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Regulatory Services

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2015 Updating and Screening Assessment for Malvern Hills District Council

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

Decembr 2015



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Executive Summary

This report represents the findings of the Malvern Hills District Council's Updating and Screening Assessment (USA) of air quality within the district. The USA evaluates new and changed sources to identify those that may give rise to a risk of an exceedence of an air quality objective. Results from the calendar year 2014 monitoring within the district are presented and evaluated in relation to the objectives: the likelihood of an exceedence at relevant locations is discussed, as is the requirement to proceed to Detailed Assessment or other actions.

Monitoring in the Malvern Hills district takes place for nitrogen dioxide only and consists of a network of NO₂ diffusion tubes.

Measured concentrations across the district were below the annual mean objective for nitrogen dioxide for the calendar year 2014. UP3 located in Upton upon Severn had been highlighted as a potential concern within the last Progress Report as monitoring at this site had exceeded the annual mean objective. However UP3 was a newly monitored location starting in July 2013 and therefore represented only 50% data capture that was annualised. A full calendar year of data has now been obtained for this location, the result of which falls below the objective. Malvern Hills District Council will continue to monitor nitrogen dioxide levels at this location throughout 2015 in order to obtain a fully robust dataset.

Long-term trend data for the five year period 2010-2014 is limited as some monitoring points have been relocated during that time period. A general decrease in concentrations between 2013 and 2014 can be observed across the board.

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1 Introduction

1.1 Description of Local Authority Area

Lying on the western edge of Worcestershire and south of the West Midlands region, Malvern Hills district covers 577km². The area is dominated by the Malvern Hills, designated as an Area of Outstanding Natural Beauty, which, coupled with the rivers Severn and Teme that flow through the district, provide a quality natural environment attracting over a million visitors every year.

The district is mainly rural with a population of 74,600 based on the 2011 census statistics centred around three main centres: Malvern, in the centre of the district, is the main town and contains the majority of the district's industry; Tenbury Wells in the northwest grows hops, apples and soft fruits; Upton upon Severn in the southeast of the district is a tourist and marina town. In terms of employment, approximately 72% of employed residents are employed within the services sector.

Road traffic emissions is the principle source of air pollution within the Malvern Hills area, with nitrogen dioxide being the most significant pollutant of concern. Whilst there are two motorways which pass through the district, the M5 and the M50, there is no relevant exposure nearby. The principal exposure to road traffic emissions lies within Malvern itself and Upton town centre.

A map of the district of Malvern and principle road network roads is shown below in Figure 1.

