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2015 Updating and Screening Assessment for Wychavon District Council

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

November 2015

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Executive Summary

Wychavon District Council has undertaken this Updating and Screening Assessment (USA) to fulfil requirements of Local Air Quality Management regime as set out in Part IV of the Environment Act 1995. The report provides an update on any relevant changes to local air quality that have occurred in the Wychavon District since the 2014 Air Quality Progress Report.

Wychavon District Council currently only monitors for nitrogen dioxide (NO_2) levels at eighteen locations within the District.

In 2014 eight diffusion tubes were decommissioned as they were deemed unrepresentative of relevant exposure or were recording concentrations well below the air quality annual mean objective. The two Droitwich locations were reduced from triplicate diffusion tubes to one tube at each location. Five additional diffusion tubes were deployed in 2014, three in Evesham and two in Wychbold.

Monitoring results within the Port Street AQMA were below the air quality objective at all locations in 2014 when the distance from road to the nearest receptor calculation was used. The AQMA will be retained and further monitoring undertaken with a view to progressing to a Detailed Assessment and revocation of the AQMA.

Monitoring results at the four locations in Wychbold were all above the air quality objective, three continued to show exceedences when the distance from road to the nearest receptor calculation was used. Therefore, a Detailed Assessment for NO_2 is required within the vicinity of the Worcester Road, Wychbold. There is no requirement to move to a Detailed Assessment for any pollutants in any other areas.

Data from monitoring locations across the District generally demonstrates a downward trend between 2013 and 2014. Most monitoring locations have recorded concentrations below the air quality objectives for nitrogen dioxide in the last 5 years.

Wychavon District Council's assessment of sources has not identified any likely exceedences from new or significantly changed local developments.

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1 Introduction

1.1 Description of Local Authority Area

Wychavon District Council lies on the river plain of the Avon between the Cotswold Hills to the south and the Birmingham plateau to the north. The district covers 664km^2 of the south and eastern part of the county of Worcestershire. It has a population of 116,900 living in the towns of Droitwich Spa, Evesham, Pershore and nearly 100 villages and hamlets. The district is relatively flat having isolated hills, most notably, Bredon Hill, 6km south of Pershore.

Wychavon has boundaries with Worcester City, Redditch Borough, Tewkesbury, Wyre Forest, Bromsgrove, Stratford-on-Avon, Cotswold and Malvern Hills District Councils.

The M5 motorway runs north/south on the western side of the district, generally through rural areas away from residential properties, with the exception of a section adjacent to Droitwich Spa and Wychbold. The District is traversed by several A-roads including the A44, A46, A422 and A449. It is also served by national rail services from Droitwich Spa, Evesham and Pershore railway stations.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedences are considered likely, the local authority must then 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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m^3	Running annual mean	31.12.2003
	5.00 µg/m^3	Running annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 µg/m^3	Annual mean	31.12.2004
	0.25 µg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Wychavon District Council concluded during the first and second rounds of Review and Assessment that it was unlikely there would be any exceedences of any of the objectives and it was not necessary for a Detailed Assessment to be carried out.

The Updating and Screening Assessment (USA) completed in April 2006, found that it was necessary to proceed to a Detailed Assessment for nitrogen dioxide at two

locations in Evesham (Port Street and Swan Lane), and for PM_{10} at Walton Lane, Hartlebury.

The Detailed Assessment concluded that an AQMA was not required in Swan Lane, but that monitoring should continue to identify any changes. An AQMA was however required for exceedences of the annual mean nitrogen dioxide objective in Port Street, Evesham, and consequently, this was declared for an area along the length of Port Street, between Waterside and Shor Street (Figure 1.1). Concentrations of PM_{10} in Hartlebury were found not to exceed the daily or annual mean objectives, and an AQMA was not required.

The Further Assessment carried out for Port Street confirmed that the AQMA was required and an Action Plan was subsequently prepared.

The Progress Reports prepared in 2007 and 2008 did not identify any significant changes, or the requirement for a Detailed Assessment, however, a decision was made to carry out Detailed Assessments for hotspots in Whittington and Wychbold. Additional monitoring was established on the façades of worst-case properties within Whittington and Wychbold, and this confirmed that concentrations are below the annual mean nitrogen dioxide objective. The Detailed Assessment confirmed that no further AQMAs were required, however monitoring continued.

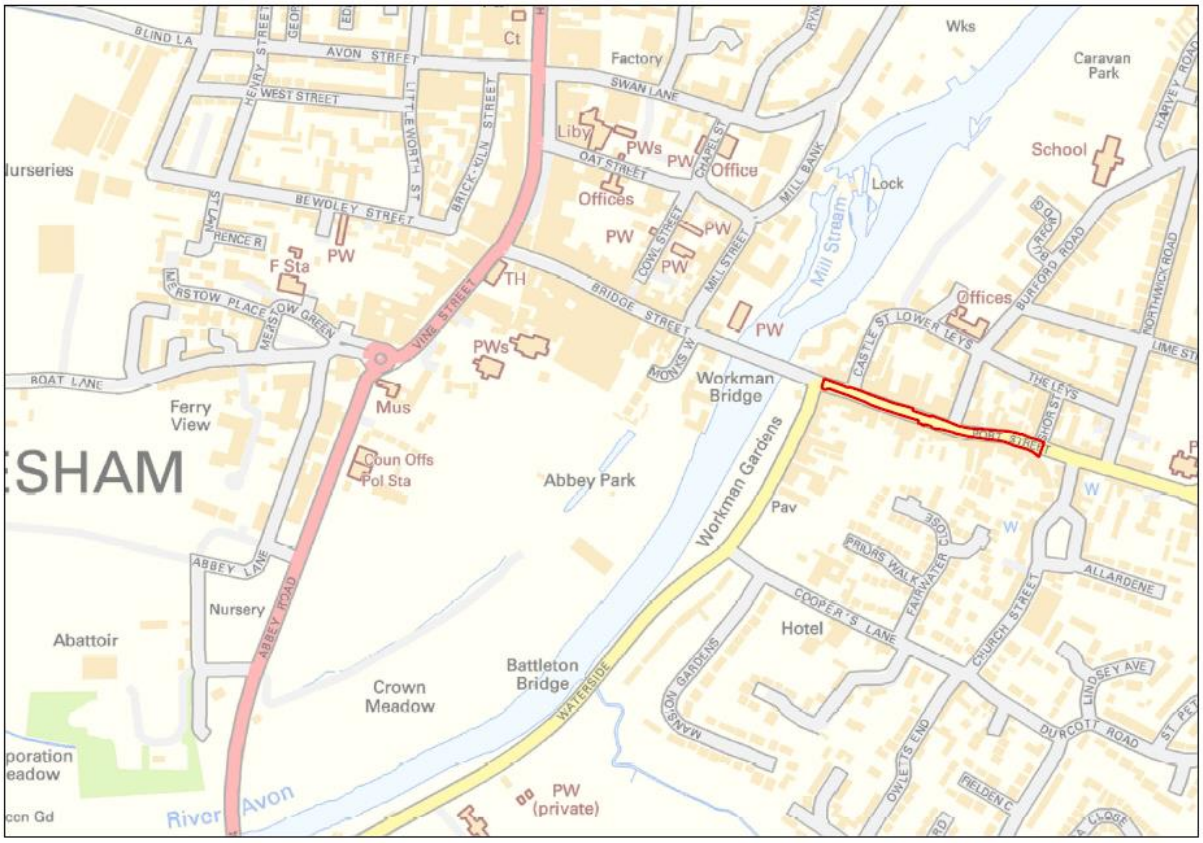
The fourth round and Review and Assessment did not identify any new locations or sources of pollutants requiring Detailed Assessment, and no new AQMAs were declared.

