



North Warwickshire Borough Council

2015 Updating and Screening Assessment for **North Warwickshire Borough Council**

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

April 2015

North Warwickshire Borough Council

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Executive Summary

Since the last Updating and Screening Assessment there has been very little change within North Warwickshire.

The monitoring carried out in recent years has not found any new objective level exceedences. However it has shown a continued reduction in annual mean nitrogen dioxide levels at the affected farmhouse within the Air Quality Management Area (AQMA). In recent years this has fallen and continues to fall below the objective level. The farmhouse has also been vacant since 2008 and has fallen into a state of disrepair. So much so that it has been considered unfit for human habitation. It has also been assessed as not being financially viable to bring the property back to a habitable standard and the agent is pursuing other non-habitable options for the use of the site. During the previous round of assessment it was proposed to revoke the AQMA as it no longer exceeds the objective level for nitrogen dioxide and the farmhouse is no longer a relevant receptor. This course of action was agreed by Defra and as a result the AQMA was formally revoked by North Warwickshire Borough Council's Community and Environment Board and the Revocation Order came into effect on 1st February 2013.

A Detailed or Further Assessment has not been considered necessary for any pollutant.

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1 Introduction

1.1 Description of Local Authority Area

North Warwickshire lies in the centre of England situated between Birmingham, Coventry, Nuneaton and Tamworth. It is a large predominantly rural area – approximately 60% of the Borough is designated Green Belt – with a number of settlements spread across an area of 28,422 hectares. The main towns are Atherstone and Coleshill, both with about 10,000 population and there numerous smaller communities and villages making up the diverse and dispersed population. The total population of North Warwickshire is around 61,500.

The M6, M42, A5, and M6 Toll pass through the Borough and Birmingham Airport is also close by.

Although the Borough is mainly rural its' location has made it a centre for manufacturing, distribution and other modern industries. There are sizeable industrial estates at Atherstone and Coleshill, the Midlands Oil Terminal at Kingsbury, and hard rock quarrying at Mancetter. A major international rail freight terminal and distribution park is sited at Hams Hall – a former power station – and a large industrial development at Birch Coppice Colliery is ongoing.

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 on the following page. 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 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

During the first round of review and assessment of air quality in North Warwickshire a small Air Quality Management Area (AQMA) was identified and declared at a residential property close to the convergence of the M6 and the M42, to the south of Coleshill. A map of the AQMA (highlighted in blue) can be seen in Figure 1.1. As part of this exercise modelling and monitoring were carried out across the Borough, the findings of which resulted in a predicted exceedence of the annual mean nitrogen dioxide objective level in 2005 at one isolated farmhouse in close proximity to the two motorways. Various stakeholders were then consulted and an Action Plan was drawn up for the AQMA. Several measures were highlighted within the plan but further, more accurate monitoring was identified as being the most important measure needed, especially with the unpredictability of the impact of the M6Toll, the country's first private toll road, on the existing motorway network.

In the next round, the re-named Updating and Screening Assessment (USA), it was found that there may be exceedences of annual mean benzene objective levels around a large petrol storage and distribution depot in North Warwickshire in 2010. This conclusion was based upon the annual throughput of petrol at Kingsbury Oil Terminal and the predicted annual emissions at nearby receptors. There are 3 separate fuel storage depots at the Terminal and these can be seen in the following table;

Table 1.2 Locations of the Fuel Storage Depots

Operator	Site	Postcode	OS_GRE	OS_GRN
BP Oil (UK) Ltd	Kingsbury	B782EA	422279	296689
Texaco Ltd	Kingsbury	B782EJ	422431	297461
Warwicks Oil Storage	Kingsbury	B782EF	422407	297461

A detailed assessment was therefore needed to fully assess the impact of benzene emissions from the Oil Terminal. The monitoring, modelling and further assessment concluded that the 2010 objective level for benzene will not be exceeded and therefore there is no need to declare an AQMA in the vicinity of Kingsbury Oil

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Terminal. All previous rounds of air quality assessment can be seen in the following table;

