



2015 Updating and Screening
Assessment for
Hastings Borough Council

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

December 2015 (Updated February 2016)

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Executive Summary

This 2015 Updating and Screening Assessment for the Hastings Borough Council reviews and assesses air quality against the government's objectives in the Air Quality Regulations 2000 and amendment regulations.

The role of the Review and Assessment process is to identify any relevant areas in the Borough where it is considered that the air quality objectives for the above air pollutants will be exceeded. The Council has previously undertaken the earlier rounds of Review and Assessment of local air quality management and identified the A259 in Bulverhythe as an area where the PM₁₀ objectives were exceeded.

This report concerns the sixth round Updating and Screening Assessment of air quality. For this, pollution sources have been re-examined and recent air quality monitoring in the Borough checked in accordance with Defra's Local Air Quality Management (LAQM) guidance.

The report identifies that the Council has not identified an additional risk of the air quality objectives for the LAQM pollutants: particles (PM₁₀), carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide, being exceeded anywhere in the Council's area. Thus the Council need not proceed beyond the updating and screening assessment for these pollutants.

Recent monitoring of nitrogen dioxide however along part of the A259 Bexhill Road has indicated that the annual mean objective has been exceeded. In previous years it has been borderline with the objective. The monitoring location is considered representative of relevant exposure and therefore further investigation is needed. **It is however important to note** that the new Hastings to Bexhill Link Road opened in December 2015. It is expected to relieve traffic congestion on the A259 Bexhill road and consequently improve air quality there.

1. Undertake consultation with the statutory and other consultees as required.

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2. Undertake a Detailed Assessment of the A259 Bexhill Road where monitoring indicated that the annual mean nitrogen dioxide objective was exceeded.
3. Maintain the existing monitoring programme.

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1 Introduction

1.1 Description of Local Authority Area

The Hastings Borough Council serves the towns of Hastings and St. Leonards, which are situated on the south coast within East Sussex. The Borough is geographically quite small and mostly urban; it covers an area of just over 29km². The estimated mid-year population for 2014 was 91,093 (from the Office of National Statistics (ONS)).

Most employment within the Borough is service based; health, public services, retail and education. Tourism is also very important to the Borough. There are industrial estates that lie on the outskirts of the Borough and these include engineering, catering, motoring and construction businesses. The main sources of atmospheric pollutants in the Borough arise from road transport. The principal roads through the Borough include the A21, A259 and the A2102.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 (USA) 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 microgrammes per cubic metre $\mu\text{g m}^{-3}$ (and 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 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2003
	5.00 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g m}^{-3}$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg m^{-3}	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g m}^{-3}$	Annual mean	31.12.2004
	0.25 $\mu\text{g m}^{-3}$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g m}^{-3}$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g m}^{-3}$	Annual mean	31.12.2005
Particles (PM ₁₀) (gravimetric)	50 $\mu\text{g m}^{-3}$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g m}^{-3}$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g m}^{-3}$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g m}^{-3}$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g m}^{-3}$, 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 Hastings Borough Council first undertook automatic monitoring air quality in the Borough in 1998. At that time the monitoring indicated that across most of the Borough met the Government's air quality objectives.

Subsequently however, more detailed work around the A259 Bexhill Road and the Freshfields landfill operation was carried out to investigate the levels of particulate matter. This included the completion of a Detailed Assessment for particles (PM₁₀) in 2003. The aim of this was to determine with reasonable certainty whether or not there was a likelihood of the AQ objectives being achieved.

The concentrations monitored at that time confirmed that the daily mean PM₁₀ objective was exceeded. Further modelled predictions based on vehicle activity associated with the landfill operation at Freshfields highlighted that the objectives were exceeded in areas close to busy roads and junctions. Relevant public exposure was also identified at residences in the area and on the basis of the findings the Council designated an Air Quality Management Area (AQMA) for the PM₁₀ in December 2003.

The AQMA encompassed properties in Bulverhythe between the junction of the A259 (Bexhill Road) and Harley Shute Road, and number 576 Bexhill Road on its northern side, and numbers 211 to 585 Bexhill Road on its southern side (see Figure 1.1).

The Council subsequently produced an Action Plan and undertook a Further Assessment in 2004. Both of these focussed on the high numbers of slow moving traffic and the re-suspension of dusts, which added to the background levels in the area.

Subsequent Updating and Screening Assessments and Progress reports were also completed by the Council and these showed that concentrations had reduced in the AQMA, upon closure of the landfill operation at Freshfields in 2008.

Figure 1.1 Hastings AQMA No. 1 (within Red line)



Note - red star represents location of Bulverhythe monitoring site

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

The Council participates in the Sussex Air Quality Partnership with other Sussex local authorities and undertakes automatic monitoring at the following fixed long-term site:

Hastings - Bulverhythe – a roadside site located near to housing in Bulverhythe (see Figure 1.1). Monitoring at this site first commenced in 2002 and is still in progress, although there have been equipment problems in recent years. Nitrogen dioxide (NO₂) and PM₁₀ are monitored at the site (see Table 2.1). The sample inlet is approximately 3m from the kerb of the A259.