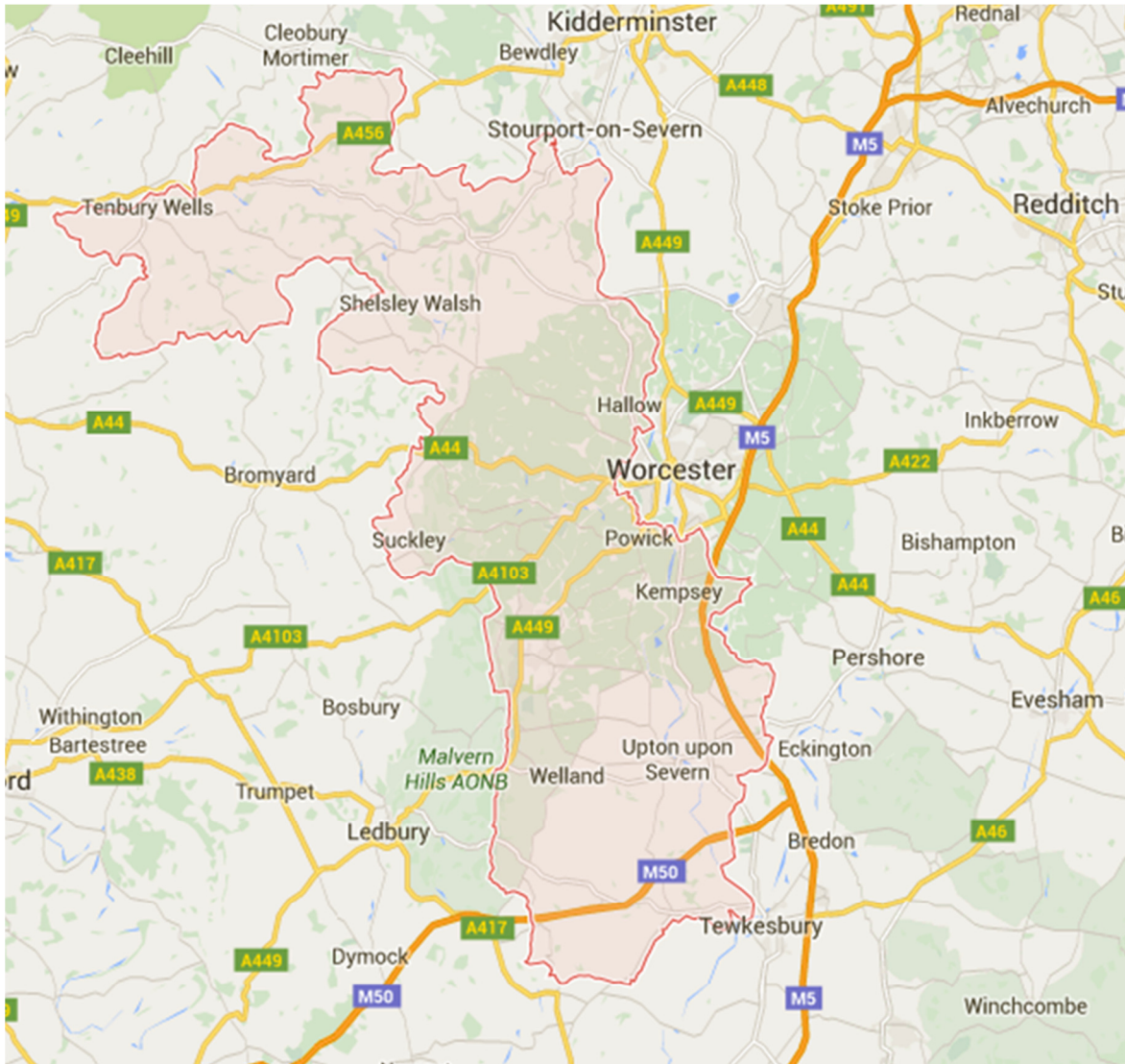


Figure 1 Map of Malvern Hills District and major roads

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.

Malvern Hills District Council

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) and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (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 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM ₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

The Council has been reviewing air quality annually since 1998, producing Progress Reports or Updating and Screening Assessments as required by Defra.

The principal source of air pollution within the Malvern Hills district is related to road traffic emissions, and the principal pollutant of concern is nitrogen dioxide. This has been measured using diffusion tubes since 2001 at locations where, primarily, there is queuing or slow-moving traffic combined with relevant exposure in close proximity.

To date, there has been only one recorded exceedence of the air quality objective for nitrogen dioxide at the identified worst-case locations. This was recorded at UP3 in the calendar year 2013. This was a new location however, first monitored in July 2013 and the exceedence was based on the annualisation of 6 months monitoring data. The 2014 Progress Report concluded that further monitoring was considered necessary at this location to obtain a more reliable dataset which has so far shown the location to fall below the annual mean objective.

Air quality across the district is considered to be good. Since 2001 there have been no significant alterations to road layouts or traffic flows which has necessitated any significant changes to the existing monitoring locations.

Table 1.2 Summary of Previous Review and Assessment

Date	Report	Outcome
Dec 2014	Annual Progress Report	One exceedance of objective identified (UP3) but this was based on annualisation of six months data capture. Further monitoring required to provide a robust dataset.

Malvern Hills District Council

Nov 2013	Annual Progress Report	No exceedances identified
July 2012	Updating and Screening Assessment	No exceedances identified. No requirement to proceed to detailed assessment.
April 2011	Annual Progress Report	No exceedances identified
April 2010	Annual Progress Report	No exceedances identified

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

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

2.1.2 Non-Automatic Monitoring Sites

During 2014, Malvern Hills District Council monitored annual mean nitrogen dioxide concentrations using passive diffusion tubes at eight locations across its area. This was an increase of one location from the seven monitored in 2013. A new monitoring location was established near to the Old Post Office in Powick (M11) which is located on the side of the busy A449 (Malvern to Worcester Road).

Figure 2.1 through to Figure 2.4 identify the location of all monitoring points referred to in this report. Table 2.1 provides details of each of the monitoring sites including co-ordinates.

Results of non-automatic monitoring of nitrogen dioxide diffusion tubes for 2014 are presented in section 2.2. The results have been adjusted for bias using a national correction factor derived from Defra of 0.89.

QA/QC information on the company and methods used is detailed in Appendix A.