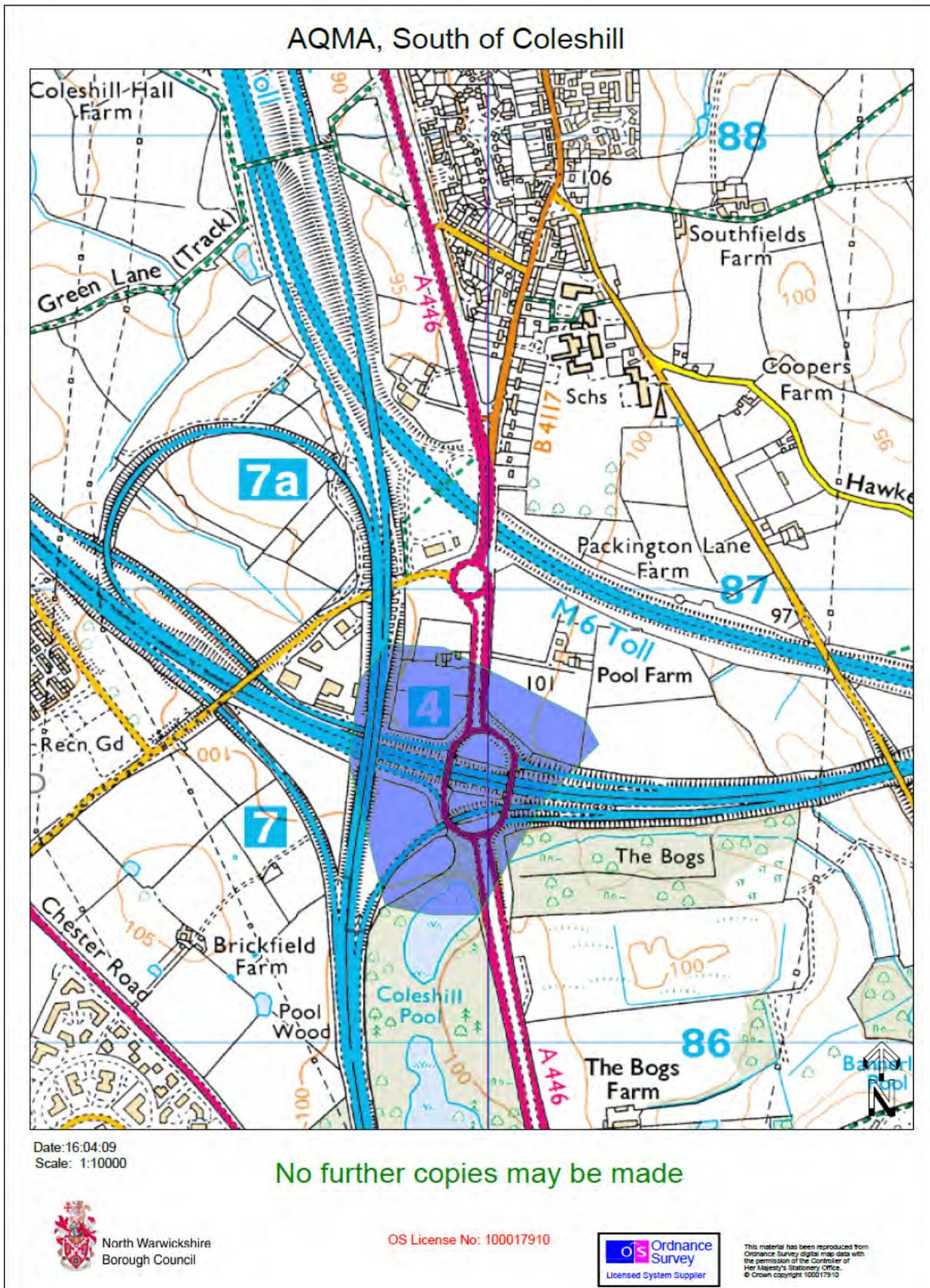
Table 1.3 Previous Rounds of Assessment for North Warwickshire

<u>Air Quality Reports</u>	<u>Date</u>	<u>Outcome</u>
1 st Round (Stage 4) Review & Assessment	Sept 2000	Predicted annual mean NO2 exceedence in 2005 at 1 farmhouse close to the M6 & M42
Air Quality Action Plan	Jan 2003	Measures proposed to improve air quality but the source is motorway traffic. Further monitoring needed.
2 nd Round Upgrading & Screening Assessment	Apr 2003	Predicted annual mean benzene exceedence in 2010 at receptors around Kingsbury Oil Terminal
Detailed Assessment of Benzene	Aug 2004	Monitoring showed significantly lower levels of benzene so an AQMA was not declared
3 rd Round Updating & Screening Assessment	Apr 2006	No further pollutant objective level exceedences predicted

Since 2006 Annual Progress Reports have been submitted in April 2007, 2008, 2010 and 2011 and an Updating and Screening Assessment was submitted in April 2009 and 2012. No further pollutant objective levels were predicted in any of these reports and Detailed Assessments were not required.

During the previous round of assessment it was proposed to revoke the AQMA as it no longer exceeds the objective level for nitrogen dioxide and the farmhouse is no longer a relevant receptor. This course of action was agreed by Defra and as a result the AQMA was formally revoked by North Warwickshire Borough Council's Community and Environment Board and the Revocation Order came into effect on 1st February 2013.

Figure 1.1 Map of AQMA Revoked Boundary



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Automatic monitoring has been carried out in a Groundhog enclosure situated at the M6Toll Grit Depot, to the south of Coleshill. It is just to the north of the AQMA and is as close as possible to the relevant exposure. It could not be located at the affected farmhouse as there is an irregular source of power at the site. A map showing the location of the automatic monitoring station can be seen in Figure 2.1, highlighted in red.

Both nitrogen dioxide and sulphur dioxide were continuously monitored by Monitor Labs ML9841B and Monitor Labs ML9850B chemiluminescent analysers. PM10 monitoring was carried out with a Rupprecht and Patashnick 1400AB TEOM analyser. In terms of QA/QC, the monitors were automatically calibrated daily, manually calibrated fortnightly by a trained local authority officer and serviced six monthly by an engineer from Casella. The nitrogen dioxide data was validated and ratified in accordance with the technical guidance (LAQM.TG(09)). This was only carried out for the nitrogen dioxide results as the sulphur dioxide and PM10 levels were monitored for indicative purposes only. The sulphur dioxide and PM10 analysers were considered to be superfluous to requirements some years ago and, until recently when the monitoring station was decommissioned, nitrogen dioxide was the only pollutant continuously monitored in North Warwickshire.

