current AQMAs for 2003-2006. Nitrogen dioxide concentrations have remained relatively constant since 2003, below the annual mean objective of 40µg/m³ (Figure 12).

There are no substantial new developments within the Council's administrative area that may influence local air quality. Taunton Deane Borough Council will continue to monitor all new developments and planning applications closely for air quality issues.

Taunton Deane will undertake an Air Quality Progress Report in 2008. Additionally Taunton Deane Borough Council may undertake a Detailed Assessment with a view to revocation of the Henlade AQMA.

3: Air Quality Action Plan Progress Report

Policy Guidance (LAQM.PG(03)) states that local authorities have a duty to keep their action plans up to date. The Air Quality Action Plan Progress Report simply lists the measures generated within the action plan and includes proposed timescales by when they are/were due to be implemented and give an update on progress in terms of implementing them. Progress in implementing the air quality actions for both the East Reach and Henlade AQMAs are outline in Table 9 below.

Table 9: Air Quality Action Plan Progress Report 2007

Measure Code	AQAP measure	Original Timescale	Progress With Measure	Outcome to data	Comment / Future actions
1	Air quality monitoring within the AQMA's to remain in place to ascertain the justification for the existence of the AQMA.	Ongoing	NO ₂ Diffusion tubes remain; 2 in East Reach AQMA, 2 in Henlade AQMA	<u>East Reach AQMA 2006:</u> East Reach Lights 42.1µgm ³ East Street 39.1µgm ³ <u>Henlade AQMA 2006:</u> Henlade East 35.2µgm ³ Henlade West 34.3µgm ³	4 tubes in East Reach were removed June 2005 for reallocation to other areas of concern. This action is ongoing
2	The Mobile Air Quality Monitoring Unit (MAQU) to be relocated to a site where data may be obtained which better relates to the current AQMA's or sites of concern listed in the conclusion of the Stage 4 Report	None given	Ruled out re-siting within AQMA's as data gathered is sufficient. Relocating cost £2-3500 for connection of utilities and preparation of hardstanding.	Sites of concern reviewed and permissions sought from landowners to place unit on their private property.	MAQU relocated to Wellington Road

Measure Code	AQAP measure	Original Timescale	Progress With Measure	Outcome to data	Comment / Future actions
3	NO ₂ diffusion tube locations to be reviewed in the light of the Stage 4 report findings. New sampling locations to be found within those areas identified as potentially extended or new AQMA's	None given	13 out of 45 diffusion tubes have been reallocated to sites where possible exceedances of the objective are predicted. Completed July 2005.	No additional areas of concern identified.	Taunton Deane Borough Council continues to assess their monitoring locations. Diffusion tubes can be re-located as necessary.
4	Air quality assessment to be included in each road development or planning application affecting the AQMA's.	None given	Planning applications – The Environmental Health Dept of Taunton Deane BC are consulted on all relevant applications.		Ongoing
5	Specific indicators for monitoring effectiveness of the Action Plan to be developed for inclusion in LTP2	None given	Indicators were developed in conjunction with Somerset County Council in Nov 2005. See Section 2.3.6 of this report.	Somerset's LTP2 was approved and assessed as 'good' by the government.	Congestion Protocol and associated indicators developed also. See Section 3.1
6	Taunton Deane BC and Somerset County Council to integrate the AQ Action Plan into the LTP2	By July 2005	Done July 2005	Somerset's LTP2 was approved and assessed as 'good' by the government.	

Measure Code	AQAP measure	Original Timescale	Progress With Measure	Outcome to data	Comment / Future actions
7	Bypass for Henlade to be implemented as part of a dual carriageway onto the M5.	None given	Secretary of State, Dept of Transport made decision favouring the A358 as designated strategic route in respect of proposals for the A303.	South West Regional Assembly to prioritise all schemes across the South West and will decide which schemes get funded. Highways Agency working on detailed plans.	Unlikely to be complete within the timeframe of the LTP2. Other options will need to be reconsidered due to the unlikely implementation of the preferred scheme within a reasonable timescale.
8	Optimisation of the SCOOT Urban Traffic Control system in East Reach AQMA and all of the town centre	None given	Audit of existing hardware – loops and ducts; Upgrading where required; Re-setting of time plans with updated versions and Commissioning and validation is ongoing across the traffic network.	Optimisation of the Traffic light systems is complete and will be regularly reviewed.	Reduction in Congestion is anticipated and flows of traffic smoothed.
9	Target school trips	None given	Work and School Travel Plan Officers posts initiated to promote Travel Planning across Taunton Deane	Ongoing promotional work.	Ongoing

Measure Code	AQAP measure	Original Timescale	Progress With Measure	Outcome to data	Comment / Future actions
10	Review parking strategies	None given	<p>A Parking strategy has been developed as part of the Transport strategy incorporated into the Urban Development Framework (UDF).</p> <p>The Taunton Transport Strategy Review 2 currently underway will cover parking strategy.</p>	<p>Parking charges have increased.</p> <p>Long stay space availability in Town centre has reduced.</p> <p>North West Taunton Transport Package / Silk Mills bridge scheme (NWTP) and park and ride was completed in 2006.</p> <p>Provision of strategic car parks within the UDF - car parks to be provided on periphery of enlarged town centre, another park and ride near Henlade is proposed to intercept cars from outside town.</p>	<p>Work to complete North West Taunton Transport Package / Silk Mills bridge in 2005 has allowed the provision of Park & Ride facilities in 2006 for the town centre which can help re-route through- traffic to reduce journeys through East Reach AQMA</p>

3.1: Supplementary AQAP Progress Report information

The main target of the Action Plan is to reduce air pollution in the AQMAs in Taunton Deane. 2003-2006 monitoring indicates no further deterioration in air quality for the pollutant of concern, Nitrogen Dioxide in the East Reach AQMA and throughout the Borough (Figure 11 and Figure 12). 2004-2006 monitoring data indicated compliance with the annual mean nitrogen dioxide object within the Henlade AQMA (Figure 11 and Table 10). Monitoring should continue at all locations and the 2007 data for the Henlade AQMA reviewed with a view to revocation of the AQMA.

Source apportionment of the nitrogen dioxide concentrations in Taunton Deane indicate the concentrations are predominantly traffic related, so it is pertinent to utilise additional proxy indicators, which have been developed to evaluate the impacts of transport strategy and policy (Table 7). Local Transport Plan (LTP) indicators have been utilised for analysis of traffic flows, public transport use, modal share of journeys into town and are helpful tools in focusing monitoring and assessment priorities. The monitoring of congestion and its amelioration through policy implementation is particularly pertinent to improvements in air quality, and work has been concentrated in utilising indicators in this area.

3.1.1: Congestion Protocol Update

Taunton Deane Borough Council and Somerset County Council have been working together to address traffic congestion through the development and implementation of a Congestion Protocol. The agreed aims are to:

- Optimise the capacity of the transport system and highway network;
- Fully assess the congestion impact of development proposals;
- Manage and deliver operational services to minimise congestion;
- To promote genuine alternatives to private car travel, particularly for short journeys in town;
- To have a joint commitment to infrastructure development, management of parking charges and commuter parking space availability; and broadly
- To manage and develop long-term a transport system which will deliver a Taunton Urban Extension, key regeneration sites, a spatial strategy and a vibrant local economy.

3.1.2: Progress on protocol elements directly effecting issues in the Action Plan

With regard to the SCOOT Urban Traffic Control system the following elements now enshrined in Taunton Transport Strategy:

- Speedy replacement of failed or malfunctioning traffic loops;
- Regular and periodic review of SCOOT operations;
- Management of all road works to avoid daytime disruption on sensitive routes;
- Management and enforcement of all parking restrictions; and
- Programming and coordination of other service delivery issues e.g. street cleansing, floral maintenance work during peak hours.