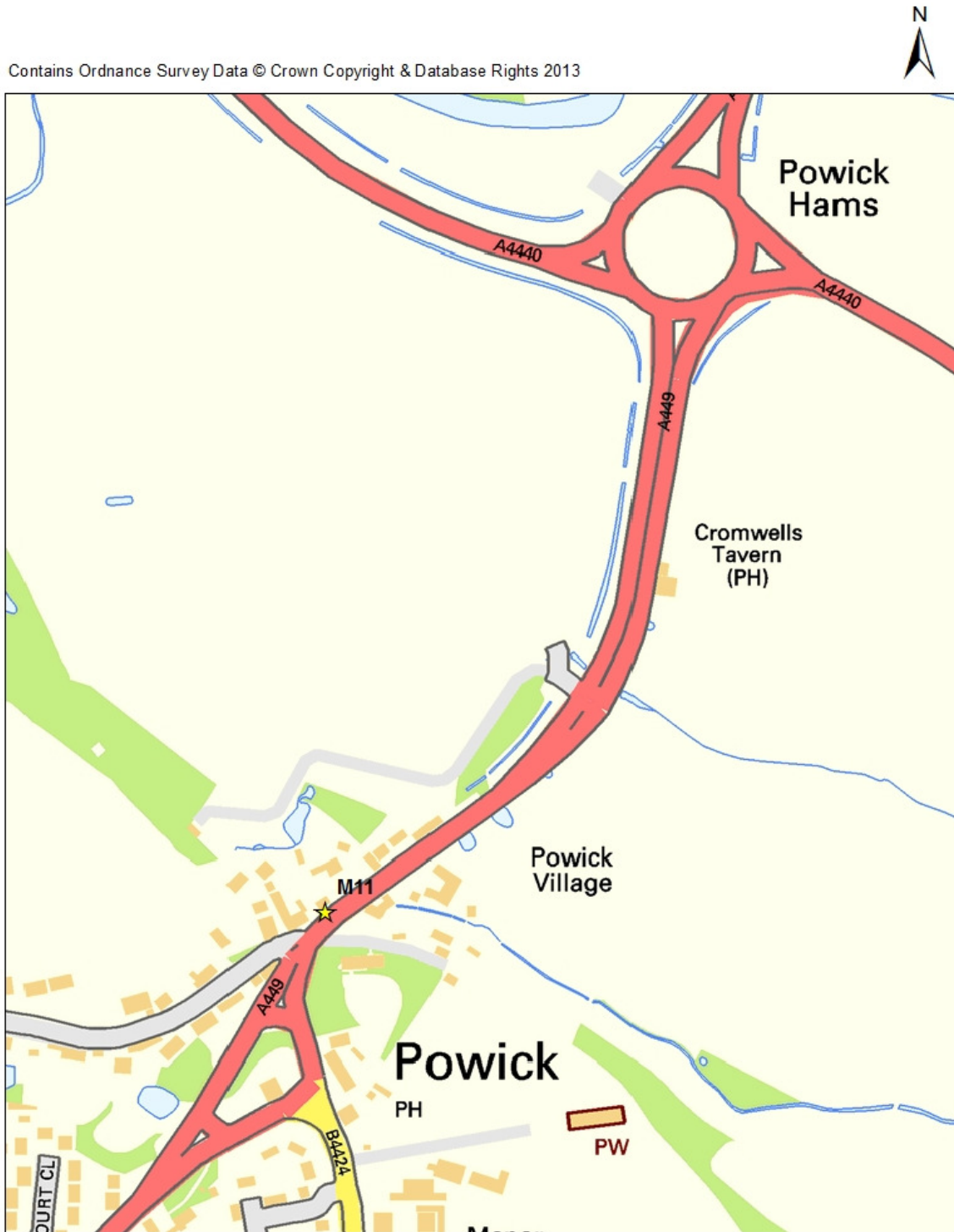


Figure 2.1 Map of Non-Automatic Monitoring Sites - Powick

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Figure 2.2 Map of Non-Automatic Monitoring Sites - Upton Upon Severn

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Figure 2.3 Map of Non-Automatic Monitoring Sites - Malvern