Figure 2.1 Map of Automatic Monitoring Site

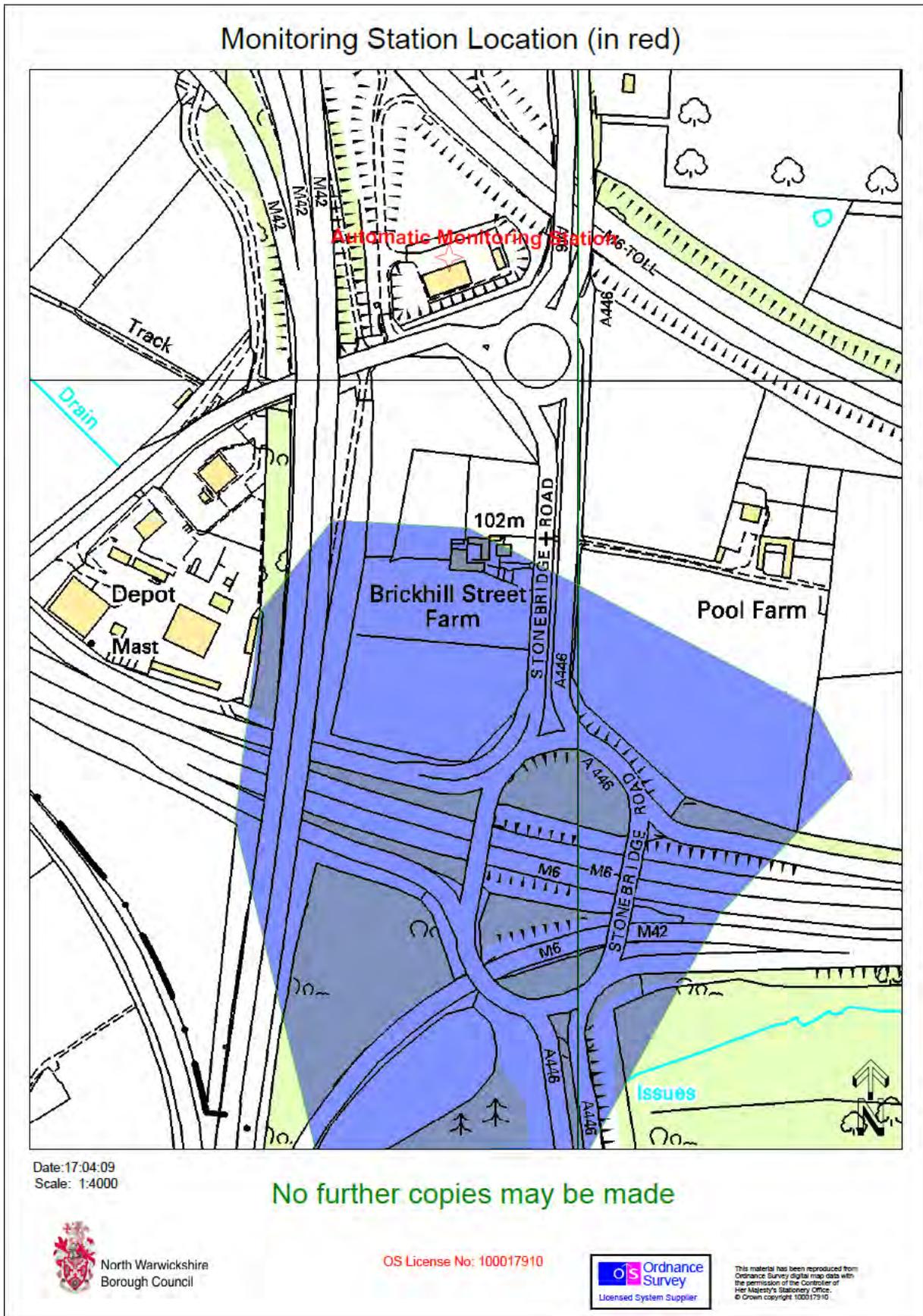


Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	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?
1	Other (Motorway Source)	419890	287100	NO2	N	Chemiluminescent	N (245m but close as possible to receptor)	57m	Y (as close to AQMA as possible)

2.1.2 Non-Automatic Monitoring Sites

Within North Warwickshire a network of diffusion tubes are used to measure nitrogen dioxide concentrations. This pollutant is measured at a few locations within the AQMA but the majority of sites are outside the now revoked AQMA. In 2013 the number of monitoring locations was reduced. The table on the following pages shows the sites used.

The diffusion tubes are prepared and analysed by Gradko International Ltd using the 20% TEA in Water Method. The laboratory analysis is UKAS accredited, the laboratory has confirmed that it follows the procedures set out in the Harmonisation Practical Guidance and also participates in an external laboratory measurement proficiency scheme (W.A.S.P.). The diffusion tube results are also used as part of the UK Nitrogen Dioxide Survey QA/QC scheme.