With regard to travel planning, Taunton Deane Borough Council have adopted the DfT initiative 'Making Smarter Choices Work' to reduce the demand for car- based movement. Key elements of this are

- Travel planning has been incorporated as a central feature of Taunton Transport Strategy;
- Taunton Deane Borough Council is developing in-house resources, assisted by Somerset County Council;
- Promotional activities are aiming to raise awareness and change attitudes to car use; and
- Promoting Car sharing, in conjunction with the County Council to develop a web based public car share scheme with signs being developed for all radials into town.

A Congestion Protocol associated indicator has been developed which may prove of use in assessing Action Plan effectiveness over the long term.

Appendix 1: Review and Assessment Appendices

A1.1: Estimation of the 2006 NO₂ diffusion tube bias adjustment factor

Taunton Deane Borough Council undertakes a triplicate diffusion tube co-location study at the Wellington Road MAQU automatic analyser site. The 2006 data for the automatic analyser and the co-located diffusion tubes was checked using the Precision and Accuracy Spreadsheet tool and a 'local' bias adjustment factor of 1.13 was calculated (Figure 2) (Precision and Accuracy tool is available to download via the Air Quality Archive Website at: http://www.airquality.co.uk/archive/laqm/tools/AEA_DifTPAB_v03.xls). However, there were considerable problems with the automatic analyser during 2006 resulting in poor data capture.

Given the data capture problems of the MAQU involved in the co-location study, a 'national' bias adjustment factor was estimated based on a number of national studies. Figure 3 illustrates the bias adjustment factor of 0.96 based on 3 studies estimated using the Bias Adjustment Factors Spreadsheet (version 03/07) available to download at: <http://www.uwe.ac.uk/aqm/review/diffusontube300307.xls>.

The co-location study results have been checked to confirm the precision of the diffusion tube results, and the accuracy of the automatic monitoring results in relation to data capture. Once data capture and coefficient of variation of the triplicate diffusion tubes was taken into account 7 months worth of results could be utilised. Although in many cases, using an overall correction factor derived from as many co-location studies as possible will provide the 'best estimate' of the 'true' annual mean concentration, it is important to recognise that uncertainty associated with this bias adjusted annual mean remains. One analysis has shown that the uncertainty for tubes bias adjusted in this way is $\pm 20\%$ (at 95% confidence level). This compares with a typical value of $\pm 10\%$ for chemiluminescence monitors subject to appropriate QA/QC procedures. Having studied both scenarios regarding which factor to use it has been decided to report all diffusion tube data adjusted against both the 'local' and 'national' bias adjustment factors (Table 10). However, due to the data capture problems associated with the automatic analyser involved in the co-location study, all of the monitoring data conclusions will be made utilising data adjusted by the 'national' bias adjustment factor of 0.96.

Figure 2: Precision and Accuracy results for the Wellington Road Mobile Unit collocation study 2006.

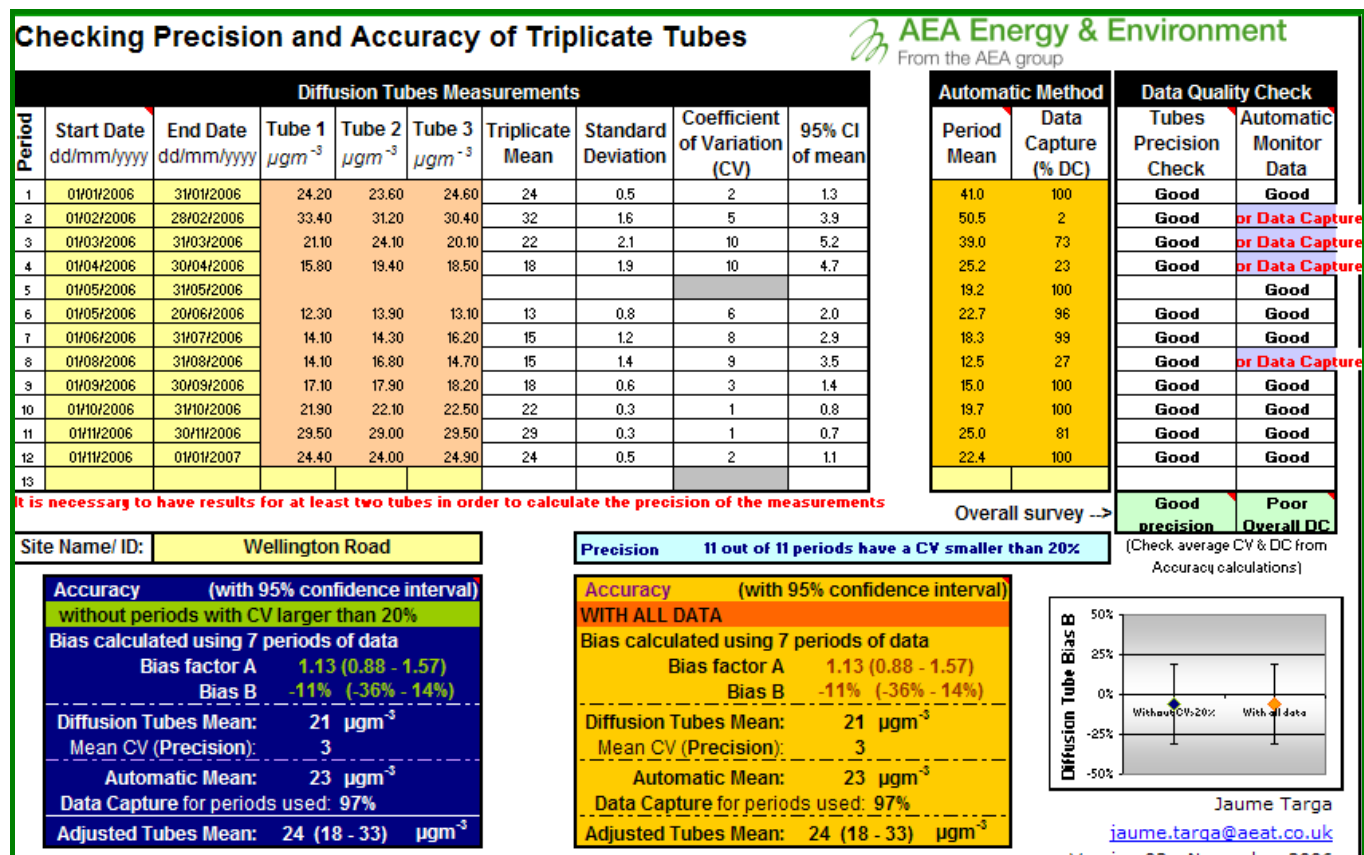


Figure 3: Bias adjustment factor estimated from the Bias Adjustment Factor Spreadsheet (v03/07).

Follow the steps below <u>in the correct order</u> to show the results of <u>relevant</u> collocation studies								This spreadsheet will be updated in late September 2007 on the R&A website		
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods										
Whenever presenting adjusted data, you should state the adjustment factor used										
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.										
Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Executive and the Department of the Environment Northern Ireland										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own collocation study then see footnote ⁴ . If uncertain what to do then contact the Review and Assessment Helpdesk: 0117 328 3668 aqm-review@uwe.ac.uk .							
Analysed By ¹	Method	Year ²	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ³	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in Water	2006	K	New Forest DC	11	49	41	18.5%	G	0.84
Gradko	50% TEA in Water	2006	R	New Forest DC	10	32	31	4.1%	G	0.96
Gradko	50% TEA in Water	2006	K	AEA E&E Intercomparison	11	102	111	-8.5%	G	1.09
Gradko	50% TEA in Water	2006		Overall Factor ³ (3 studies)					Use	0.96

A1.2: Air Quality Management Areas and monitoring locations in West Somerset

Figure 4: Map of East Reach Air Quality Management Area.