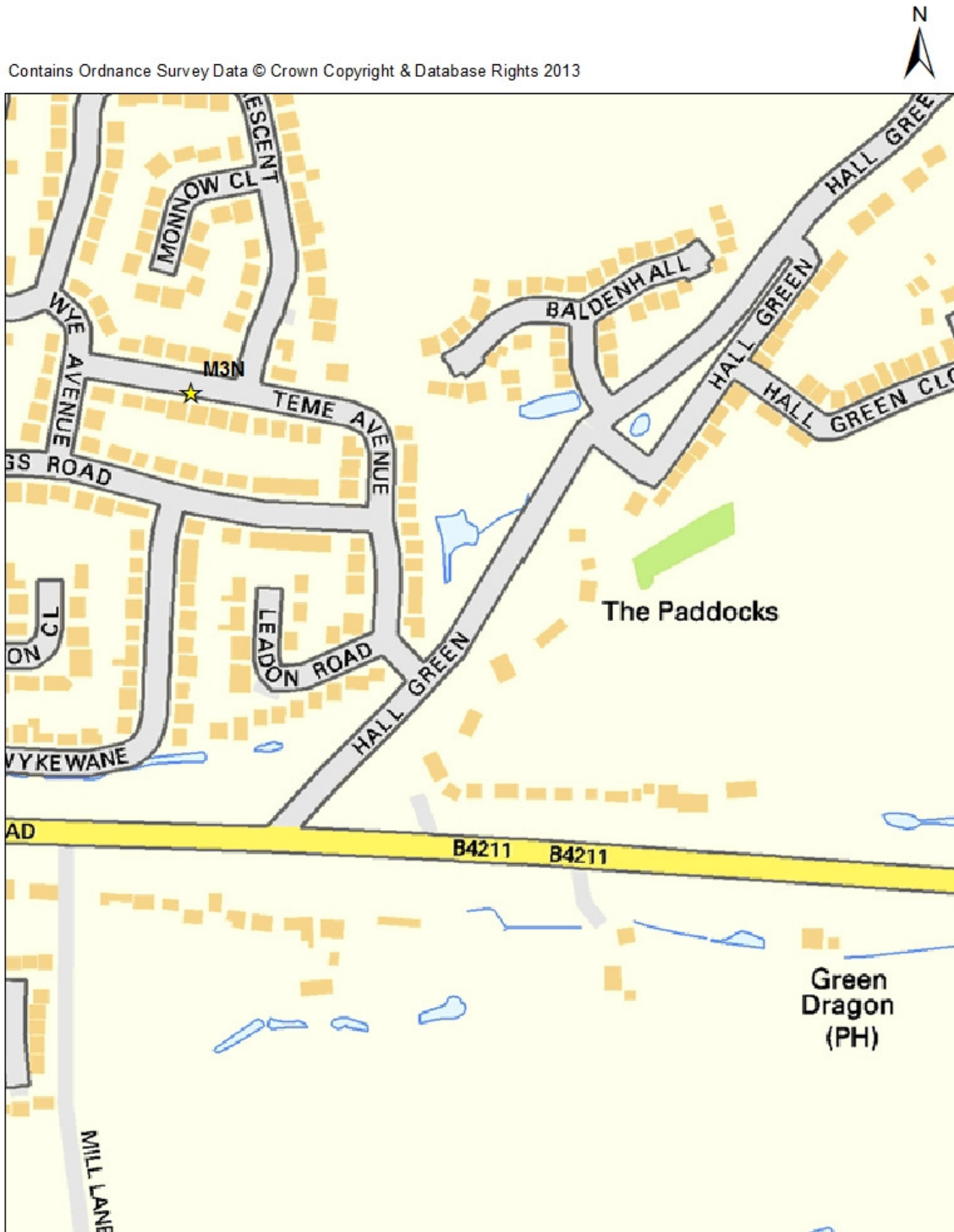


Figure 2.4 Map of Non-Automatic Monitoring Sites - Teme Avenue, Malvern (Background Location)

Table 2.1 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?
M3N	Teme Avenue, Malvern	Urban Background	379790	245677	NO ₂	N	N	Y (7m)	1	N
M5N	Richmond Road, Malvern	Roadside (junction)	378520	247753	NO ₂	N	N	Y (0.5m)	4.5	Y
M9N	188 Worcester Road, Malvern	Roadside	378771	247926	NO ₂	N	N	Y (0m)	4	Y
M10N	Church Street, Malvern	Roadside	377657	245927	NO ₂	N	N	Y (2m)	1	N
M11	Old Post Office, Powick	Roadside	383231	251684	NO ₂	N	N	Y (0m)	1.6	N
UP1	2 Old Street, Upton upon Severn	Roadside	385171	240555	NO ₂	N	N	Y (0m)	2	Y
UP2	Junction London Lane/High Street Upton upon Severn	Roadside	385201	240646	NO ₂	N	N	Y (0m)	1.5	N
UP3	15 Old Street, Upton upon Severn	Roadside (relevant)	385157	240508	NO ₂	N	N	Y (0m)	1.3	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

There are no automatic monitoring locations within the Malvern Hills District Council area.

Diffusion Tube Monitoring Data

Measured concentrations at the eight diffusion tube monitoring sites in 2014 are presented in Table 2.2. Concentrations since 2002, at all sites where monitoring data is available, are presented in Table 2.3.

The full dataset of monthly results for 2014 and annual mean adjusted for bias are shown in Appendix B.

Annual mean concentrations of nitrogen dioxide ranged from 12.5 µg/m³ at M3N – Teme Avenue, Malvern, to 35.1 µg/m³ at UP3 – 15 Old Street, Upton upon Severn.

Measured concentrations in 2014 were well below the annual mean objective at all monitoring locations.