Figure 2.2 Map of Non-Automatic Monitoring Sites

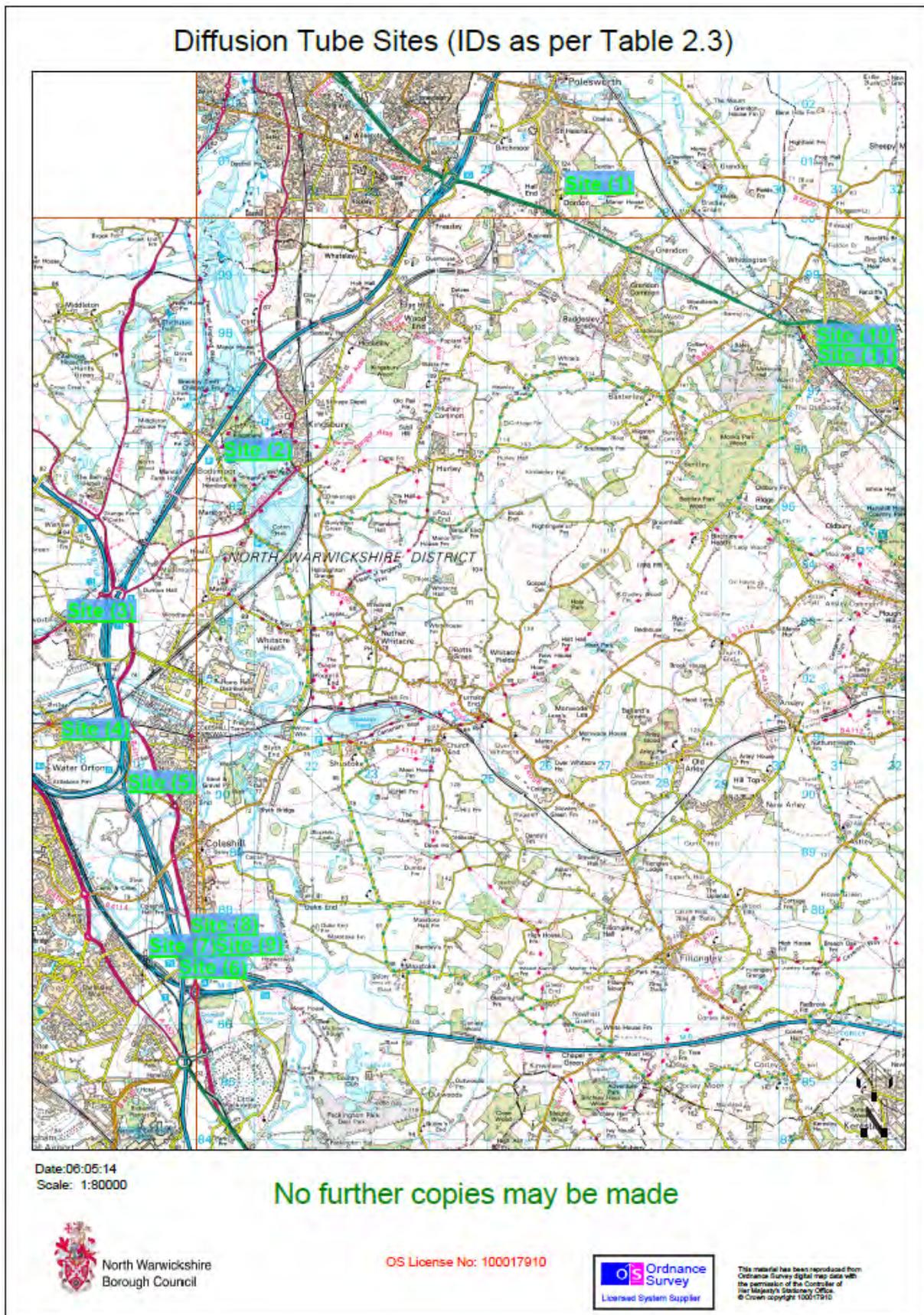


Table 2.2 Details of Non-Automatic Monitoring Sites

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?
Dordon	Roadside	426415	300504	NO2	N	N	Y - 7m	2m	Y
Kingsbury	Rural	420380	295902	NO2	N	N	N - 32m	19m	N
Farthing Lane, Curdworth	Roadside	418186	292959	NO2	N	N	Y - 10m	2m	Y
Water Orton	Roadside	418060	290943	NO2	N	N	Y - 5m	20m	Y
Gilson	Roadside	418856	290231	NO2	N	N	Y - 0m	5m	Y
Coventry Rd, Coleshill	Roadside	420027	287360	NO2	N	N	Y - 15m	14m	Y
Coleshill School	Roadside	420113	287577	NO2	N	N	Y - 0m	78m	Y
Packington Lane, Coleshill	Roadside	420323	287470	NO2	N	N	Y - 0m	30m	Y
Long St, Atherstone	Kerbside	430912	297773	NO2	N	N	N - 50m	3m	Y
South St, Atherstone	Roadside	430875	297679	NO2	N	N	N - 20m	7m	Y
AQMA Farmhouse (Gate)	Roadside	419932	286835	NO2	Y	N	Y - 8m	32m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

It can be seen in the next few sections that in North Warwickshire there are not considered to be any specific issues with any pollutants. All of the relevant objective levels for each pollutant highlighted in the National Air Quality Strategy are being complied with.

2.2.1 Nitrogen Dioxide

The following sections show that the annual mean concentration for 2014 is less than the objective level of 40µg/m³ at every monitoring location.

Automatic Monitoring Data

North Warwickshire's automatic monitoring station has now been decommissioned and as a result there is no such data available

Diffusion Tube Monitoring Data

Table 2.3 on the following page shows the results for 2014 and the percentage of data capture at each site. It can be seen that there have been a couple of incidents at sites where the tubes have gone missing but all sites had 10 months of data or more.

The table also shows that the annual mean objective level for nitrogen dioxide of 40µg/m³ is not exceeded. Table 2.4, which compares the results in 2014 to previous years, shows that the annual mean nitrogen dioxide levels have fallen below the objective level at the AQMA in recent years.

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes in 2014

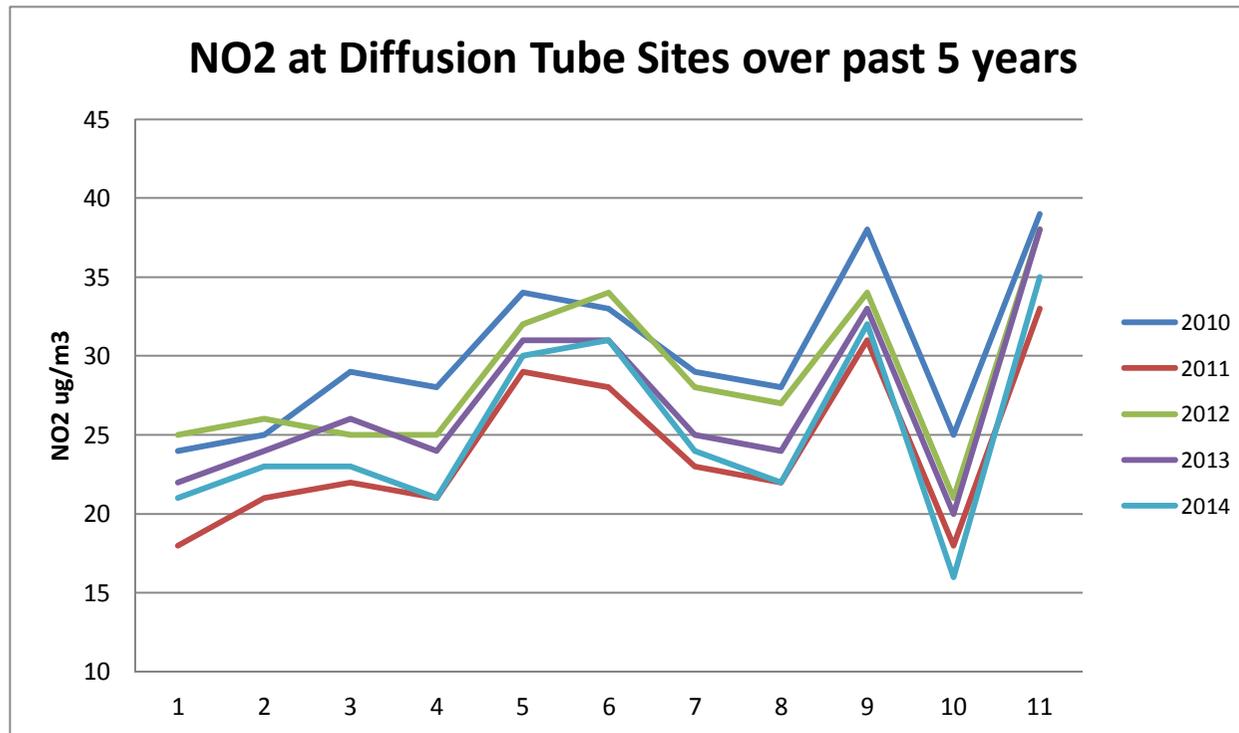
Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.91)
								2014 ($\mu\text{g}/\text{m}^3$)
1	Dordon	Roadside	N	N	12 months	N	N	21
2	Kingsbury	Rural	N	N	10 months	N	N	23
3	Farthing Lane, Curdworth	Roadside	N	N	12 months	N	N	23
4	Water Orton	Roadside	N	N	10 months	N	N	21
5	Gilson	Roadside	N	N	12 months	N	N	30
6	Coventry Rd, Coleshill	Roadside	N	N	12 months	N	N	31
7	Coleshill School	Roadside	N	N	12 months	N	N	24
8	Packington Lane, Coleshill	Roadside	N	N	12 months	N	N	22
9	Long St, Atherstone	Kerbside	N	N	12 months	N	N	32
10	South St, Atherstone	Roadside	N	N	10 months	N	N	16
11	AQMA Farmhouse (Gate)	Roadside	Y	N	12 months	N	N	35