The 2012 USA confirmed that there are no locations of relevant exposure where concentrations exceed the annual mean nitrogen dioxide objective, even within the AQMA. Consequently, there was no requirement to proceed to a Detailed Assessment.

The 2013 Progress Report concluded that the existing AQMA at Port Street, Evesham should be retained and that Detailed Assessment is required within the Worcester Road, Wychbold area.

The 2014 Progress Report concluded that the existing AQMA at Port Street, Evesham should be retained and that Detailed Assessment is required within the Worcester Road, Wychbold area.

Figure 1.1 Map of Port Street AQMA Boundary



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

There are no automatic monitoring sites in the Wychavon District Council area.

2.1.2 Non-Automatic Monitoring Sites

During 2014, Wychavon District Council monitored annual mean nitrogen dioxide concentrations using passive diffusion tubes at eighteen locations across the area. In a rationalisation exercise, five diffusion tubes in Evesham and three diffusion tubes in Pershore were removed as they were deemed unrepresentative of relevant exposure or were recording concentrations well below the air quality objective. The two locations in Droitwich were reduced from triplicate diffusion tubes to one tube at each location. Five additional diffusion tubes were deployed, three in Evesham and two in Wychbold, see Table 2.1

Table 2.1 Details of Decommissioned and Additional Diffusion Tubes

Decommissioned Diffusion Tubes				
Site ID	**Site Address**	**Site Type**	**X Coordinates**	**Y Coordinates**
EPS13/A/B	Swan Lane, Street Light LP1, Evesham	Kerbside	403796	244013
EPS15	High Street, Central Strip, Evesham	Kerbside	403761	244002
EPS32	Avon St/High St Jnctn LP Adj. to Domino's Pizza, Evesham	Kerbside	403725	244023
EPS34	High Street, Swan Lane Camera, Evesham	Roadside	403751	244020
EPS57	Oat St/High St, Car Park Sign, Evesham	Kerbside	403747	243925
EPS6	Civic Centre, Traffic Sign, Pershore	Urban Background	394703	246308
EPS7	High Street, Light LP25, Pershore	Roadside	394850	246065
EPS10	Broad Street Traffic sign opposite HSBC, Pershore	Roadside	394981	245735
Additional Diffusion Tubes				
Site ID	**Site Address**	**Site Type**	**X Coordinates**	**Y Coordinates**
EPS60	Corner of Rynal Street & De La Bere Close SL2, Evesham	Roadside	403914	244046
EPS61	1 - 6 The Old Dairy, Swan Lane, Evesham	Roadside	403796	244006
EPS62	Bengal Dreams, No 53 High Street, Evesham	Roadside	403729	243971
EPS58	2 Rose Villas, Worcester Road, (Speed Limit sign S14), Wychbold	Roadside	392034	265762
EPS59	Weathervale, Worcester Rd (LP 3) Jasmine Gdns Dev Sign, Wychbold	Roadside	392061	265807

The diffusion tubes for 2014 were prepared and analysed by Somerset Scientific Services using the 20% TEA in water method. Tubes are changed on a monthly basis. Further details of the diffusion tube QA/QC are presented in Appendix A.