Concentrations have reduced in 2014 when compared to 2013 results at all monitoring locations where previous data is available. Figure 2.5 shows a comparison of 2014 data with that of previous years. Overall concentrations are shown to have remained reasonable stable at these locations.

Table 2.2 Results of Nitrogen Dioxide Diffusion Tubes in 2014 (Bias Adjusted)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	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)
								2014 ($\mu\text{g}/\text{m}^3$)
M3N	Teme Avenue, Malvern	Urban Background	N	N	12	N	N	12.5
M5N	Richmond Road, Malvern	Roadside (junction)	N	Triplicate	11	N	N	27.1
M9N	188 Worcester Road, Malvern	Roadside	N	Triplicate	12	N	N	25.7
M10N	Church Street, Malvern	Roadside	N	Triplicate	12	N	N	26.2
M11	Old Post Office, Powick	Roadside	N	N	11	N	N	31.8
UP1	2 Old Street, Upton upon Severn	Roadside	N	N	12	N	N	31.7
UP2	Junction London Lane/High Street Upton upon Severn	Roadside	N	N	11	N	N	24.1
UP3	15 Old Street, Upton upon Severn	Roadside (relevant)	N	N	12	n	N	35.1

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			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)
M3N	Urban Background	N	15.7	10.6	9.6	14	12.5
M5N	Roadside (junction)	N	31.3	26.8	22.2	33	27.1
M9N	Roadside	N	-	-	21.3	31	25.7
M10N	Roadside	N	-	-		31.5	26.2
M11	Roadside	N	-	-	-	-	31.8
UP1	Roadside	N	-	-	36	38	31.7
UP2	Roadside	N	-	-	21.8	31	24.1
UP3	Roadside (relevant)	N	-	-	-	44.6	35.1