N.B. Up until 2012 bias adjustment factors were derived locally but as a result of the decommissioning of the automatic monitoring station the national bias adjustment factor of 0.91 (derived from <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>) has been used for 2014.

Table 2.4 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 = 0.87)	2011* (Bias Adjustment Factor = 0.81)	2012* (Bias Adjustment Factor = 0.97)	2013* (Bias Adjustment Factor = 0.95)	2014 (Bias Adjustment Factor = 0.91)
1	Dordon	N	24	18	25	22	21
2	Kingsbury	N	25	21	26	24	23
3	Farthing Lane, Curdworth	N	29	22	25	26	23
4	Water Orton	N	28	21	25	24	21
5	Gilson	N	34	29	32	31	30
6	Coventry Rd, Coleshill	N	33	28	34	31	31
7	Coleshill School	N	29	23	28	25	24
8	Packington Lane, Coleshill	N	28	22	27	24	22
9	Long St, Atherstone	N	38	31	34	33	32
10	South St, Atherstone	N	25	18	21	20	16
11	AQMA Farmhouse (Gate)	Y	39	33	38	38	35

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



2.2.2 PM₁₀

The automatic monitoring station initially monitored PM10 but this was surplus to requirements and ceased in 2008. The results have been reported in previous rounds of assessment.

2.2.3 Sulphur Dioxide

The automatic monitoring station initially monitored Sulphur Dioxide but this was surplus to requirements and ceased in 2008. The results have been reported in previous rounds of assessment.

2.2.4 Benzene

A Detailed Assessment of benzene was carried out in 2004 at Kingsbury Oil Terminal. The modelling and monitoring showed significantly lower levels of benzene than previously predicted and there was therefore no need to declare an AQMA.

2.2.5 Other pollutants monitored

No other pollutants have been monitored in North Warwickshire

2.2.6 Summary of Compliance with AQS Objectives

There are no sites with relevant receptors in North Warwickshire which exceed any of the objective levels for the respective pollutants. This also now includes the affected farmhouse within the recently revoked AQMA.

North Warwickshire Borough Council has examined the results from monitoring in the borough. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

To date, around 200 AQMAs have been declared. Of these, the vast majority are related to road traffic emissions where the annual mean objective for nitrogen dioxide is considered unlikely. The updating and screening assessment has been simplified in that it is no longer necessary to consider each pollutant in turn. The updating and screening assessment now follows a more efficient, source by source approach.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Concentrations of nitrogen dioxide can be high where traffic is slow moving (less than 15mph average), with stop/start driving, and where buildings on either side of a road reduce dispersion. During previous rounds of review and assessment it was identified that there are no narrow congested streets (with daily traffic flows of 5,000 vehicles or more) with dwellings close to the kerb (within 2 metres) in North Warwickshire with significant traffic flows. The situation has not changed since.

North Warwickshire Borough 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

Shopping areas and busy streets where people may spend 1-hour or more near traffic have also been assessed in previous rounds. It was found that public exposure to such concentrations would be very low and that there would be no exceedences of the objective levels for nitrogen dioxide. There are no busy streets (daily traffic flows of more than 10,000 vehicles) with cafes, bars or shops within North Warwickshire where people are exposed to high concentrations of nitrogen dioxide.

North Warwickshire Borough 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.

There are also no street locations where traffic flows are not particularly high (daily traffic flows of less than 20,000 vehicles) but there is an unusually high proportion (greater than 25%) of buses and or/HGVs. Entrances to some industrial estates such as Hams Hall, Coleshill, and Carlyon Road, Atherstone may have high proportions of HGV traffic but there are no relevant exposures (within 10 metres) at these sites. PM₁₀ and nitrogen dioxide concentrations are therefore not an issue.

North Warwickshire Borough Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

Concentrations of nitrogen dioxide and PM₁₀ are usually higher close to junctions, due to the combined impact of traffic emissions on two roads, and to the higher emissions due to stop start driving. In previous assessments it has been identified that there are no busy junctions in the Borough. A busy junction is one where there is a daily traffic flow of 10,000 or more vehicles.