Figure 2.1 Map of Pershore Non-Automatic Monitoring Sites

Figure 2.2 Map of Evesham Non-Automatic Monitoring Sites

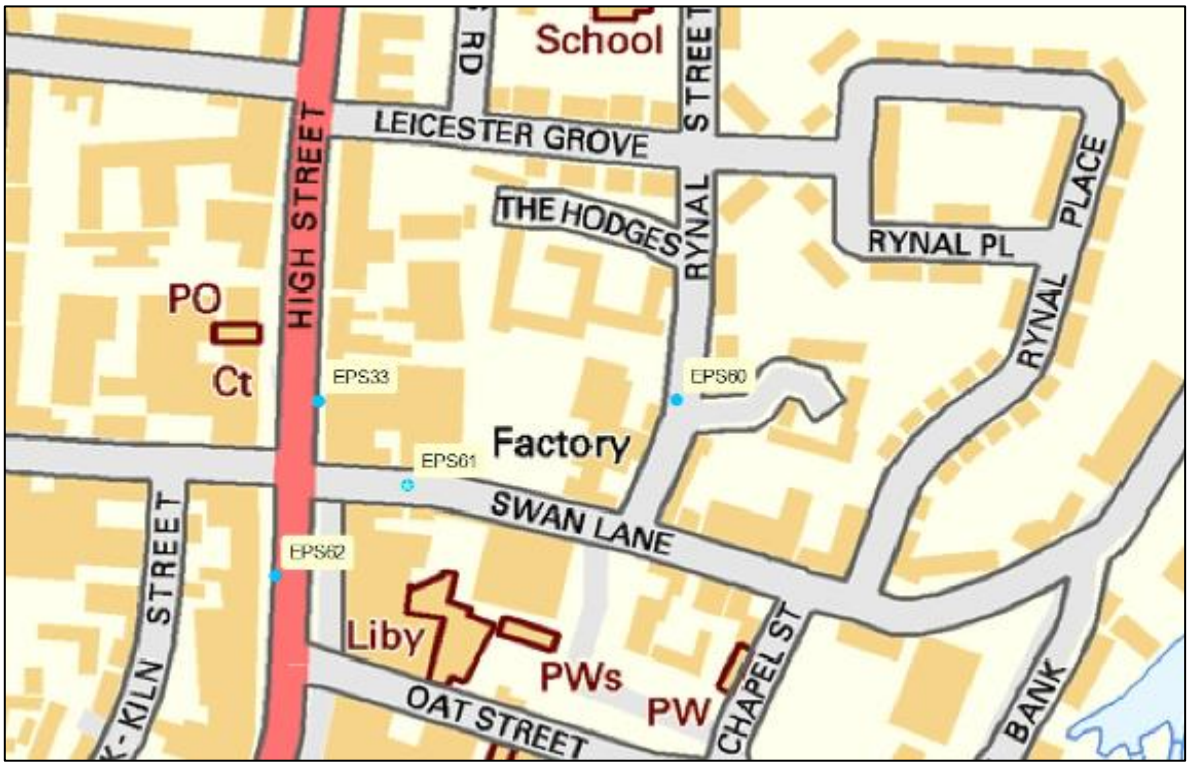


Figure 2.3 Map of Port Street, Evesham Non-Automatic Monitoring Sites

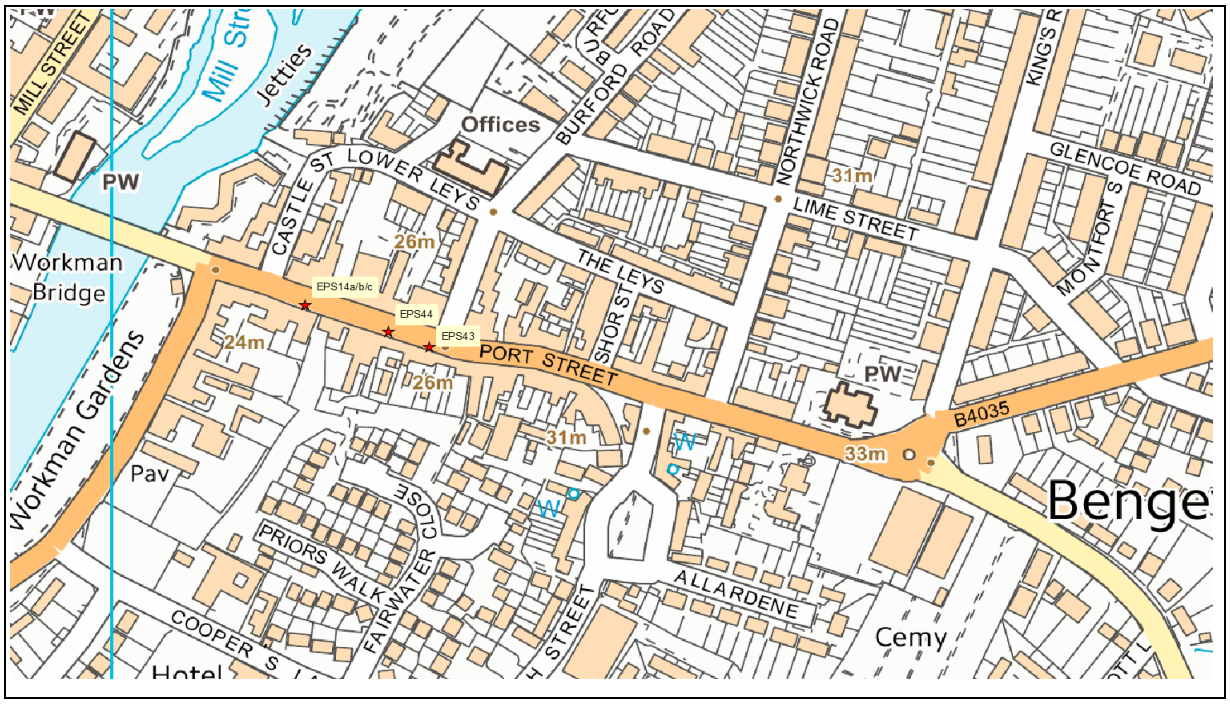


Figure 2.4 Map of Wychbold Non-Automatic Monitoring Sites

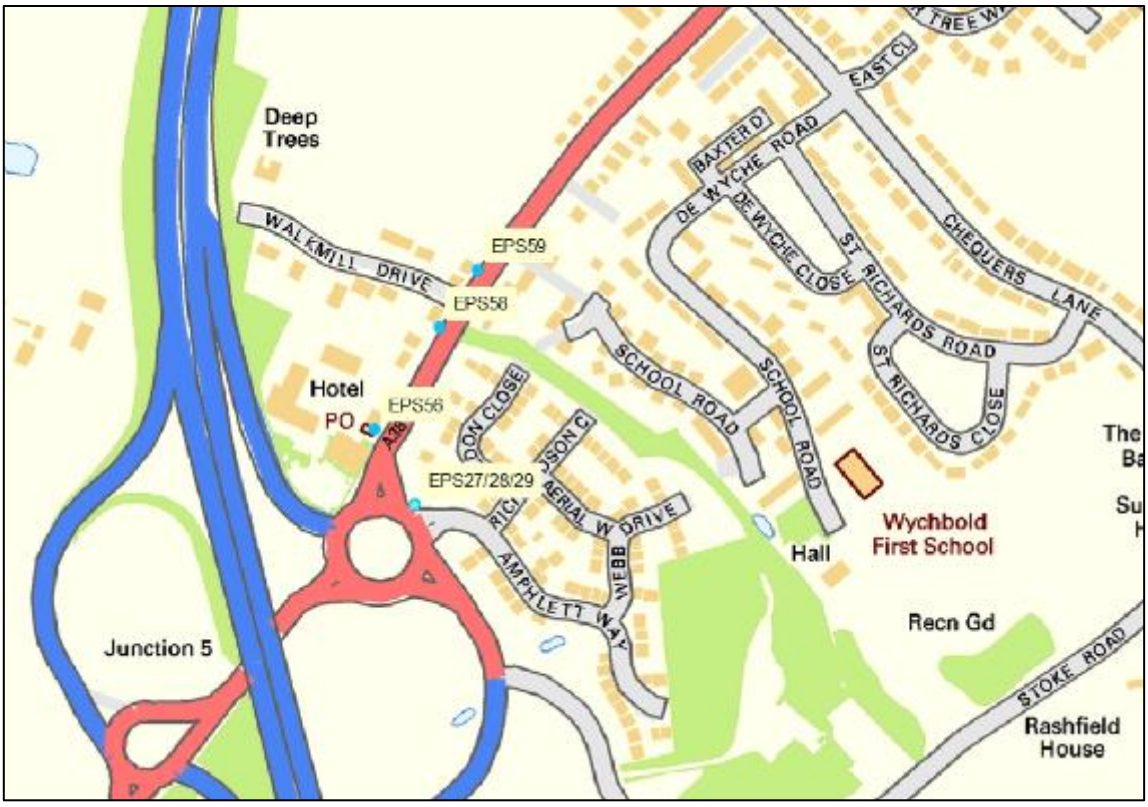


Figure 2.5 Map of Droitwich Non-Automatic Monitoring Sites

Figure 2.6 Map of Whittington Non-Automatic Monitoring Sites

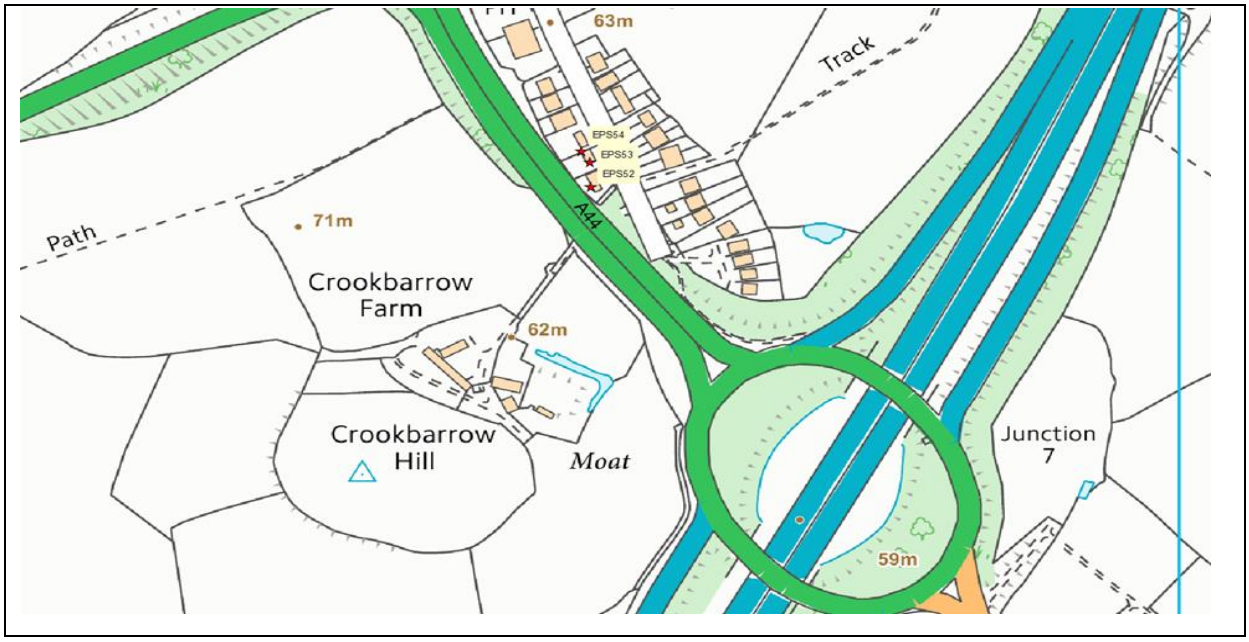


Table 2.2 Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Pershore										
EPS9	St. Andrews Road, Street light 139	Urban Background	394571	245377	NO_2	N	N	Y (6m)	1.5m	N
EPS8	40 Bridge Street, Street Light LP8	Roadside	395048	245527	NO_2	N	N	Y (2m)	0.5m	N
Evesham										
EPS43	Long Stay Opposite Cinema, Port Street	Roadside	404222	243598	NO_2	Y	N	Y (<1m)	1.5m	Y
EPS44	Camera Post Opposite No. 33, Port Street	Roadside	404183	243611	NO_2	Y	N	Y (2.6m)	1.5m	N
EPS14A/B/C	Port Street, Road Sign o/s Pizza Shop, Port Street	Kerbside	404128	243630	NO_2	Y	N	Y (1.7m)	0.3m	N
EPS60	Corner of Rynal St,7 De La Bere Close	Roadside	403914	244046	NO_2	N	N	Y(5.5m)	1.10m	N
EPS61	1 - 6 The Old Dairy, Swan Lane	Roadside	403796	244006	NO_2	N	N	Y (<1m)	1.9m	N
EPS33	High Street, Street Light LP 32 Opposite One Stop Shop	Roadside	403753	244068	NO_2	N	N	Y (2m)	1m	N
EPS62	Bengal Dreams, No 53 High Street	Roadside	403729	243971	NO_2	N	N	Y (<1m)	5.38m	N
Wychbold										
EPS27/28/29	Worcester Rd, Jnct. Amphlett Way	Roadside	392031	265624	NO2	N	N	Y (15.5m) 140m to M5	2.5m	N
EPS56	Post Office, Worcester Road	Roadside (façade)	391983	265688	NO_2	N	N	Y (0m)	9m	Y
EPS58	2 Rose Villas, Worcester Road, (Speed Limit sign S14)	Roadside	392034	265762	NO_2	N	N	Y (9m)	3.0m	N
EPS59	Weathervale, Worcester Rd (LP 3(3373) Jasmine Gardens Dev Sign	Roadside	392061	265807	NO_2	N	N	Y (7.5m)	2.4m	N

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Droitwich										
EPS19	Mayflower Road	Roadside	390715	262846	NO_2	N	N	N (36m to M5)	1m	N
EPS22	Tagwell Close (LP 4)	Roadside	390853	261909	NO_2	N	N	N (36m to M5)	1m	N
Whittington										
ESP52	The Bungalow, Church Lane	Roadside (façade)	387598	252511	NO_2	N	N	Y (<1m)	12m	Y
ESP53	Hill View Cottage, Church Lane	Roadside (façade)	387595	252533	NO_2	N	N	Y (<1m)	22m	Y
ESP54	Green Rise, Church Lane	Roadside (façade)	387591	252541	NO_2	N	N	Y (<1m)	24m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

There are no automatic monitoring sites in the Wychavon District Council area.

Diffusion Tube Monitoring Data

Measured concentrations at the eighteen diffusion tube monitoring sites in 2014 and a summary of concentrations for the last five years since 2010 at all sites where monitoring data is available are presented in the tables and graphs below.

The results of these tubes in 2014 have been adjusted for bias using a national correction factor derived from Defra of 0.89.