Figure 5: Map of Henlade Air Quality Management Area.

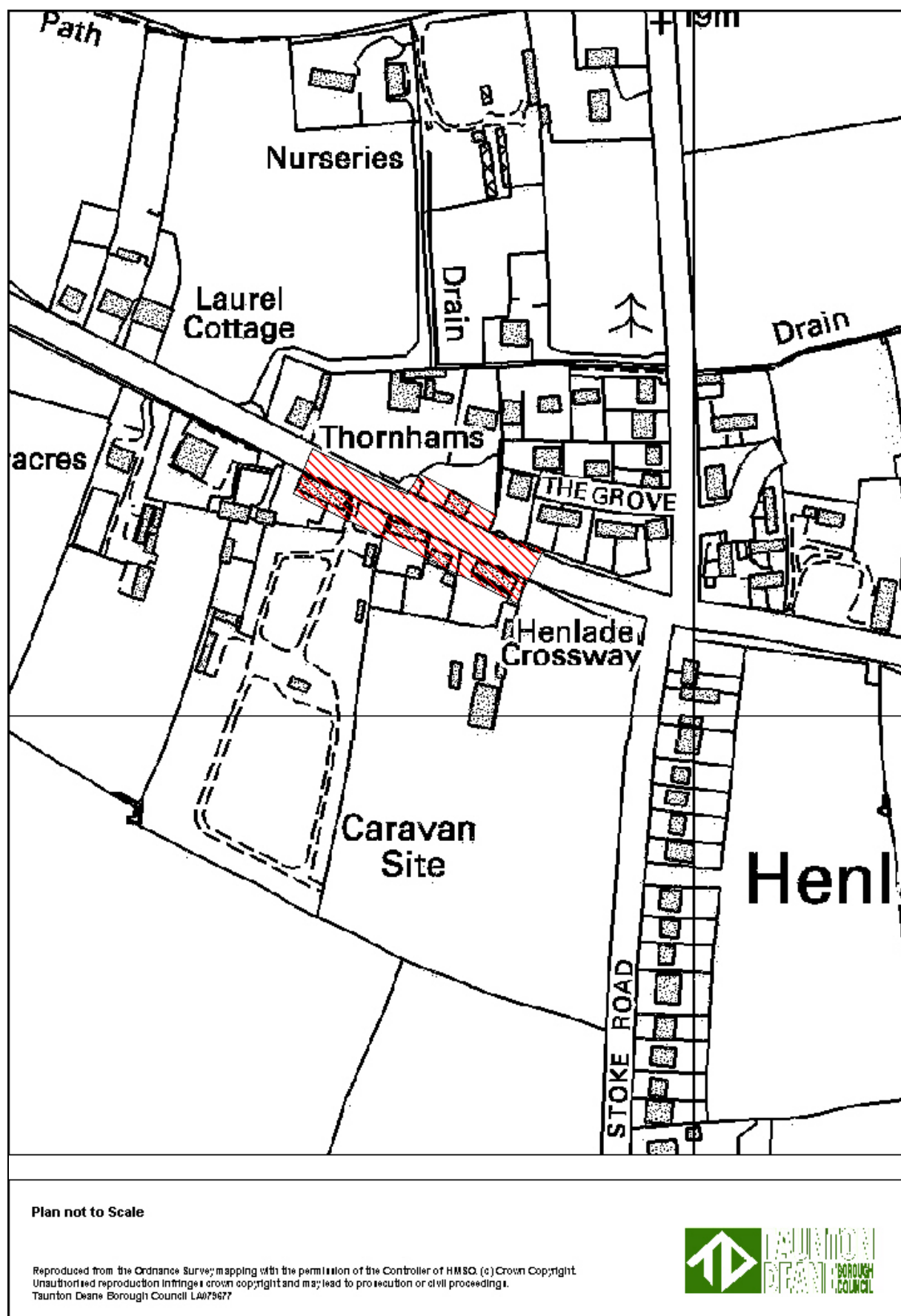


Figure 6: Map of Taunton current monitoring locations.