North Warwickshire Borough Council 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

There are no new roads that have been constructed or proposed since the last round of review and assessment.

North Warwickshire Borough Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

During previous rounds of air quality assessment Annual Average Daily Traffic (AADT) flows were obtained for roads within North Warwickshire to establish if there had been any significant changes. None of the AADT flows were found to be greater

than 25% higher than the figures used in the previous Updating and Screening Assessment.

In previous assessments it has been found that the highest AADT flows in North Warwickshire are around Junction 7 of the M42 and around Junction 4 of the M6. These are both to the south west of the AQMA and are the only sections of road that have significant AADT flows. In 2002 the AADT flow for J4 – J4A of the M6 was found to be 96,600 and in 2005 was found to be 88,865. Previously these figures were requested from the Highways Agency but there is now an on-line database for this information at www.trads.hatris.co.uk. The AADT flows for 2008 for J4 – J4A were found to be 92,810 in the previous round of Updating and Screening Assessment and this has increased to an estimated level of 107,585. This is therefore not considered to be a significant change in traffic flow i.e. greater than 25% increase. It is likely that this increase in traffic is due to Active Traffic Management being introduced along this section of the M6 which includes the use of the hard shoulder as an additional carriageway during peak times. This has increased the capacity of the motorway but has also reduced congestion with more freely flowing traffic.

For the section of the M42 from J7A – J8 the AADT flow was around 140000 in 2002. There were no figures available for this section in 2005 and 2008 but the section of road below this, J7 – J7A, had an AADT flow of 102,872 in 2008. In the last round of Updating and Screening Assessment the AADT flow has been estimated to be 93,676 in 2011 for the J7 – J7A section of the motorway.

The only other busy road, with greater than 10,000 AADT flows and which runs near any relevant receptors, is the A5, which runs from Tamworth to Nuneaton. The AADT flows have increased slightly on this road but not significantly. In 2005 the AADT flow was 26,307 in 2006 was 27,928, in 2007 was 28,984, and finally in 2008 was 29,813. AADT flows were not available for 2011 for the section of the A5 which runs through North Warwickshire.

The A45 and the A452 have also been identified as busy roads. They do not affect any particular receptors but they were also assessed in terms of the changes in

traffic flow. The changes found were extremely small and much less significant than those of the roads above.

It is not considered necessary to carry out a further detailed assessment of any of the roads in North Warwickshire.

North Warwickshire Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

There is an unenclosed bus station in Atherstone but it is relatively small in scale. The daily flow of vehicles at this site is just over 300, which is considerably less than the 2,500 vehicles per day threshold for consideration in the guidance document. There are also no relevant exposures within 10 metres of the station so there is no need to carry out a further assessment of NO₂ or PM₁₀.

North Warwickshire Borough Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

This section considers non-road transport sources that may be significant, including airports, mainly as a result of aircraft emissions; railways, mainly stations and depots, but also alongside some busy lines with a high number of diesel locomotives; and ports, due to shipping emissions.

4.1 Airports

Birmingham International Airport is just beyond the border of North Warwickshire but is further than 1,000 metres from the nearest relevant exposure. NO₂ emissions need to be considered for airports but concentrations fall off rapidly on moving away from the source and are unlikely to make a significant contribution beyond this distance.

North Warwickshire Borough Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

In the 2006 round of assessment sulphur dioxide emissions from stationary trains needed to be investigated. However new evidence has come to light that NO₂ concentrations are elevated alongside those rail lines with a large number of diesel locomotive movements.

4.2.1 Stationary Trains

As highlighted in previous Updating and Screening Assessments, the only sites in North Warwickshire where diesel locomotives are regularly stationary for periods of 15 minutes or more are Hams Hall and Birch Coppice. These sites are freight stations and are some considerable distance from any relevant exposure. The West Coast Mainline also runs through the Borough and although diesel locomotives use this track they are not stationary at any point or more on a regular basis.

North Warwickshire Borough 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

The most recent technical guidance (TG(09)) showed that there was a requirement for a number of local authorities to assess railway lines with a high usage of diesel locomotives to establish whether there is relevant exposure nearby. The guidance provides a list of rail lines with a heavy traffic of diesel passenger trains and one of those listed is the West Coast Mainline. There is a section of the West Coast Mainline which runs through North Warwickshire, from Nuneaton, through Atherstone and Polesworth, and onto Tamworth. This line only needs to be considered if the background annual mean NO₂ concentration is greater than 25 µg/m³. The background NO₂ concentrations for 2011 for North Warwickshire have been downloaded from <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html> and can be seen in Appendix C. There are 40 grid squares across the Borough where background concentrations are greater than 25 µg/m³ in 2011 and these are highlighted in red in the attached appendix. All of these grid squares are in the south and west of the Borough and they appear to be closely related to the motorway network in this area i.e. the M42 and the M6. The rail line from Nuneaton to Tamworth dissects the east and north of the Borough so there are no areas around the track where the background annual mean NO₂ concentration is greater than 25 µg/m³.

North Warwickshire Borough 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)

North Warwickshire is situated in the Midlands and is therefore unaffected by any issues associated with ports or shipping.

North Warwickshire Borough 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

Industrial sources are unlikely to make a significant local contribution to annual mean concentrations, but could be significant in terms of the short-term objectives. All existing industrial sources have been fully assessed in previous rounds of air quality assessment, particularly in terms of sulphur dioxide, nitrogen dioxide, PM10 and benzene, and there have been no new or proposed installations and no significant changes to existing installations in North Warwickshire or in neighbouring authorities.

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

There have been no new installations requiring air quality assessments in the borough since 2012.

North Warwickshire Borough 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

There are numerous Part A and Part B industrial installations within North Warwickshire and the emissions from these were modelled during the first round of review and assessment. There have been no considerable changes at any of these sites and emission rates from them have not substantially increased i.e. an increase of greater than 30%. These sites have also not received any new relevant exposures in their vicinity.