The figures in bold below show those which exceed the Air Quality Objective of 40µg/m^3. Those in bold and underlined indicate a potential exceedence of the NO_2 hourly mean Air Quality Objective of > 60µg/m^3.

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.89) ($\mu g/m^3$)
Pershore								
EPS9	St. Andrews Road, Street light 139	Urban Background	N	N	11	N	N	15.56
EPS8	40 Bridge Street, Street Light LP8	Roadside	N	N	12	N	N	26.34
Evesham								
EPS43	Long Stay CP Opposite Cinema, Port Street	Roadside	Y	N	10	N	N	31.67
EPS44	Camera Post Opposite No. 33, Port Street	Roadside	Y	N	12	N	N	30.59
EPS14A/B/C	Road Sign o/s Pizza Shop, Port Street	Kerbside	Y	Triplicate	10	N	N	**40.38 (Av)**
EPS60	Corner of Rynal St 7 De La Bere Close SL2	Roadside	N	N	11	N	N	17.62
EPS61	1 - 6 The Old Dairy, Swan Lane	Roadside	N	N	12	N	N	29.90
EPS33	High Street, Street Light LP 32 Opposite One Stop Shop	Roadside	N	N	12	N	N	30.30
EPS62	Bengal Dreams, No 53 High Street	Roadside	N	N	11	N	N	30.89
Wychbold								
EPS27/28/29	Worcester Rd Jnct. Amphlett Way	Roadside	N	Triplicate	10	N	N	**44.37 (Av)**
EPS56	Post Office, Worcester Road	Roadside (façade)	N	N	12	N	N	**45.38**
EPS58	2 Rose Villas, Worcester Road, (Speed Limit sign S14),	Roadside	N	N	9	N	N	**57.24**
EPS59	Weathervale, Worcester Rd (LP 3(3373) Jasmine Gardens Dev Sign	Roadside	N	N	11	N	N	**51.23**

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.89) ($\mu g/m^3$)
Droitwich								
EPS19	Mayflower Road	Roadside	N	N	11	N	N	34.26
EPS22	Tagwell Close (LP 4)	Roadside	N	N	12	N	N	28.31
Whittington								
ESP52	The Bungalow, Church Lane	Roadside (façade)	N	N	12	N	N	32.81
ESP53	Hill View Cottage, Church Lane	Roadside (façade)	N	N	12	N	N	30.00
ESP54	Green Rise, Church Lane	Roadside (façade)	N	N	12	N	N	34.22

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2010 (Bias Adjustment Factor = 0.95)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.69)	2013 (Bias Adjustment Factor = 0.98)	2014 (Bias Adjustment Factor = 0.89)
Pershore							
EPS9	Urban Background	N	36.1	16.5	11.5	18	15.6
EPS8	Roadside	N	31	27.3	24.6	34	26.3
Evesham							
EPS43	Roadside	Y	**42.4**	32.9	29.8	39	31.7
EPS44	Roadside	Y	38	31.6	24.4	**40**	30.6
EPS14A/B/C	Kerbside	Y	**42.4**	39.4	36.0	**49**	**40.4**
EPS60	Roadside	N	-	-	-	-	17.7
EPS61	Roadside	N	-	-	-	-	29.9
EPS33	Roadside	N	21.6	29.8	25.5	34	30.3
EPS62	Roadside	N	-	-	-	-	30.9
Wychbold							
EPS27/28/29	Roadside	N	**48.5**	**52.2**	**42.6**	**55**	**44.4**
EPS56	Roadside (façade)	N	-	-	**43.6**	**52**	**45.4**
EPS58	Roadside	N	-	-	-	-	**57.2**
EPS59	Roadside	N	-	-	-	-	**51.2**
Droitwich							
EPS19	Roadside	N	36.5	39.5	39.2	29.0	34.3
EPS22	Roadside	N	35.7	32.6	23.8	34	28.3
Whittington							
ESP52	Roadside (façade)	N	23.4	37.4	32.4	39	32.8
ESP53	Roadside (façade)	N	30.1	32.6	28.5	34	30
ESP54	Roadside (façade)	N	31	36	32.1	38	34.2