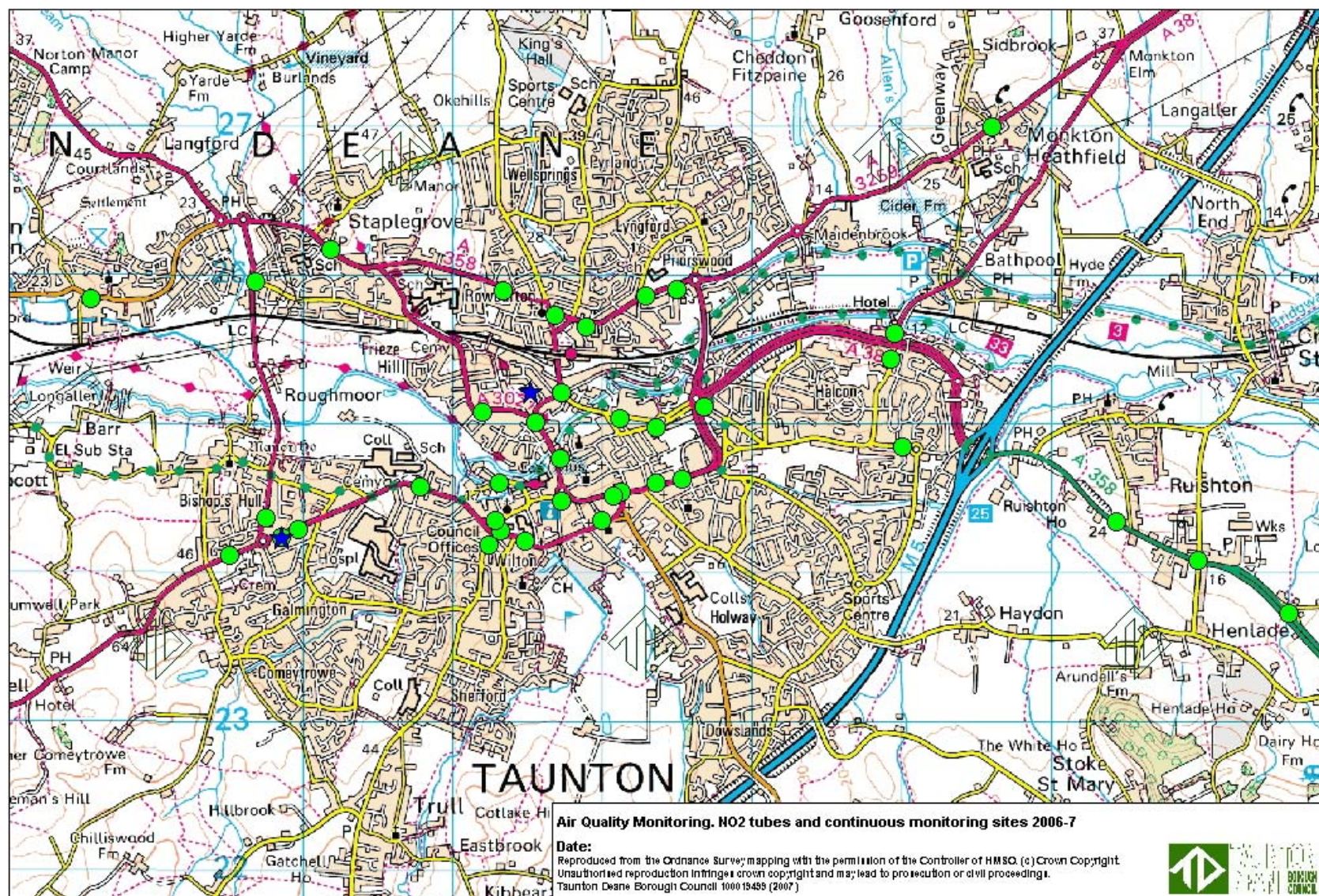
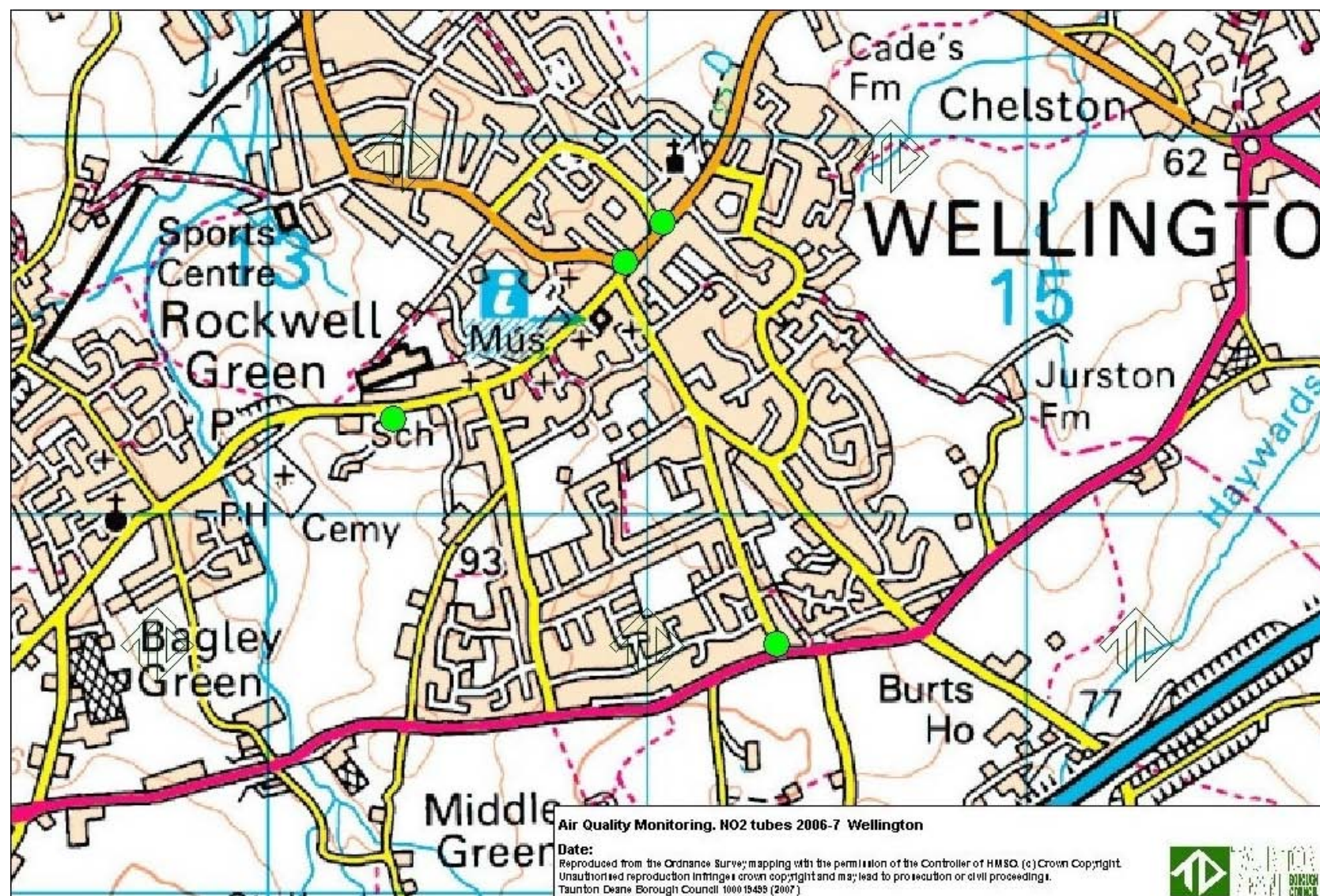


Figure 7: Map of Wellington current monitoring locations



A1.3: NO₂ diffusion tube concentrations (2006)

Table 10 presents the NO₂ diffusion tube data for Taunton Deane Borough Council. The 2006 annual mean has been bias adjusted and projected forward to 2010 in accordance with TG(03) Box 6.6. Any locations and annual mean figures shaded red indicate an exceedence of the 40µg/m³ annual mean NO₂ objective.

Table 10: NO₂ diffusion tube data for all locations in Taunton Deane (2006)

DT Num	Site Name	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Mean (0.96)	2010 (0.96)	Mean (1.13)
		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
2	Henlade East	36.0	41.8	35.6	33.5	32.9	34.2	39.4	39.4	32.5	37.2	41.3	35.8	35.2	30.4	41.4
3	Monks Close	32.4	36.0	41.3	25.6	19.2	19.9	24.2	24.3	23.5	24.1	30.8	32.1	26.7	23.1	31.4
6	Wellington High	-	41.5	-	29.3	27.0	34.4	37.3	38.4	28.3	29.5	34.9	32.7	32.0	27.7	37.7
10	Market Place	29.3	36.4	31.5	-	20.3	25.2	22.5	22.6	23.2	28.0	27.3	28.2	25.7	22.3	30.3
12	Bridge Street	32.4	43.7	-	33.6	31.7	41.9	46.3	-	38.2	-	40.2	39.5	37.1	32.1	43.6
13	Station Road	40.0	38.8	35.8	30.9	28.8	31.1	33.6	33.6	32.8	37.3	-	37.9	33.2	28.8	39.1
14	Wellington Road	31.7	27.2	25.0	23.8	24.4	28.5	34.5	34.4	25.6	-	36.4	40.2	28.9	25.1	34.1
15	Haydon Road	49.0	-	29.2	24.4	23.2	-	22.6	22.7	24.5	30.0	38.3	-	28.1	24.4	33.1
16	Park Gate	23.6	29.3	21.4	20.3	16.9	17.3	20.7	20.8	19.0	24.7	25.7	28.3	21.4	18.6	25.2
18	Hurdle Way	30.0	35.9	35.0	32.3	25.4	27.8	32.9	32.9	29.4	33.1	-	30.1	30.1	26.1	35.4
19	Ilminster Road	29.3	32.7	29.6	24.9	24.8	-	32.6	32.5	28.0	-	-	30.9	28.3	24.5	33.3
21	Carn Street	33.2	36.8	34.1	19.0	-	-	20.8	-	32.2	-	-	-	28.2	24.4	33.2
22	Priory Bridge	22.5	29.2	25.5	30.5	17.0	18.3	32.0	32.0	19.3	30.9	26.7	31.6	25.3	21.9	29.7
25	Creech Castle	26.1	32.4	29.1	21.5	24.6	27.3	31.1	31.1	31.4	34.3	35.3	31.0	28.4	24.6	33.5
26	Westerkirk Gate	25.2	26.7	19.8	16.7	20.2	17.4	20.6	20.7	22.7	26.6	28.4	23.1	21.4	18.6	25.2
27	Henlade West	35.5	39.7	-	34.3	28.1	34.1	38.1	38.1	36.9	34.5	40.8	33.3	34.3	29.7	40.4
29	Linden Grove	-	24.2	17.1	14.0	12.6	21.1	16.4	16.5	15.2	17.9	19.6	19.9	17.0	14.7	20.0
30	Malvern Terrace	-	29.4	23.7	20.1	19.1	20.2	33.3	33.3	21.0	26.4	28.7	25.4	24.5	21.2	28.8
31	St Augustines	25.6	27.3	19.8	19.4	17.8	17.8	21.4	21.5	21.4	25.8	27.2	27.9	21.8	18.9	25.7
32	Monkton	-	27.1	24.3	19.1	23.5	20.2	23.6	10.4	21.6	-	27.0	23.5	21.1	18.3	24.9
34	Oldway	17.4	24.2	17.5	15.0	14.8	19.6	19.5	14.4	17.5	21.9	23.5	23.1	18.3	15.8	21.5