North Warwickshire Borough 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

There are no new or significantly altered installations in the Borough where an air quality assessment has not already been carried out.

North Warwickshire Borough 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 three large petrol storage depots at Kingsbury Oil Terminal in North Warwickshire. These installations are currently permitted under the Pollution Prevention and Control Act 1999 and are regulated by the Borough Council. During the first round of updating and screening assessment in 2003 it was suggested that there may be potential exceedences of the 2010 objective level for benzene at residential properties in the vicinity of the Kingsbury depot. However modelling and monitoring carried out in a subsequent detailed assessment concluded that concentrations at relevant receptors would not exceed the 2010 objective level and there was therefore no need to declare an Air Quality Management Area in this location.

There are major fuel (petrol) storage depots within the Local Authority area, but these have been considered in previous reports.

5.3 Petrol Stations

Studies have shown that the presence of a petrol station is unlikely to have a significant influence on the concentrations of benzene close to residential properties where the petrol throughput is less than 2,000m³ per annum and where the pumps are more than 10m from residential properties, either vertically or horizontally. If there are any petrol stations with annual throughputs of greater than 2,000m³ the next step is to identify if they are close to busy roads (daily traffic flows of greater than 30,000 vehicles). During previous rounds of upgrading and assessment only 4 roads were identified in the Borough as being “busy” and these were the M42, M6, A452 and A45. In the vicinity of these roads there are only petrol stations at the M42 Services, Tamworth and the M6 Services, Corley. However the pumps at both of these sites are not within 10m of any residential properties.

In the past few years there has been a new legal requirement introduced for all existing petrol stations with an annual throughput of greater than 3,500m³ of petrol, to fit Stage 2 Vapour Recovery at their sites by the 1st January 2010. As a result the petrol stations within the Borough have been surveyed to get more recent and more accurate throughput figures. The 2 sites above have been seen to be above the threshold and have therefore implemented Stage 2 Vapour Recovery. This additional vapour recovery means that they can be ignored in terms of assessing benzene emissions as these should be insignificant. One other site has been previously identified as being above the threshold but this is not in the vicinity of any “busy” roads and the company has since installed Stage 2 Vapour Recovery anyway. There is therefore no need for any further assessment of benzene emissions from petrol stations.

North Warwickshire Borough Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Due to the potential PM10 emissions from poultry farms there is a new to look at sites which house a large number of birds. Each authority must identify any farms housing in excess of 400,000 birds if mechanically ventilated, 200,000 birds if naturally ventilated and 100,000 birds for any turkey unit. They must also establish if there are any relevant exposures within 100 metres of the poultry units.

In North Warwickshire there is one large poultry unit, regulated by the Environment Agency, which is approximately 80 metres from a residential building. However upon further investigation it was found that the unit only houses 70,000 birds in a mechanically ventilated unit and there is therefore no need to progress to a detailed assessment.

North Warwickshire Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

In February 2010 the Secretary of State granted planning permission for a biomass power plant and an anaerobic digestion plant on the site of a former shale tip in Baxterley. As part of this process the applicant had to supply a full Environmental Impact Statement which included an assessment of the potential air quality impact from the development.

A generic assessment was carried out for the construction phase and this concluded that there would be likely dust and PM10 emissions from site activities but through good practice and the implementation of suitable mitigation measures the impact could be minimised. A review of the traffic generation data did not identify the need for detailed assessment of related emissions and this potential source can be regarded as insignificant.

Detailed modelling was undertaken to predict the impacts associated with the operation of the proposed facility. The modelling exercise showed that all the pollutant concentrations are predicted to be well below the relevant Air Quality Objectives and Environmental Assessment Levels. The impact of the proposed facility was considered to be negligible for all pollutants except nitrogen dioxide, which was considered to have a moderate adverse impact. However the predicted annual mean concentration only accounted for less than 50 percent of the objective for this pollutant, when based on worst case scenarios, therefore exceedence is extremely unlikely. The assessment also assumed that there was 100 percent conversion of NO_x to NO₂. In reality, it is therefore likely that nitrogen dioxide impacts will be lower than those reported.

The installation has not yet commenced operation but has been assessed in the 2012 USA.

North Warwickshire Borough 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

There is the potential that many small biomass combustion installations (including domestic solid fuel burning) whilst individually acceptable, could in combination lead to unacceptably high PM10 concentrations, particularly in areas where PM10 concentrations are close to or above the objectives. The impact of domestic biomass combustion in most areas is thought to be small at the time of writing, but could become more important in the future.

As far as the author is aware there are no small-scale service sector biomass combustion plant within North Warwickshire. There are some domestic solid fuel burning appliances which could be considered to be biomass combustion units but as discussed in the following section, these are relatively few in number and not densely concentrated in any 500x500 metre squares within the Borough. Further assessment of PM10 emissions from combined commercial and domestic impacts is therefore not required.

North Warwickshire Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

The previous rounds of review and assessment have identified areas where domestic solid fuel burning gives rise to exceedences of the objective for sulphur dioxide. In the 2006 updating and screening assessment areas were identified where a relatively high proportion of houses still used coal as their primary heating source. The highest amount of domestic properties known to be burning solid fuel in any 500m x 500m zone in North Warwickshire was 55 at that time. This one area could have been considered significant but coal use would have had to almost double in the area in order for a detailed assessment to be required for sulphur dioxide. This area was also made up of predominantly local authority owned properties and the authority's Housing Division had a rolling programme to replace all solid fuel heating systems over 15 years old with gas central heating, where possible, by 2010. This has now been completed.

If a detailed assessment was not needed in previous updating and screening assessments it should be considered even less necessary now.