Figure 2.7 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites within the Port Street AQMA

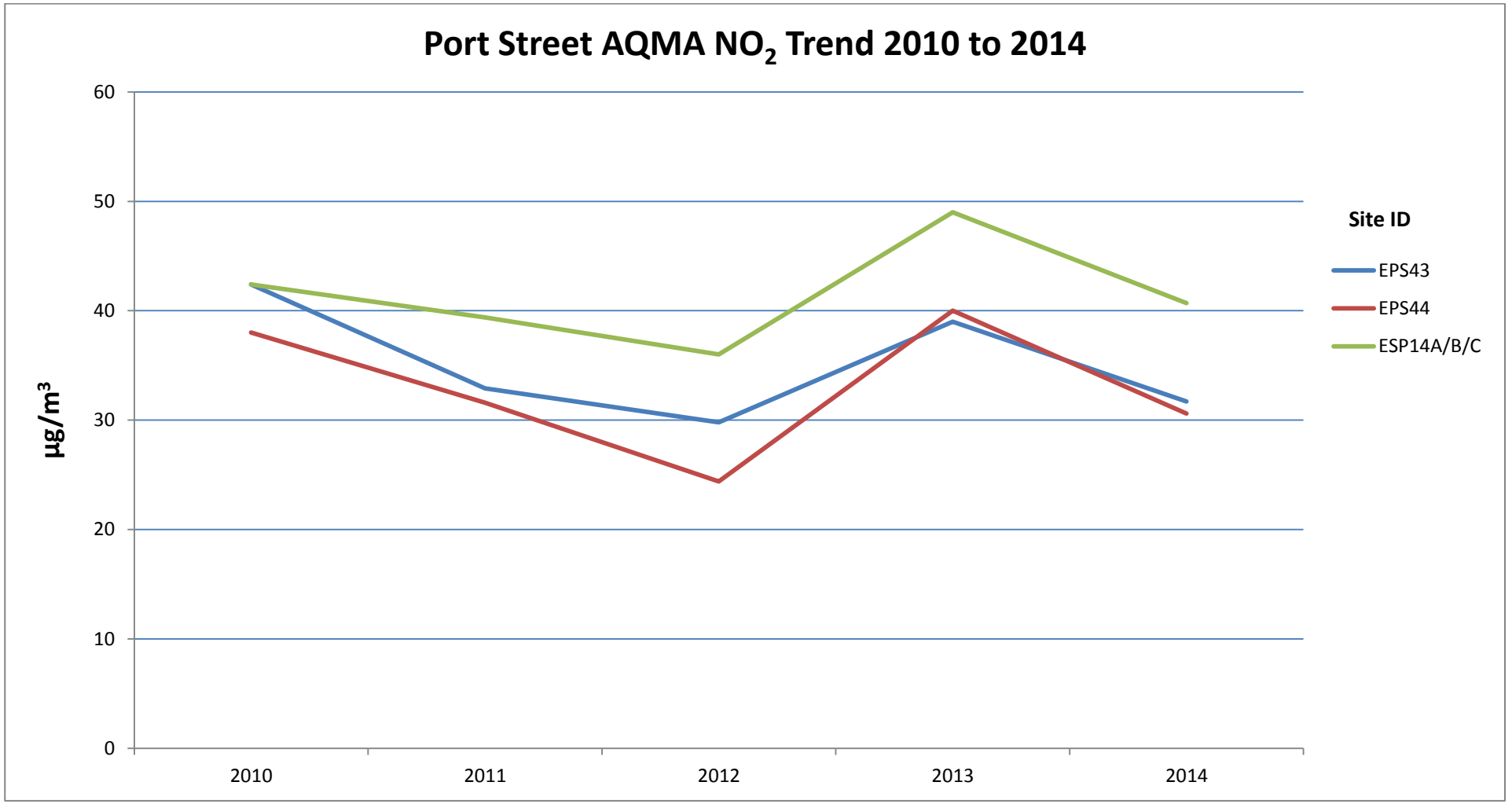


Figure 2.8 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites within Pershore, Evesham and Whittington