DT	Site Name	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Mean	2010	Mean
Num														(0.96)	(0.96)	(1.25)
		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
35	Wellington Centre	32.0	33.8	-	31.6	24.4	-	26.6	31.9	31.5	31.6	33.7	28.7	29.4	25.4	34.6
36	Trinity Close	-	21.9	-	13.0	14.1	15.3	15.1	8.5	13.2	16.1	20.9	-	14.7	12.8	17.3
37	Norton Fitzwarren	21.2	25.7	24.6	20.4	18.9	23.1	19.6	16.5	22.7	21.3	26.4	20.7	20.9	18.1	24.6
39	Badgers Close	18.8	22.3	17.8	15.4	12.4	11.6	11.6	13.4	-	-	0.3	15.8	13.4	11.6	15.7
40	Wellington Road SCAT	28.3	33.3	27.5	25.1	-	27.1	28.3	-	28.8	31.5	32.2	28.8	27.9	24.2	32.9
44	East Reach Lights	39.7	47.9	55.2	41.8	39.8	47.5	46.3	33.4	43.1	47.5	48.0	35.9	42.1	36.4	49.5
45	East Street	32.2	42.3	39.1	36.1	41.8	39.8	41.3	41.1	44.7	45.9	44.8	39.9	39.1	33.9	46.0
50	Priory Avenue	30.2	39.2	31.5	23.7	15.8	25.7	17.0	22.1	24.4	28.3	35.6	27.7	25.7	22.2	30.2
51	Bridgewater Road	26.8	-	32.6	23.5	-	26.3	24.8	23.8	28.1	28.9	-	27.3	25.8	22.3	30.4
52	Park Street	34.1	37.6	35.1	32.7	32.6	32.2	37.3	26.9	36.9	52.6	42.4	33.9	34.7	30.1	40.9
53	Upper High Street	31.6	37.4	34.6	28.8	27.7	30.9	29.6	27.0	24.8	28.8	32.1	25.8	28.7	24.9	33.8
54	Wellington New Road	-	40.4	34.3	28.3	21.9	28.9	27.9	26.7	24.6	31.8	34.7	32.0	28.9	25.0	34.1
55	Brewster Priorswood Rd	24.9	30.7	29.2	20.1	17.8	23.9	17.5	20.2	21.6	26.8	28.0	26.0	22.9	19.9	27.0
56	St. Andrews Road	-	38.7	41.6	31.5	30.3	37.0	22.8	26.8	36.0	38.0	35.2	36.2	32.7	28.3	38.4
57	St James Street	27.9	34.6	30.4	24.0	26.8	30.1	29.1	29.4	31.7	33.1	33.8	34.2	29.2	25.3	34.4
58	Castle Street	22.8	24.4	17.7	15.6	13.1	14.0	13.9	12.4	14.6	20.0	23.1	23.5	17.2	14.9	20.2
59	Burdon Road	24.0	-	21.5	21.7	20.1	20.5	22.5	19.8	23.7	29.0	28.1	26.2	22.4	19.4	26.4
60	Greenway Road	-	32.1	27.2	19.5	19.6	-	-	-	-	26.3	30.4	28.0	25.1	21.7	29.6
61	Trull Road	-	37.9	35.3	24.5	21.7	25.5	-	-	-	32.0	31.9	-	28.6	24.8	33.7
62	Thornfalcon	-	27.2	-	19.1	19.0	-	18.6	-	23.1	22.2	30.7	22.4	21.9	18.9	25.7
7	Mobile A (co-location)	24.2	33.4	21.2	15.8	-	12.3	14.1	14.1	17.1	21.9	29.5	24.4	-	-	-
8	Mobile B (co-location)	23.6	31.2	24.1	19.4	-	13.9	14.2	16.8	17.9	22.1	29.0	23.9	-	-	-
9	Mobile C (co-location)	24.6	30.4	20.7	18.5	-	13.0	16.1	14.6	18.2	22.5	29.5	24.9	-	-	-

A1.4: Automatic Analyser Monitoring Data for Taunton Deane 2006**Table 11: Nitrogen dioxide automatic analyser data 2006 (Deane House)**

Data Capture: 78%	Monthly Mean Concentration	Exceedences of 1-hr objective
	($\mu\text{g}/\text{m}^3$)	(18 exceed – $200\mu\text{g}/\text{m}^3$)
January 2006	29.1	0
February 2006	25.6	0
March 2006	19.6	0
April 2006	12.3	0
May 2006	11.1	0
June 2006	12.6	0
July 2006	12.5	0
August 2006	9.1	0
September 2006	12.9	0
October 2006	10.5	0
November 2006	-	-
December 2006	-	-
	Mean = 15.5	Total = 0

Table 12: Particulates (PM_{10}) automatic analyser data 2006 (Wellington Road MAQU)

Data Capture: 73%	Monthly Mean Concentration	Exceedences of 24-hr objective
	$\mu\text{g}/\text{m}^3$ (gravimetric adj)	(35 exceed – $50\mu\text{g}/\text{m}^3$)
January 2006	30.6 (25.5)	3
February 2006	25.4 (21.2)	0
March 2006	25.6 (21.3)	1
April 2006	27.1 (22.6)	0
May 2006	20.8 (17.3)	0
June 2006	35.1 (29.2)	2
July 2006	38.3 (31.9)	4
August 2006	25.7 (21.4)	0
September 2006	26.7 (22.2)	1
October 2006	29.8 (24.8)	1
November 2006	27.9 (23.2)	0
December 2006	27.6 (23.0)	1
	Mean = 28.4 (23.6)	Total = 13 (9)

Table 13: Nitrogen dioxide automatic analyser data 2006 (Wellington Road MAQU)

Data Capture: 75%	Monthly Mean Concentration	Exceedences of 1-hr objective
	($\mu\text{g}/\text{m}^3$)	(18 exceed – $200\mu\text{g}/\text{m}^3$)
January 2006	41.0	0
February 2006	50.5	0
March 2006	39.0	0
April 2006	25.2	0
May 2006	19.2	0
June 2006	22.7	0
July 2006	18.3	0
August 2006	12.5	0
September 2006	15.0	0
October 2006	19.7	0
November 2006	25.0	0
December 2006	22.4	0
Mean = 25.9		Total = 0