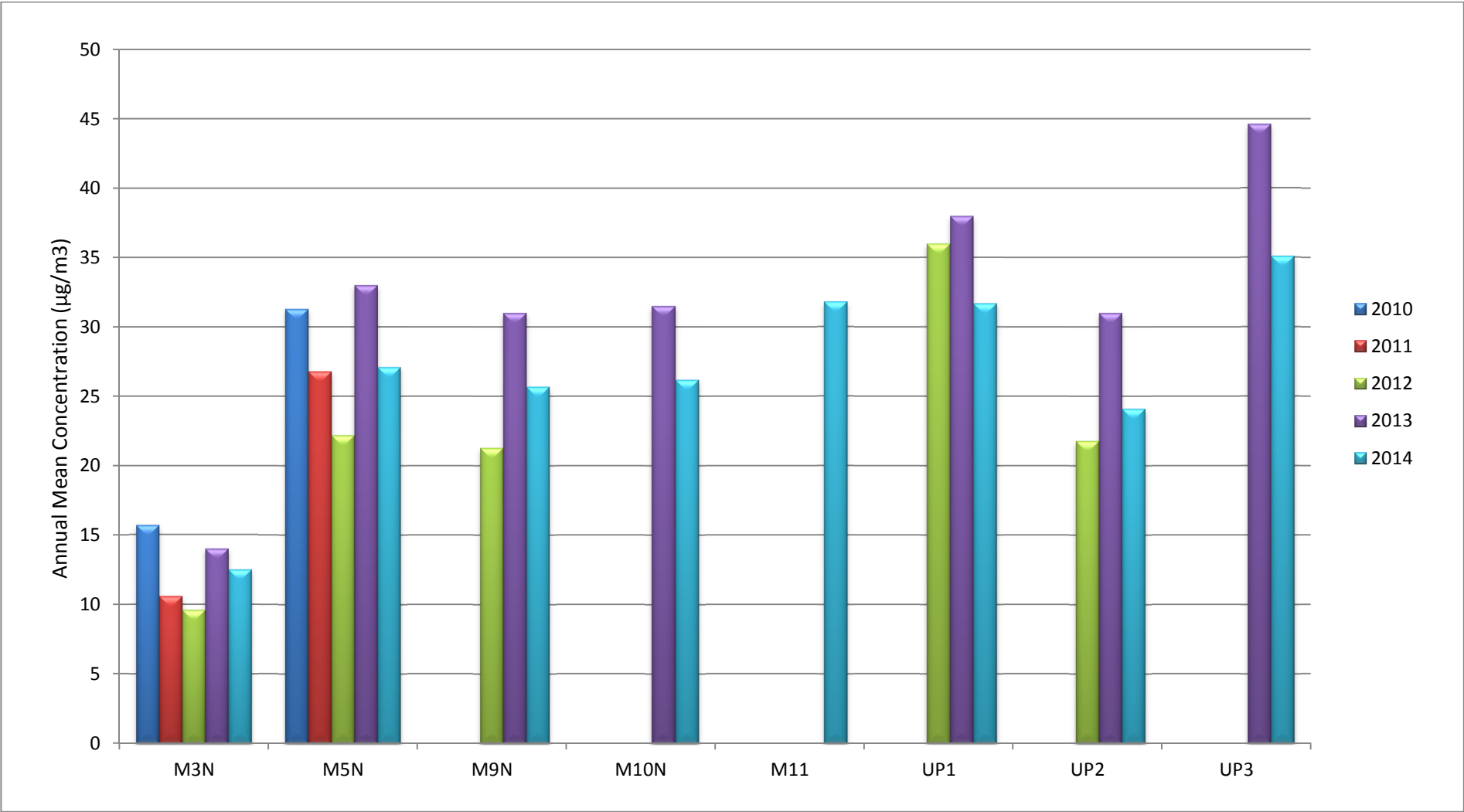


Figure 2.5 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites

2.2.2 PM₁₀

PM10 is not monitored within the Malvern Hills District Council area.

2.2.3 Sulphur Dioxide

Sulphur Dioxide is not monitored within the Malvern Hills District Council area.

2.2.4 Benzene

Benzene is not monitored within the Malvern Hills District Council area.

2.2.5 Other pollutants monitored

No other pollutants are measured within the Malvern Hills District Council area.

2.2.6 Summary of Compliance with AQS Objectives

Malvern Hills District Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

The criteria for assessing narrow congested streets are set out in Section A.1 of Box 5.3, LAQM.TG(09). The 2012 Updating and Screening Assessment did not identify any locations requiring assessment, and this remains the case.

Malvern Hills District Council 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

The criteria for assessing busy streets relevant for the hourly nitrogen dioxide objective are set out in Section A.2 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. The 2012 Updating and Screening Assessment did not identify any locations requiring assessment, and no new locations have subsequently been identified.

Malvern Hills District Council 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.

The criteria for assessing roads with high flows of buses and / or HGVs are set out in Section A.3 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of

Review and Assessment. The 2012 Updating and Screening Assessment did not identify any locations requiring assessment, and no new locations have subsequently been identified.

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

3.4 Junctions

The criteria for assessing junctions are set out in Section A.4 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. The 2012 Updating and Screening Assessment did not identify any junctions requiring assessment. No new junctions have subsequently been identified.

Malvern Hills confirms that there are no new/newly identified busy junctions/busy road.

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

The criteria for assessing new roads are set out in Section A.5 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. No major new roads have been constructed or proposed since the previous Updating and Screening Assessment was completed.

Malvern Hills District Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

The criteria for assessing roads with significant increases in traffic flows are set out in Section A.6 of Box 5.3, LAQM.TG(09).

A4440 Worcester Southern Link Road Dualling Phase 3

The A4440 Southern Link Road forms a key part of Worcestershire's Primary Road Network and links the Strategic Road Network (M5, J7) and the eastern side of Worcester City with the A38, A449, A4103 and A44 to the west. The Southern Link Road is one of only two road crossings of the River Severn in Worcester and is an important bypass around the south of the city of Worcester providing a key link to west Worcestershire including the Malvern Hills District.

A scheme for a third phase of improvements to the Southern Link Road to address significant constraint to the performance of the transport network in Worcester City and wider South Worcestershire aligned with supporting economic growth in Worcestershire and the Local Transport Plan, Worcester Transport Strategy, the South Worcester Development Plan and associated Infrastructure Delivery Plan is currently underway and due to be completed by 2018.

The scheme bordering the eastern central part of MHDC includes:

- Dualling Broomhall Way
- Enlarging Norton Junction
- Dualling Crookbarrow Way between Norton and Whittington Junctions.

The scheme is predicted to lead to an increase in traffic of approximately 9000 vehicles per day (a 68% increase in AADT on 2014 figures) on the A4440 (Broomhall Way and Crookbarrow Way) on the eastern border of Malvern Hills District.

An Air Quality Assessment was undertaken by consultants for Worcestershire County Council and reviewed by WRS in 2014. The assessment does not predict any exceedances of the air quality objective in the Malvern Hills District area as a result of the road improvements and there is no need to move to detailed assessment at this time.

It should be noted that a fourth and final phase of improvements is proposed that includes parts of the Southern Link Road within the Malvern Hills district area.

Proposals include:

- Dualling of the carriageway between The Ketch and Powick Roundabouts including Carrington Bridge
- Enhancements to the Powick Roundabout.

WCC are currently awaiting the outcome of a bid for funding. Should these works go ahead the local impact on air quality will be considered within future rounds of annual reporting to Defra.