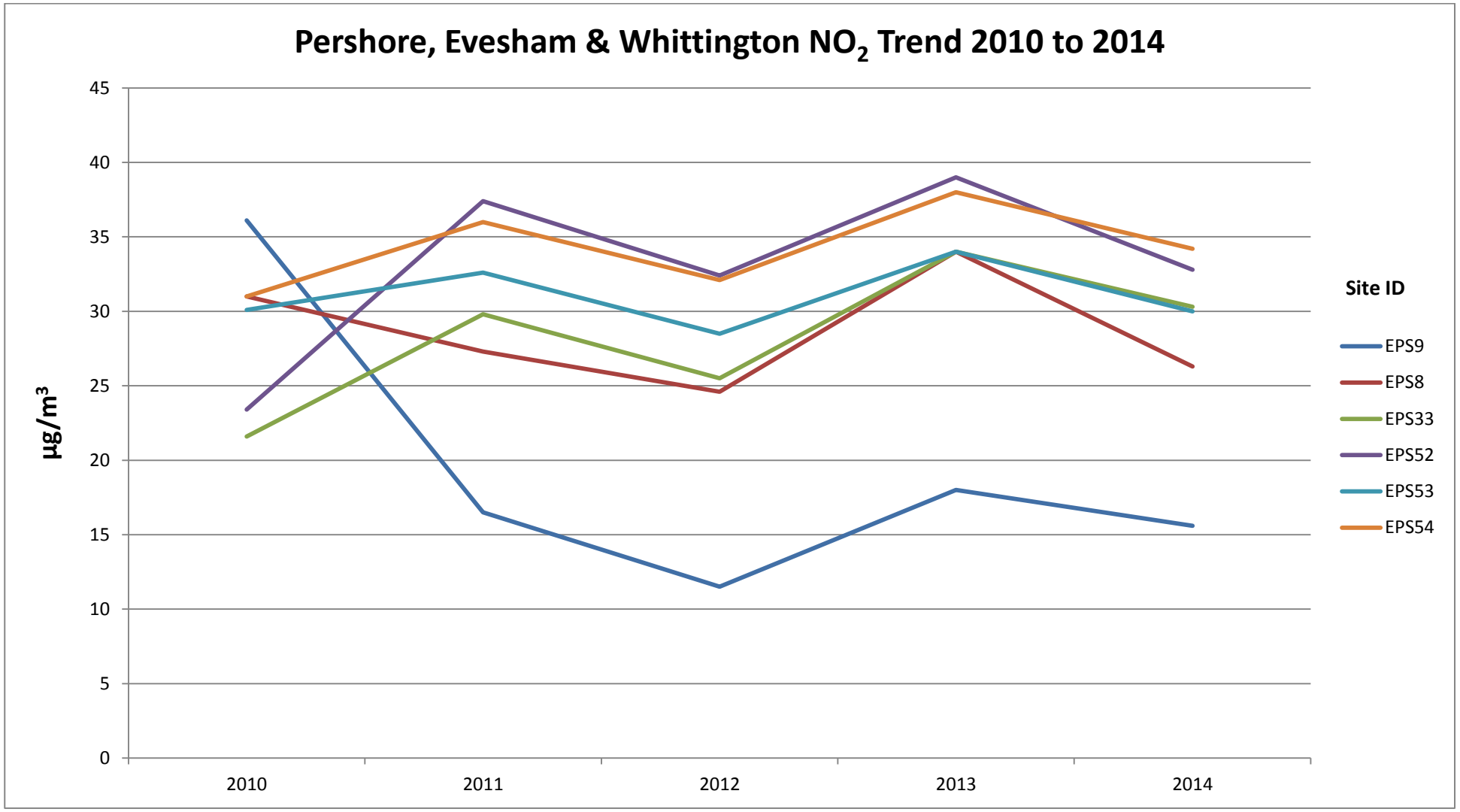
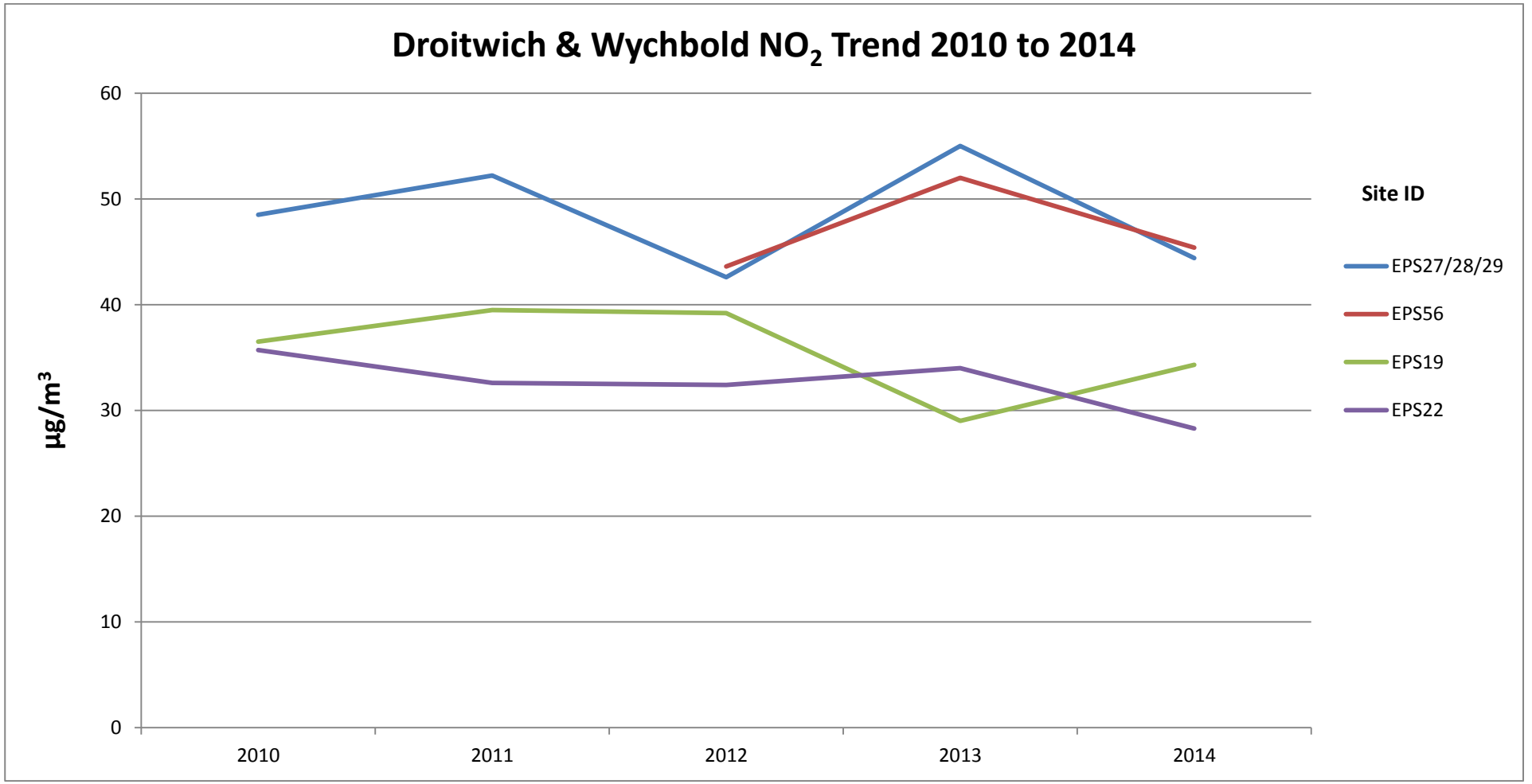


Figure 2.9 Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites within Droitwich and Wychbold



Exceedences

The 2014 monitoring results (adjusted for bias) indicate there are exceedences of the air quality objective of 40µg/m^3 for NO_2 at five locations within the District. One location is within the existing AQMA and four locations lie outside of the existing AQMA in the Worcester Road, Wychbold area. Table 2.5 below shows these five locations and the estimate of the concentration at the nearest receptor. The calculations for Table 2.5 are shown in Appendix B.

Table 2.5 Concentration of Nitrogen Dioxide at the nearest receptor

Site ID	Location	In AQMA?	Roadside Measurement (µg/m^3)	Estimation of concentration at nearest receptor (µg/m^3)
EPS14A/B/C	Port Street, Road Sign o/s Pizza Shop, Evesham	Y	**40.38(Av)**	32.9(Av)
EPS27/28/29	Worcester Rd, Wychbold	N	**44.37**	32.4
EPS56	Post Office, Worcester Road, Wychbold	N	**45.38**	**45.38**
EPS58	2 Rose Villas, Worcester Road, (Speed Limit Sign S14), Wychbold	N	**51.23**	**41.7**
EPS59	Weathervale, Worcester Rd (LP 3(3373) Jasmine Gardens Dev Sign, Wychbold	N	**57.24**	**46.2**

When the concentration at the nearest receptor calculation is used, the location within the Port Street AQMA (EPS14A/B/C) is below the air quality objective when the concentrations of the three diffusion tubes are averaged. However, the AQMA must be retained and further monitoring undertaken with a view to progressing to a Detailed Assessment and revoking the AQMA in the future.

The four locations in the Worcester Road, Wychbold area are all above the air quality objective, however one location (EPS27/28/29) falls below the air quality objective when the concentrations of the three diffusion tubes are averaged and the nearest receptor calculation is used. The three other locations remain above the air quality objective when the concentration at the nearest receptor calculation is used; therefore a Detailed Assessment for NO_2 is required within the vicinity of Worcester Road, Wychbold.

Trends

Evesham

Port Street AQMA

There were concerns raised in 2012 regarding the reliability of the 2012 monitoring data related to the bias-adjustment factor provided and confidence in the supplier of diffusion tubes at the time which was reflected by a significant rise in concentrations in 2013. The have been significant decreases in measured concentrations at the three locations in 2014 compared to 2013 and overall there is a downward trend over the five year period. The AQMA must be retained for further monitoring with a view to revoking the AQMA if the results continue to show measurements below the air quality objective.

Diffusion tube EPS33 in the High Street, Evesham shows an increase over the five year period, but remains significantly below the air quality objective.