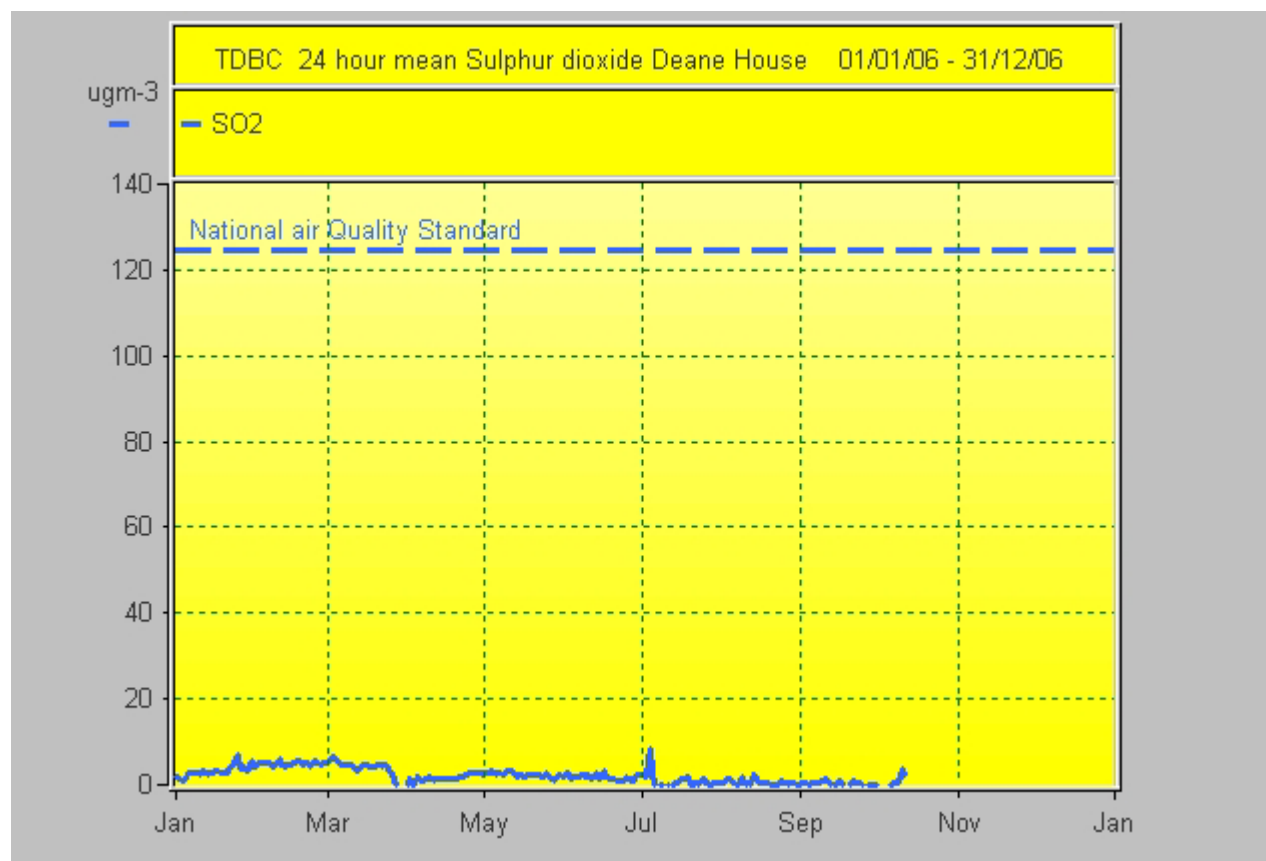
Figure 8: Sulphur Dioxide concentrations 2006 – 24 hour objective (Deane House)

Figure 9: Sulphur Dioxide concentrations 2006 – 1 hour objective (Deane House)

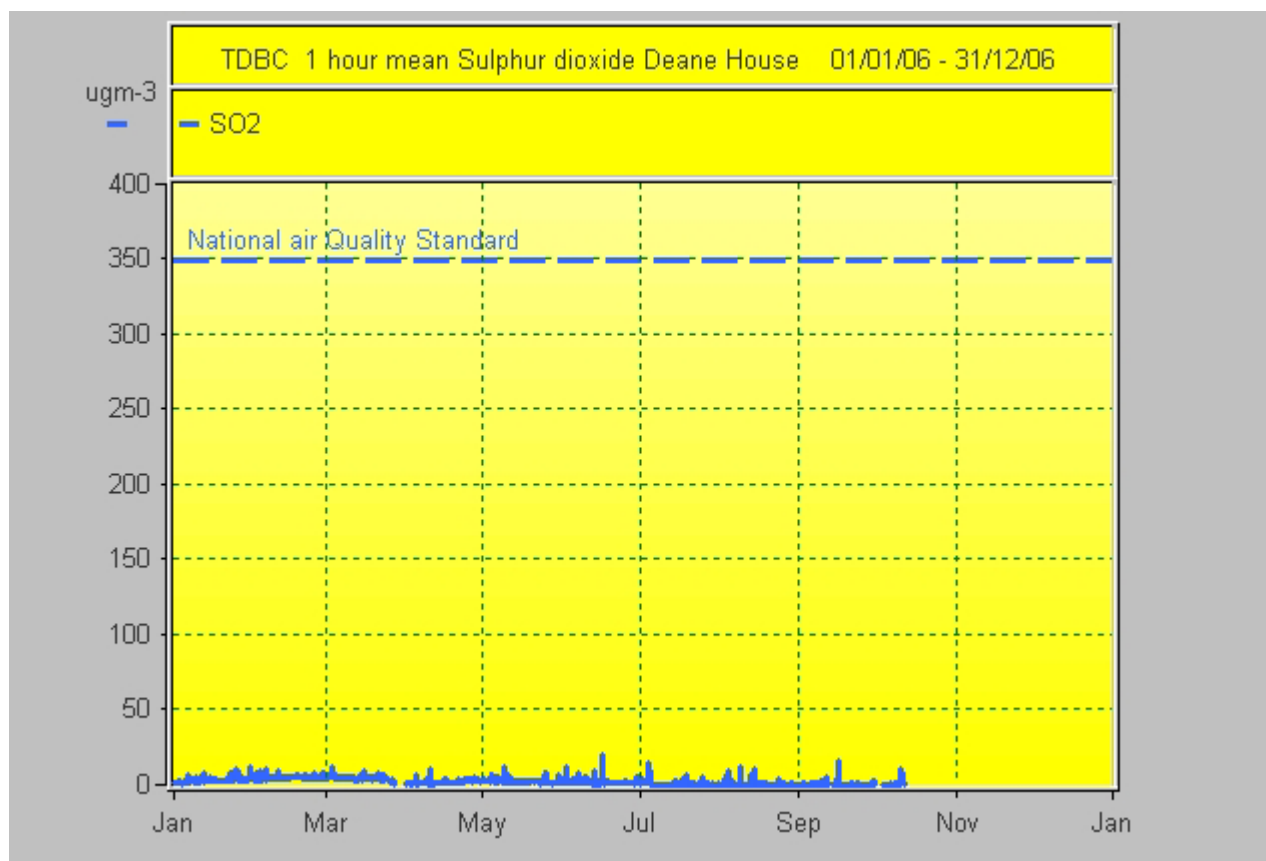


Figure 10: Sulphur Dioxide concentrations 2006 – 15 minute objective (Deane House)