Malvern Hills District Council has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

The criteria for assessing bus and coach stations are set out in Section A.7 of Box 5.3, LAQM.TG(09). Previous Updating and Screening Assessments have concluded that there are no bus stations within the District with more than 2500 daily movements or with relevant exposure within 10m. Malvern Hills District Council has confirmed that there have been no significant changes.

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

4 Other Transport Sources

4.1 Airports

The criteria for assessing airports are set out in Section B.1 of Box 5.4, LAQM.TG(09). There are no airports within the Malvern Hills District.

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

4.2 Railways (Diesel and Steam Trains)

The criteria for assessing railways (diesel and steam trains) are set out in Section B.2 of Box 5.4, LAQM.TG(09).

4.2.1 Stationary Trains

The 2012 Updating and Screening Assessment did not identify any locations where diesel locomotives were stationary for more than 15 minutes on a regular basis. There has been no change to this position.

Malvern Hills 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

None of the rail lines identified in Table 5.1 of LAQM.TG(09) as carrying large numbers of movements of diesel locomotives travel through the Malvern Hills area.

Malvern Hills 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)

The criteria for assessing ports (shipping) are set out in Section B.3 of Box 5.4, LAQM.TG(09). Malvern Hills is located inland and there is no significant shipping to consider.

Malvern Hills 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

The criteria for assessing industrial installations are set out in Section C.1 of Box 5.5, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. There have been no new industrial installations identified within the Malvern Hills District Council area since the 2012 USA was completed.

Malvern Hills District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area.

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

None of the industrial installations identified in previous Updating and Screening Assessments have substantially increased emissions and no new exposure has been introduced nearby.

Malvern Hills 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

The criteria for assessing industrial installations are set out in Box 5.5, section C.1 of LAQM.TG(09). There are no new or significantly changed industrial installations within Malvern Hills District since the last USA.

Malvern Hills 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

The criteria for assessing major fuel (petrol) storage depots are set out in Section C.2 of Box 5.5, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. No such locations have been identified.

There are no major fuel (petrol) storage depots within the Malvern Hills District Council area.

5.3 Petrol Stations

The criteria for assessing petrol stations are set out in Section C.3 of Box 5.5 LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Malvern Hills District Council confirmed in the 2012 USA that there are no petrol stations meeting the criteria requiring assessment. Since then no new petrol stations have been installed.

Malvern Hills District Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

The criteria for assessing poultry farms are set out in Section C.4 of Box 5.5 LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Malvern Hills District Council confirmed in the 2012 USA that there were no poultry farms meeting the criteria requiring assessment. No new installations have been identified.

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

The criteria for assessing biomass combustion (individual installations) are set out in Section D1a of Box 5.8, TG(09). Malvern Hills District Council has not identified any new biomass boilers between 50kW and 20MW since the 2012 Updating and Screening Assessment was produced.

Malvern Hills District Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

The criteria for assessing biomass combustion (combined impacts) are set out in Section D.1b of Box 5.8, LAQM.TG(09). No significant combined impacts have been identified since the previous Updating and Screening Assessment was undertaken in 2012.

Malvern Hills District Council confirms that there are no significant combined impacts from biomass combustion in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The criteria for assessing domestic solid-fuel burning are set out in Section D.2 of Box 5.8, LAQM.TG(09) and are unchanged from previous Review and Assessments. The 2012 Updating and Screening Assessment concluded that there were no areas of significant domestic coal or smokeless fuel burning. There has not been a significant increase in domestic solid-fuel burning within the area since that time.

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

7 Fugitive or Uncontrolled Sources

The criteria for assessing fugitive or uncontrolled sources are set out in Section E.1 of Box 5.10, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. The 2012 USA concluded that there were no potential sources of fugitive dust within the Malvern Hills District area.

No new potential fugitive or uncontrolled sources have been identified.

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

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Concentrations of nitrogen dioxide were measured at eight locations within the Malvern Hills District Council area. All of the measured locations were well below the annual mean objective in 2014. Available long term trend data shows that concentrations have remained at similar levels in recent years.

The 2014 Progress Report identified exceedances of the objective at UP3 however this was based on six months monitoring data that was annualised. The report recommended that further monitoring be undertaken at that location to provide a full robust dataset. A full calendar year of data has now been obtained for UP3 the result of which falls well below the objective for Nitrogen Dioxide. Further monitoring will be continued at this location throughout 2015 to further inform the dataset.

A rationalisation of monitoring locations within the Malvern Hills District Council area was carried out in early 2015. As a result of this rationalisation all eight locations were retained from the previous year.

8.2 Conclusions from Assessment of Sources

The Updating and Screening Assessment has not identified any significant changes to emission sources that would lead to deterioration in air quality within the Malvern Hills District Council. There have been no new or significantly altered industrial processes, road, transport, commercial, domestic or fugitive sources of emissions requiring a more Detailed Assessment to be undertaken.