Wychbold

Monitored concentrations over the five year period at triplicate tube location EPS27/28/29 have shown exceedences for each year, however when the fall-off with distance calculator is used the estimated NO_2 levels where relevant exposure exists, all concentrations are below the air quality objective. Diffusion tube EPS56 deployed in 2012 shows exceedences for each year since and results for the two tubes deployed in 2014 (EPS58 & EPS59) are above the air quality objective therefore Wychavon District Council will need to progress to Detailed Assessment at the Worcester Road, Wychbold location.

Pershore

Diffusion tube EPS9 showed a significant decrease in concentration between 2010 and 2011 and has remained relatively stable since. Diffusion tube EPS8 has remained stable over the five year period. Both are significantly below the air quality objective.

Droitwich

Diffusion tubes EPS19/20/21 and EPS22/23/24 were reduced from triplicate tubes to one tube each (EPS19 & EPS22) in 2014 however the trend over the five year period shows a decrease in overall concentrations. Both are significantly below the air quality objective.

Whittington

Diffusion tubes EPS52 and EPS54 have fluctuated over the five year period and EPS53 has remained stable. All are significantly below the air quality objective.

2.2.2 PM_{10}

Particulate Matter (PM_{10}) is not monitored within the Wychavon District Council area.

2.2.3 Sulphur Dioxide

Sulphur Dioxide (SO_2) is not monitored within the Wychavon District Council area.

2.2.4 Benzene

Benzene is not monitored within the Wychavon District Council area.

2.2.5 Other pollutants monitored

No other pollutants are measured within the Wychavon District Council area.

2.2.6 Summary of Compliance with AQS Objectives

Wychavon District Council has examined the results from monitoring in the District. Concentrations within the AQMA are below the air quality objective for nitrogen dioxide. The AQMA must be retained for further monitoring with a view to progressing to a Detailed Assessment and revoking the AQMA if the results continue to show concentrations below the air quality objective.

Wychavon District Council has examined the results from monitoring in the District. Concentrations outside of the AQMA are all below the air quality objective at relevant locations apart from Worcester Road, Wychbold where there is a need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Wychavon District Council has reviewed available Department for Transport Traffic Count Point data for Worcestershire and confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Wychavon District Council has reviewed available Department for Transport Traffic Count Point data for Worcestershire and confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Wychavon District Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Wychavon District Council has reviewed available Department for Transport Traffic Count Point data for Worcestershire and confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Wychavon District Council confirms that there are no new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG(09)

3.6 Roads with Significantly Changed Traffic Flows

Wychavon District Council has reviewed available Department for Transport Traffic Count Point data for Worcestershire and confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

Wychavon District Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Wychavon District Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Wychavon District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Wychavon District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m..

4.3 Ports (Shipping)

Wychavon District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Wychavon District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Wychavon District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Wychavon District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Wychavon District Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

Wychavon District Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Wychavon District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

Wychavon District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

Wychavon District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Wychavon District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The 2014 monitoring results (adjusted for bias) indicate the Port Street AQMA concentrations were below the air quality objective at all locations when the distance from road to the nearest receptor calculation was used. The AQMA must be retained and further monitoring undertaken with a view to moving to a Detailed Assessment and revocation of the AQMA in the future.

Measured concentrations at the four locations in Wychbold were all above the air quality objective, three continued to show exceedences when the distance from road to the nearest receptor calculation was used. Therefore, a Detailed Assessment for NO_2 is required within the vicinity of the Worcester Road, Wychbold.

Measured concentrations at the diffusion tube locations at Pershore, Droitwich and Whittington have remained stable or shown decreases over the last five years and all are below the air quality objective.

8.2 Conclusions from Assessment of Sources

Wychavon District Council's assessment of sources has not identified any likely exceedences from new or significantly changed local developments.

8.3 Proposed Actions

Wychavon District Council confirms that existing AQMAs at Port Street, Evesham will be retained and further monitoring undertaken with a view to moving to a Detailed Assessment and revocation of the AQMA in the future. The Council has identified a requirement to move to Detailed Assessment within the vicinity of the Worcester Road, Wychbold. No requirement to proceed to Detailed Assessment for any other pollutants has been identified.

Wychavon District Council will continue to monitoring nitrogen dioxide levels across its area and confirms that it will continue to progress the implementation of the Air Quality Action Plan for Worcestershire. An annual report on progress, as required, will be submitted to Defra in 2016.

9 References

1. DEFRA (2009) ‘Local Air Quality Management Technical Guidance LAQM TG.(09)’
2. DEFRA (2015) ‘National Diffusion Tube Bias Adjustment Factor Spreadsheet v.03/15’
3. Department for Transport ‘Traffic Count Points for Worcestershire’ accessed 23rd November 2015
4. EPUK & IAQM (2015) ‘Land-Use Planning & Development Control: Planning For Air Quality v1.1’
5. NO_2 Distance from roads calculator used for regression of values available at: http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html
6. Wychavon District Council l (2010) ‘2010 Air Quality Progress Report for Wychavon District Council’
7. Worcestershire Regulatory Services (2011) ‘2011 Air Quality Progress Report for Wychavon District Council’
8. Worcestershire Regulatory Services (2012) ‘2012 Air Quality Updating and Screening Assessment for Wychavon District Council’’
9. Worcestershire Air Quality Action Plan September, 2013
10. Worcestershire Regulatory Services (2013) ‘2013 Air Quality Progress Report for Wychavon District Council’’
11. Worcestershire Regulatory Services (2014) ‘2014 Air Quality Progress Report for Wychavon District Council’

Appendices

Appendix A: QA/QC Data

Appendix B: Estimation of concentrations at nearest receptor calculations

Appendix C: 2014 Full Diffusion Tube Results

Appendix A: QA/QC Data

Factor from Local Co-location Studies

No local co-location studies for nitrogen dioxide have been undertaken in 2014.

Diffusion Tube Bias Adjustment Factors

The following UKAS accredited company provides Wychavon District Council with nitrogen dioxide diffusion tubes and analysis:

Somerset Scientific Services,
The Crescent
County Hall
Taunton
TA1 4DY

Tel: 0300 123 2224

Email: somersetscientific@somerset.gov.uk

The 20% Triethanolamine (TEA) / De-ionised Water preparation method is used.

The bias adjustment factor applied to the results in 2014 was 0.89 (Spreadsheet Version No. 03/15) which were derived from the national studies. Results from all sites for 2014 are shown in Appendix C.

Short-term to Long-term Data Adjustment

No annualisation of 2014 data in accordance with Box 3.2 of TG(09) was required.

QA/QC of Automatic Monitoring

No Automatic Monitoring Data is available for 2014.

QA/QC of Diffusion Tube Monitoring

Under the WASP Scheme Somerset Scientific Services performed 100% satisfactory for all periods in 2014. Tube precision was generally ‘Good’ throughout 2014.