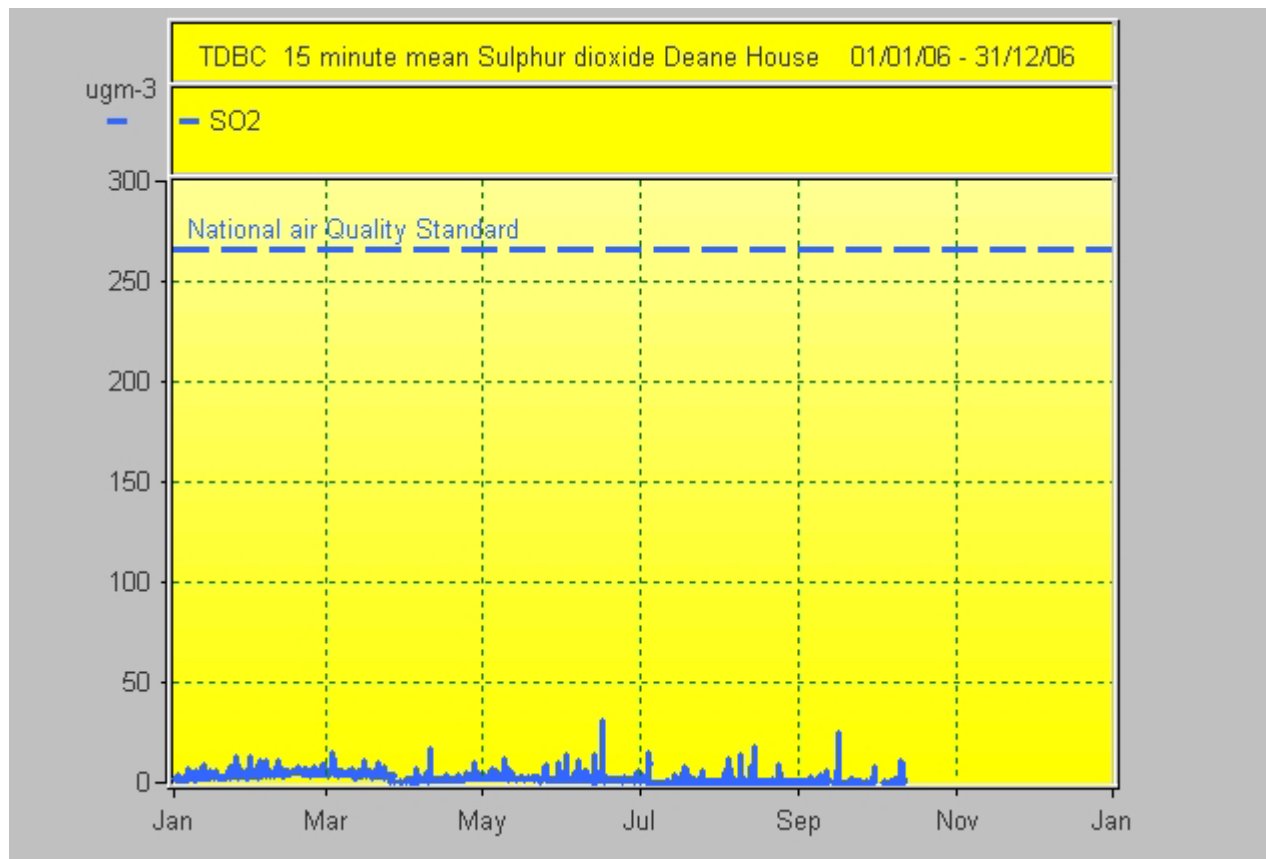


Table 14: Automatic analyser and diffusion tube monitoring information

Site Num	Site Name	Easting	Northing	Site Type
2	Henlade East	326974.4	124075.0	U2
3	Monks Close	323668.1	125109.6	U2
6	Wellington High	314041.4	120773.3	U1
10	Market Place	322719.0	124473.8	U3
12	Bridge Street	322540.0	125007.0	U2
13	Station Road	322716.8	125205.5	U2
14	Wellington Road	320495.0	124111.3	U2
15	Haydon Road	323349.5	124595.8	U2
16	Park Gate	323523.3	124627.2	U2
18	Hurdle Way	322986.6	124348.5	U2
19	Ilminster Road	325001.7	124837.5	U2
21	Carn Street	322305.3	124275.8	U2
22	Priory Bridge	323102.9	125034.6	U2
25	Creech Castle	324945.8	125601.8	U2
26	Westerkirk Gate	321170.9	126170.6	U2
27	Henlade West	326426.1	124332.3	U2
29	Linden Grove	322185.9	125078.4	U2
30	Malvern Terrace	322879.2	125643.8	U2
31	St Augustines	323279.5	125853.1	U2
32	Monkton	325593.4	126987.5	U2
34	Oldway	314343.4	119655.7	U2
35	Wellington Centre	313942.1	120666.9	U2
36	Trinity Close	313332.4	120251.7	U2
37	Norton Fitzwarren	319569.8	125838.4	U1
39	Badgers Close	320738.8	124358.3	U2
40	Wellington Road SCAT	321773.0	124566.6	U2
44	East Reach Lights	323119.3	124532.2	U2
45	East Street	323063.5	124508.2	U2
50	Priory Avenue	323346.0	124974.0	U2
51	Bridgewater Road	324923.0	125428.0	U1
52	Park Street	322271.0	124346.0	U2
53	Upper High Street	322471.0	124203.0	U2
54	Wellington New Road	320959.0	124288.0	U1
55	Brewster Priorswood Rd	323491.0	125901.0	U2

Site Num	Site Name	Easting	Northing	Site Type
56	St. Andrews Road	322675.0	125729.0	U2
57	St James Street	322705.0	124760.0	U1
58	Castle Street	322296.0	124597.0	U2
59	Burdon Road	320668.0	125950.0	U1
60	Greenway Road	322329.0	125893.0	U2
61	Trull Road	322229.0	124178.0	U2
62	Thornfalcon	327585.0	123724.0	U2
7	Mobile A (co-location)	320845.0	124231.0	U2
8	Mobile B (co-location)	320845.0	124231.0	U2
9	Mobile C (co-location)	320845.0	124231.0	U2
	Dean House Analyser	322505.3	125210.6	U4
	Wellington Road MAQU	320845.0	124231.0	U2

A1.5: QA/QC for monitoring undertaken by Taunton Deane Borough Council

The following monitoring equipment was used:

- Nitrogen Dioxide automatic monitoring: API Real-time Chemiluminescence Analyser.
- Nitrogen Dioxide diffusion tubes: Supplied and analysed by Gradko (50% TEA in water)
- PM₁₀: Beta Attenuation Monitor (unheated inlet – all data adjusted according to FAQ guidance on the Review and Assessment Website)
- Sulphur Dioxide: API M100A Fluorescent UV Analyser
- Ozone: API Model 400A UV Photometric Ozone Analyser

The fundamental aims of the QA/QC programme are as follows:

- data should be representative of ambient concentrations existing in the area under investigation;
- measurements need to be sufficiently accurate and precise to meet the defined monitoring requirements. Data must be inter-comparable and reproducible. Results from multi-site networks need to be internally consistent and comparable with national, international or other acceptable standards; and
- measurements should be consistent over time, particularly if long-term trend analysis is to be undertaken.

QA/QC procedures are applied to both passive samplers and automatic monitoring data throughout the each monitoring period. QA/QC procedures are involved in all aspects of the

monitoring exercise from purchase of equipment to the data presentation. The following information summarizes the QA/QC practice applied in all the Council's air quality monitoring.

A1.5.1: Routine Site Visits

Regular site visits are carried out to:

- carry out site checks on equipment, sampling systems, safety and security; and
- perform manual calibrations.

The following operations are carried out on site to maximise data integrity and capture rate:

- ensuring the proper running of equipment;
- performing instrument calibrations and diagnostic checks;
- minimising instrument down-time as much as possible, by anticipating problems prior to them becoming serious or fatal;
- carrying out essential routine functions such as particle filter changes and BAM tape replacement;
- performing checks of the automatic calibration systems; and
- ensuring that initial siting criteria are still fulfilled i.e. that the surrounding environment has not changed in any way which prejudices the monitoring objectives.

A Site Manual is displayed in the permanent monitoring station and the MAQU, which provides the facility to document visits made to the site by operating personnel.

A1.5.2: Calibration Procedure

Proper calibration of automatic monitoring equipment is essential for obtaining accurate and reproducible air quality data. Electrical response signals are generated by the API M100A and both APIM200A analysers that correspond to the concentrations of SO₂ and NO_x + NO, respectively, in the air. In order to correctly scale the analyser response, it is necessary to calibrate it using a gas mixture of known concentration.