8.3 Proposed Actions

Malvern Hills District Council will continue to monitor nitrogen dioxide levels at relevant locations throughout the area. A full rationalisation of tube locations is proposed for the 2016 period. It is anticipated that the triplicate locations that have

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consistently measured well below the annual mean objective for a number of years will be reduced to single tubes and new locations established close to areas of relevant exposure.

Malvern Hills District Council will submit a Progress Report in 2016 as part of the local air quality management annual review and assessment process.

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. EPUK & IAQM (2015) 'Land-Use Planning & Development Control: Planning for Air Quality v1.1'
4. Office for National Statistics (ONS) (July 2012) 'Mid-year estimates of population 2011'
5. Malvern Hills District Council (2010) '2010 Air Quality Progress Report for Malvern Hills District Council'
6. South Worcestershire Development Plan
7. Worcester Transport Strategy
8. Worcestershire Local Transport Plan 3
9. Worcestershire Regulatory Services (2011) '2011 Air Quality Progress Report for Malvern Hills District Council'
10. Worcestershire Regulatory Services (2012) '2012 Air Quality Updating and Screening Assessment for Malvern Hills District Council'
11. Worcestershire Regulatory Services (2013) '2013 Air Quality Progress Report for Malvern Hills District Council'
12. Worcestershire Regulatory Services (2014) '2014 Air Quality Progress Report for Malvern Hills District Council'

Appendices

Appendix A: QA/QC Data

Appendix B: Full Dataset of Measured Monthly Concentrations and Bias Adjustment

Appendix A: QA/QC Data

Factor from Local Co-location Studies (if available)

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

Diffusion Tube Bias Adjustment Factors

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

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

0300 123 2224

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.

Short-term to Long-term Data Adjustment

Data capture was of a level that no annualisation was necessary.

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:

Full Dataset of Measured Monthly Concentrations and Bias Adjustment

Tube ref	Location	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Average	Bias adj	Adj Average	No of Months
UP1	2 Old Street, Upton	40.15	14.02	29.43	39.09	35.29	35.00	35.62	34.46	37.05	40.06	45.69	41.90	35.65	0.89	31.73	12
UP2	Junction of London Lane/High Street Upton	21.72	24.41	40.14	26.94	22.45	24.15	24.60		27.77	21.85	33.56	29.88	27.04	0.89	24.07	11
UP3	15 High Street, Upton	40.26	35.33	43.25	38.23	37.94	40.43	37.26	28.85	44.80	36.79	51.58	38.10	39.40	0.89	35.07	12
M3N	Teme Avenue, Street Light o/s no 10	13.58	36.44	17.85	10.47	14.16	7.56	6.05	6.94	9.68	10.33	20.57	14.37	14.00	0.89	12.46	12
M12	Church Street, Fat Face	20.39	27.23	37.40	31.22	27.93	30.72	20.54	25.17	32.64		45.30	28.85	29.76	0.89	26.49	11
M12	Church Street, Fat Face	22.10	26.59	36.76	28.74	28.16	30.72	25.17	21.08	34.04	27.37	40.08	30.05	29.24	0.89	26.02	12
M12	Church Street, Fat Face	23.27	26.76	36.41	31.53	28.16	31.56	21.35	23.78	33.27	24.92	38.93	29.62	29.13	0.89	25.93	12
MSN	Richmond Road - Link Wines	30.73	31.14	34.89	32.95	27.00	25.42	25.37	27.85	30.84	26.96	36.00	32.18	30.11	0.89	26.80	12
MSN	Richmond Road - Link Wines	30.33	35.69	30.13			23.75	23.46	28.34	31.51	29.29	36.15	36.97	30.56	0.89	27.20	10
MSN	Richmond Road - Link Wines	29.54	33.42	31.35	32.77	27.06		23.66	28.84	30.88	28.65	35.19	34.14	30.50	0.89	27.15	11
M9N	188 Worcester Road	26.76	27.64	34.66	26.88	27.29	25.24	25.07	23.01	34.53	25.12	35.76	31.51	28.62	0.89	25.47	12
M9N	188 Worcester Road	26.93	31.14	33.85	28.92	27.74	26.26	25.07	22.34	33.95	26.75	36.87	28.35	29.01	0.89	25.82	12
M9N	188 Worcester Road	27.84	29.97	34.84	29.67	24.59	23.64	27.29	21.90	33.71	27.91	36.05	32.37	29.15	0.89	25.94	12
M11	Old Post Office, Powick	34.30		43.11	37.12	25.27	33.04	32.36	28.38	35.30	36.57	47.94	39.17	35.69	0.89	31.76	11