North Warwickshire Borough Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Dust emissions from a range of fugitive and uncontrolled sources can give rise to elevated PM10 concentrations. These sources can include quarrying and mineral extraction sites, landfill sites, coal and material stockyards, major construction works, and waste management sites. Dust arises from the passage of vehicles over unpaved ground and from the passage of vehicles along public roads that have been affected by dust and dirt tracked out from dusty sites. It also arises from the handling of dusty materials, the cutting of concrete etc. Dust can also be wind-blown from stockpiles and dusty sources. Potential sources of fugitive or uncontrolled emissions have been assessed in previous rounds of review and assessment and it has been concluded that this is not an issue in the Borough. Since the last round of assessment there have been no new sources and no new relevant exposures.

North Warwickshire Borough 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 new monitoring data has not shown anything which contradicts previous assessment findings. There are no new exceedences identified for any of the pollutant objective levels. However monitoring data in recent years has shown that the annual mean nitrogen dioxide has fallen and continues to fall below the objective level at the isolated farmhouse within the AQMA. Exceedences have still been found in close proximity to the M6 but these have not been at relevant exposures. It is suggested that the AQMA can now be revoked.

Previous rounds of assessment have predicted that levels of nitrogen dioxide should decrease over time due to improvements in vehicle technology. Nationally this does not appear to be having the expected impact on emissions. However, on a local level, there have been decreasing levels of nitrogen dioxide recorded. This is particularly the case in and around the AQMA. This may be due to a number of factors such as the price of fuel restricting vehicle usage, newer fleet vehicles on the roads, and the implementation of Active Traffic Management on the surrounding stretches of the M6 and the M42 easing congestion and as a result lowering vehicle emissions.

8.2 Conclusions from Assessment of Sources

The assessment of likely air quality impacts of local developments has found that there are no areas of potential concern. Further, source specific, detailed assessment is therefore not required.

8.3 Proposed Actions

The updating and screening assessment has not identified the need to proceed to a Detailed Assessment for any pollutant. It has also not identified the need for any altered or additional monitoring. No further action is proposed but work will continue with the Warwickshire Air Quality Strategy.

The next air quality report to be submitted will be the Annual Progress Report in 2016.

9 References

Local Air Quality Management Technical Guidance LAQM.TG(09)

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2006

North Warwickshire Borough Council 1st Round Review & Assessment 2000

North Warwickshire Borough Council Air Quality Action Plan 2003

North Warwickshire Borough Council 2nd Round Updating & Screening Assessment 2003

North Warwickshire Borough Council Detailed Assessment of Benzene 2004

North Warwickshire Borough Council 3rd Round Updating & Screening Assessment 2006

North Warwickshire Borough Council Progress Report 2007

North Warwickshire Borough Council Progress Report 2008

North Warwickshire Borough Council 3rd Round Updating & Screening Assessment 2009

North Warwickshire Borough Council Progress Report 2010

North Warwickshire Borough Council Progress Report 2011

North Warwickshire Borough Council 4th Round Updating & Screening Assessment 2012

North Warwickshire Borough Council Progress Report 2013

North Warwickshire Borough Council Progress Report 2014

Appendices

Appendix A: QA/QC Data

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Diffusion Tube Bias Adjustment Factors

For 2014 the national diffusion tube bias adjustment factor of 0.91 was derived from 16 studies as seen below and calculated at <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>.

Analysed By ¹	Method <small>To undo your selection, choose (All) from the pop-up list</small>	Year ² <small>To undo your selection, choose (All)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu\text{g}/\text{m}^3$)	Automatic Monitor Mean Conc. (Cm) ($\mu\text{g}/\text{m}^3$)	Bias (B)	Tube Precision ³	Bias Adjustment Factor (A) (Cm/Dm)	
Gradko	20% TEA in w ater	2014	UC	Belfast City Council	11	33	32	5.6%	G	0.95	
Gradko	20% TEA in w ater	2014	R	Borough Council of King's Lynn & West Norfolk	12	29	21	37.7%	G	0.73	
Gradko	20% TEA in w ater	2014	R	Brighton & Hove City Council	12	55	48	15.2%	G	0.87	
Gradko	20% TEA in w ater	2014	R	Brighton & Hove City Council	11	60	57	6.2%	G	0.94	
Gradko	20% TEA in w ater	2014	R	Cheshire West and Chester	11	40	40	-1.0%	G	1.01	
Gradko	20% TEA in w ater	2014	UB	Dudley MBC	12	36	31	18.1%	G	0.85	
Gradko	20% TEA in w ater	2014	UB	Dudley MBC	12	26	23	11.2%	G	0.90	
Gradko	20% TEA in w ater	2014	R	Dudley MBC	12	41	35	15.2%	G	0.87	
Gradko	20% TEA in w ater	2014	R	Dudley MBC	12	52	60	-12.6%	G	1.14	
Gradko	20% TEA in w ater	2014	R	Gateshead Council	10	35	32	10.8%	G	0.90	
Gradko	20% TEA in w ater	2014	R	Gateshead Council	12	38	36	-0.1%	G	1.00	
Gradko	20% TEA in w ater	2014	R	Gateshead Council	12	34	32	6.4%	G	0.94	
Gradko	20% TEA in w ater	2014	UB	Luton Borough Council	9	36	37	-4.0%	G	1.04	
Gradko	20% TEA in w ater	2014	KS	Marylebone Road Intercomparison	12	115	80	42.8%	G	0.70	
Gradko	20% TEA in w ater	2014	R	Monmouthshire County Council	10	42	38	10.1%	G	0.91	
Gradko	20% TEA in w ater	2014	R	NOTTINGHAM CITY COUNCIL	12	44	39	14.9%	G	0.87	
Gradko	20% TEA in w ater	2014	Overall Factor² (16 studies)							Use	0.91

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are prepared and analysed by Gradko International Ltd using the 20% TEA in Water Method. The laboratory analysis is UKAS accredited, the laboratory follows the procedures set out in the Harmonisation Practical Guidance and also participates in an external laboratory measurement proficiency scheme (W.A.S.P.). WASP results in recent periods have all been 100% satisfactory and these can be seen at <http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>