Calibrations are conducted at a number of levels:

- daily automatic calibration (NB these are only carried out at the MAQU);
- frequent (fortnightly) manual calibrations (performed by qualified TDBC staff); and
- periodic (6 monthly) reference calibrations (performed by ET engineers).

The fortnightly calibrations are carried out according to procedures contained in the Site Manual and blank forms are provided to assist in performing and documenting the calibrations. Copies of the completed forms during the monitoring period are available on request.

A1.5.3: Equipment Service and Maintenance

An ongoing service and maintenance contract is in place with Enviro Technology (ET) for the MAQU and the three continuous monitors at the urban background site at the Deane House, Taunton. The contract provides the following cover:

- routine six monthly service visits in accordance with the manufacturer's instructions and warranty conditions;
- guaranteed breakdown call out response of forty hours (normal working time);
- written reports showing work carried out and status of instrumentation;
- all work and documentation carried out in accordance with BS ISO 9002 accredited system; and
- dedicated telephone support (Technical Support Engineer) in normal working hours.

A service and maintenance contract is also in place for the air conditioning units in both the Deane House cabinet and the MAQU.

A1.5.4: Data Capture

Data capture rates are contained in the individual statistical summary tables for each period of monitoring carried out. The following methods are employed to maximise data capture rates.

- Regular and frequent site visits;
- Automatic daily data collection using dedicated software;
- In-built data storage capability within the analysers;
- Rapid, service, maintenance and repair;
- Comprehensive and documented site operational protocols; and
- Experienced site operator.

A1.5.5: Data Processing

The data stored on the each analysers in-built logger is downloaded via laptop computer or a modem and mobile telephone line to a computer at the Council offices using ET EnviMan series of software modules (ComVisioner and Reporter). The raw values are then converted using calibration factors obtained from the manual calibrations performed every fortnight. There is always a gradual decline in the sensitivity of the analysers between each full 6-monthly service. It

is this decline in sensitivity that the manual calibration conversion factors are intended to scale against.

The conversion is achieved using zero and span “calibration factors” achieved from the fortnightly calibrations. The two-point calibration will quantify the analyser “zero” and “span” response.

The zero response, V_z , is the response in measurement units of the analyser when the pollutant species being measured is not present in the sample air stream. The span response, V_s , is the response of the analyser to an accurately known concentration, c , of the pollutant species. Instrument zero and span factors are then calculated using these data as follows:

$$\text{Instrument zero} = V_z$$

$$\text{Instrument span, } F = c/(V_s - V_z)$$

Ambient pollution data are then calculated by applying these factors to logged output signals as follows:

$$\text{Pollutant concentration (ppb)} = F(V_a - V_z)$$

where V_a is the recorded signal from the analyser sampling ambient air.

The list of calibration factors applied to the raw data can be provided upon request.

A1.5.6: Data Validation and Ratification

All data collected is thoroughly scrutinised by visual examination to ensure that there was no spurious and unusual measurements. The dedicated software used for handling the data (Enviman) allows data to be edited but ensures that a raw data set is always maintained.

Thorough ratification of the data is carried out at the end, and during, the monitoring period. Steps in the ratification process included:

- examination of the calibration records to ensure correct application of calibration factors;
- examination of simultaneously monitored pollutants eg PM_{10} monitoring and NO_2 data monitored by the MAQU is scrutinised to ensure that there are no anomalies in either of the measured concentrations;
- the measurements are also compared with NO_x and O_3 data collected during the same period at the Council’s permanent station at The Deane House.

Since 19 April 2001, all QA/QC procedures are applied to the continuous monitoring carried out at the permanent monitoring station, when new analysers and facilities for calibration were installed.

A1.6: Nitrogen dioxide trends (NO₂)

Trends in nitrogen dioxide were investigated for the diffusion tube sites in the East Reach and Henlade AQMAs for 2003-2006. Nitrogen dioxide concentrations have remained relatively constant since 2003 in the East Reach AQMA, dropping slightly since 2003. Nitrogen dioxide concentrations have dropped and remained below the annual mean objective of 40 μ g/m³ since 2004 in the Henlade AQMA (Figure 11).

Trends in nitrogen dioxide were investigated for a select number of diffusion tube sites outside the current AQMAs for 2003-2006. Nitrogen dioxide concentrations have remained relatively constant since 2003, below the annual mean objective of 40 μ g/m³ (Figure 12).

Figure 11: Comparison of NO₂ annual mean concentrations in the AQMAs.

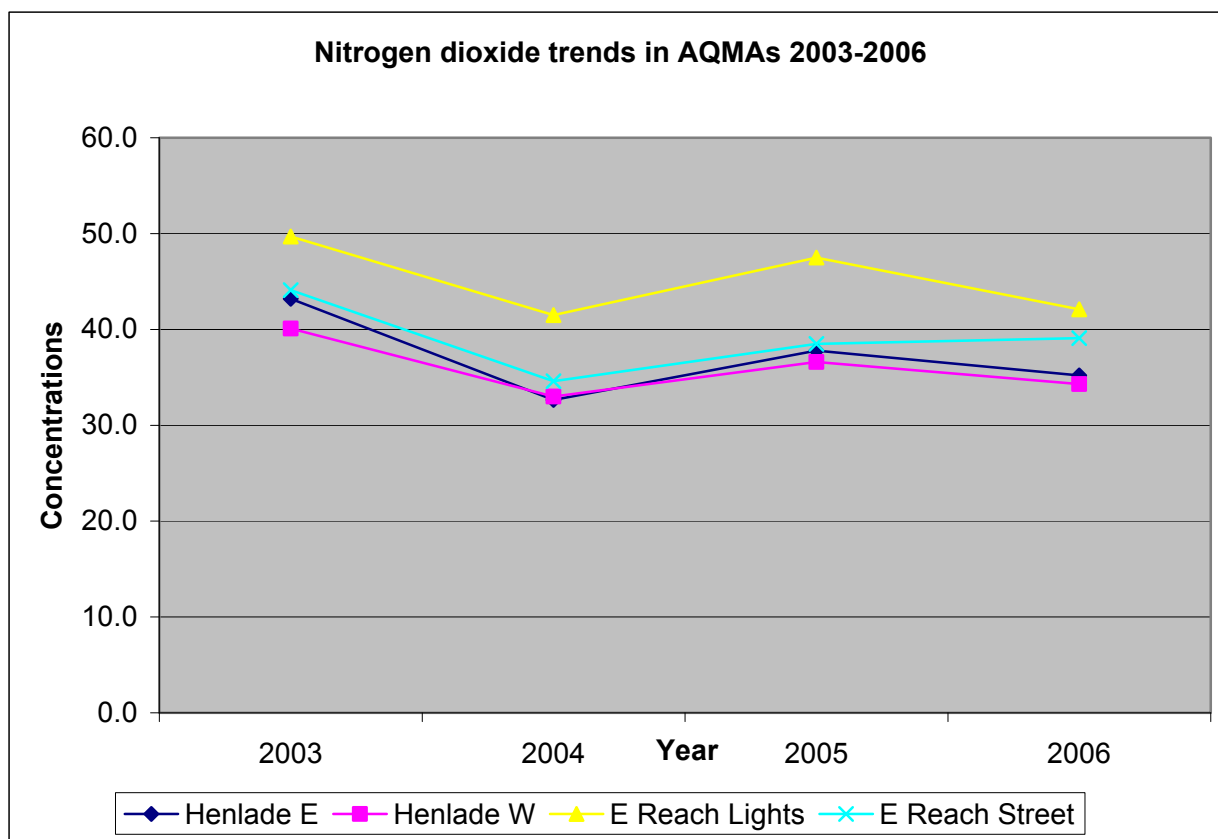


Figure 12: Comparison of NO₂ annual mean concentrations outside the AQMAs.