Appendix B: Estimation of concentrations at nearest receptor calculations

Results from monitoring locations demonstrating exceedences of NO_2 objective or borderline sites have been estimated to nearest receptor location, where appropriate, using the NO_2 distance from road calculator tool available from Defra. A copy of each calculation is provided below and summarised in Table B.1

Table B.1 Concentration of Nitrogen Dioxide at the nearest receptor

Site ID	Location	In AQMA?	Roadside Measurement (µg/m^3)	Estimation of concentration at nearest receptor (µg/m^3)
EPS14A/B/C	Port Street, Road Sign o/s Pizza Shop, Evesham	Y	**40.38(Av)**	32.9(Av)
EPS27/28/29	Worcester Rd, Wychbold	N	**44.37**	32.4
EPS56	Post Office, Worcester Road, Wychbold	N	**45.38**	**45.38**
EPS58	2 Rose Villas, Worcester Road, (Speed Limit Sign S14), Wychbold	N	**51.23**	**41.7**
EPS59	Weathervale, Worcester Rd (LP 3(3373) Jasmine Gardens Dev Sign, Wychbold	N	**57.24**	**46.2**

Figure B.1 Location EPS14A/B/C NO_2 Distance from road calculation

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality Consultants

Enter data into the yellow cells

Step 1	**How far from the KERB was your measurement made (in metres)?**	(Note 1)	**0.3**	metres
Step 2	**How far from the KERB is your receptor (in metres)?**	(Note 1)	**1.7**	metres
Step 4	**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)	**13.91**	µg/m^3
Step 3	**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)	**40.38**	µg/m^3
Result	**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)	**32.9**	µg/m^3

Note 1: This should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.2 of LAQM TG(08). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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Figure B.2 Location EPS27/28/29 NO_2 Distance from road calculation

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality Consultants

Enter data into the yellow cells

Step 1	**How far from the KERB was your measurement made (in metres)?**	(Note 1)	**2.5**	metres
Step 2	**How far from the KERB is your receptor (in metres)?**	(Note 1)	**15.5**	metres
Step 4	**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)	**17.78**	µg/m^3
Step 3	**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)	**44.37**	µg/m^3
Result	**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)	**32.4**	µg/m^3

Note 1: This should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.2 of LAQM TG(08). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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Figure B.3 Location EPS58 NO_2 Distance from road calculation

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality Consultants

Enter data into the yellow cells

Step 1	**How far from the KERB was your measurement made (in metres)?**	(Note 1)	**3**	metres
Step 2	**How far from the KERB is your receptor (in metres)?**	(Note 1)	**9**	metres
Step 4	**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)	**17.78**	µg/m^3
Step 3	**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)	**51.23**	µg/m^3
Result	**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)	**41.7**	µg/m^3

Note 1: This should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.2 of LAQM TG(08). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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Figure B.4 Location EPS59 NO_2 Distance from road calculation

This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality Consultants

Enter data into the yellow cells

Step 1	**How far from the KERB was your measurement made (in metres)?**	(Note 1)	**2.4**	metres
Step 2	**How far from the KERB is your receptor (in metres)?**	(Note 1)	**7.5**	metres
Step 4	**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)	**17.78**	µg/m^3
Step 3	**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)	**57.24**	µg/m^3
Result	**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)	**46.2**	µg/m^3

Note 1: This should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.2 of LAQM TG(08). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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Appendix C: 2014 Full Diffusion Tube Results

Table C.1 Monthly diffusion tube results for nitrogen dioxide in 2014 (µg/m^3)

Tube ref	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Bias adj	Adj Average	No of Months capture
Pershore																	
EPS9	St. Andrews Road	18.62	14.11	19.43	29.74	10.16		9.01	10.73	16.66	15.51	26.18	22.14	17.48	0.89	15.56	11
EPS8	40 Bridge Street	30.23	30.57	34.46	27.41	24.47	26.13	25.13	27.73	28.46	27.57	36.10	36.92	29.60	0.89	26.34	12
Evesham																	
EPS43	Long Stay opp Cinema	37.21			37.03	34.02	30.53	30.86	31.91	36.82	34.90	41.90	40.64	35.58	0.89	31.67	10
EPS44	Camera Post opp 33	39.78	37.22	35.51	33.64	33.47	33.47	27.67	31.97	34.57	25.94	38.83	40.41	34.37	0.89	30.59	12
EPS14	Port Street, Road Sign o/s Pizza Shop	57.23	52.44	49.60	42.28	45.33	35.53	39.29	39.83		49.16		50.61	**46.13**	0.89	**41.06**	10
EPS14a	Port Street, Road Sign o/s Pizza Shop	55.66	50.30			42.55	38.31	35.80	39.54	40.28	46.12		51.71	**44.47**	0.89	39.25	9
EPS14b	Port Street, Road Sign o/s Pizza Shop	63.95	48.61	50.19	41.74	42.86	39.38	34.71	40.89	40.71	50.18		51.56	**45.89**	0.89	**40.84**	11
EPS60	Corner of Rynal st 7 De La Bere Close SL2	25.19	20.82	23.12	15.86	13.06	11.32	10.10		16.96	21.66	31.16	29.11	19.85	0.89	17.67	11
EPS61	1 - 6 The old Dairy, Swan Lane	44.17	39.82	35.98	29.41	29.84	27.10	19.46	31.44	29.05	38.51	35.67	42.71	33.60	0.89	29.90	12
EPS33	High Street opp One Stop Shop	41.41	34.12	38.14	35.24	31.20	26.08	22.80	24.76	34.62	37.66	45.49	37.03	34.05	0.89	30.30	12
EPS62	Bengal Dreams, no 53 High Street	33.48	33.28	37.32	33.94	20.09	31.15	32.02	36.11	34.95	41.39		48.04	34.71	0.89	30.89	11
Wychbold																	
EPS27	Worcester Road (1)	38.06	63.06	58.70	47.70			40.77	47.30	45.16	52.46	52.56	33.60	**47.94**	0.89	**42.67**	10
EPS28	Worcester Road (2)	56.48	56.96	57.57	49.21	48.83	41.16	38.07	44.37	44.96	49.07	50.33	41.29	**48.19**	0.89	**42.89**	10
EPS29	Worcester Road (3)	57.26	64.59	68.68	52.68	49.30	45.68	41.81	45.97	50.15	52.57	53.28	59.20	**53.43**	0.89	**47.55**	12

Tube ref	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average	Bias adj	Adj Average	No of Months capture
EPS56	Post Office, Worcs Rd	51.03	54.07	58.67	44.50	47.79	47.68	43.93	47.30	48.02	53.80	56.14	58.93	**50.99**	0.89	**45.38**	12
EPS58	2 Rose Villas, Worcs Rd (Speed Limit sign S14)		38.54	75.04	59.77	81.31	68.81		59.85	65.79	79.35		50.44	**64.32**	0.89	**57.24**	9
EPS59	Weathervale, Worcs Rd, Jasmine Gardens Dev Sign	70.20	50.37	68.95	56.75		51.24	34.45	40.86	56.52	69.36	68.29	66.25	**57.56**	0.89	**51.23**	11
Droitwich																	
EPS19	Mayflower Road (1)	50.83	43.34	54.19	44.33	35.41	30.69	29.11	22.72	38.10	36.73	37.91		38.49	0.89	34.26	11
EPS22	Tagwell Close (LP 4) (1)	38.18	31.84	47.32	29.69	28.02	32.45	23.08	16.73	36.31	25.58	45.39	27.08	31.81	0.89	28.31	12
Whittington																	
EPS52	The Bungalow	40.97	42.52	42.28	39.07	32.91	33.39	15.84	33.70	34.78	41.75	41.18	43.91	36.86	0.89	32.81	12
EPS53	Hill View Cottage	42.10	38.97	37.87	32.71	30.26	28.63	15.82	31.70	30.15	32.36	46.60	37.35	33.71	0.89	30	12
EPS54	Green Rise	48.26	43.03	43.47	37.70	29.20	28.15	23.59	35.41	34.05	41.34	50.96	46.26	38.45	0.89	34.22	12