Figure 2.1 Hastings Bulverhythe site



(See <http://www.sussex-air.net/AQNearMe/Monitoring/SiteDetails.aspx?SiteCode=HT1&SiteName=Hastings%20-%20Bulverhythe>)

The site is part of the Sussex Air Quality Network; hence the standards of QA/QC are similar to those of the government's AURN sites. The calibrations and filter change data are sent to the Environmental Research Group (ERG) at Kings College, London on a fortnightly basis.

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The ERG collect data from the instruments on a daily basis, verifying the data against other monitoring stations in the south-east and ratifying it using the calibration information supplied. The Local Site Operations (LSO) duties are carried out by trained officers from the Council.

Subsequent data ratification is also undertaken by ERG. In all cases the data are fully ratified unless reported otherwise. Further details of the sites can be found at www.sussex-air.net.

(Note - details of the Hastings site at Freshfields, which closed in 2011 are given in previous Council reports).

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	Easting	Northing	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?
Hastings - Bulverhythe	Roadside	577633	108726	2	NO ₂ PM ₁₀	TEOM	Y (0)	5	N

2.1.2 Non-Automatic Monitoring Sites

The Hastings Borough Council also undertakes the Hastings diffusion tube monitoring survey to supplement and extend its understanding of air quality. During 2014, the diffusion tube survey was based on 14 locations. All sites had single tubes exposed and none were co-located with the continuous monitoring station. The details of the diffusion tube monitoring locations are given in the table below.

The diffusion tubes were supplied and analysed by Gradko Environmental, with a preparation method using 20% TEA in water. (Note – the Council changed analyst during 2014 and hence the results for 2014 represent the period from April to December only). Gradko participated in the Health and Safety Laboratory's (HSL) Workplace Analysis Scheme for Proficiency (WASP) programme for diffusion tubes, which provides a Quality Assurance / Quality Control (QA/QC). The rating was determined in the laboratory performance testing rounds for the period January 2014 and December 2014; all rounds were determined as 100% satisfactory.

A major disadvantage of undertaking monitoring using diffusion tubes is that the method is less precise and accurate than continuous monitoring. The recommended methods to reduce errors include the use of good QA/QC practices and bias adjustment factors that are derived from co-location studies between continuous analysers and diffusion tubes.

The bias adjustment factors are specific to each year, analysing laboratory, method of analysis and location. The factors are therefore also limited to the data supplied. The Review and Assessment website advises that "in many cases, using an overall correction factor derived from as many co-location studies as possible will provide the 'best estimate' of the 'true' annual mean concentration, it is important to recognise that there will still be uncertainty associated with this bias adjusted annual mean. One analysis has shown that the uncertainty for tubes bias adjusted in this way is $\pm 20\%$ (at 95% confidence level). This compares with a typical value of $\pm 10\%$ for chemiluminescence monitors subject to appropriate QA/QC procedures."

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A local co-location study was not undertaken and so the default factor obtained from the Defra helpdesk default factor spreadsheet (version 09/15) was used. The tube precision for Gradko in 2014 was reported as good (based on 22 studies).

Year	Bias Default factor
2014	0.92

The above factor indicates that the diffusion tube results overestimate continuously monitored concentrations.

Table 2.2 Details of NO₂ non-Automatic Monitoring Sites

Site Name	Site Type	Easting	Northing	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?
St Luke's, 19 Barnfield Close	Roadside	580831	109964	N	N	N(10)	1.0	Y
Carlisle Parade	Roadside	581496	109288	N	N	Y(2)	1.0	Y
Manor Road	Roadside	582223	110361	N	N	Y(2)	1.0	Y
Ore Church, Old London Road	Roadside	583610	111325	N	N	Y	1.0	Y
Harley Shute	Roadside	578382	109601	N	N	N(10)	1.0	Y
Bexhill Road Boat	Roadside	576770	108101	N	N	N(15)	1.5	Y
81 Bexhill Road	Roadside	578500	108771	N	N	Y	1.5	Y
45 Bexhill Road	Roadside	578637	108798	N	N	Y(1.5)	1.0	Y
71 Bexhill Road	Roadside	578532	108776	N	N	Y(0.1)	1.5	Y
139 Bexhill Road	Roadside	578290	108819	N	N	Y(1.5)	2.0	Y
Bexhill Rd rail bridge	Roadside	578447	108794	N	N	N	1.5	Y
West Marina Gardens	Roadside	578946	108746	N	N	Y(2)	3.0	Y
114 Bohemia Road	Roadside	580252	110058	N	N	Y	1.5	Y
116 Bohemia Road	Roadside	580246	110064	N	N	Y	1.5	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

The monitoring reported below represents the 2014 results along with recent years' monitoring from 2010. The results are reported in accordance with the requirements of TG09.

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The nitrogen dioxide monitoring results for the Council's automatic site is in the following tables (Tables 2.3 and 2.4), which provide results for the period from 2010 to 2014 inclusive. The data are fully ratified for all years.

For 2014 the data capture at the Bulverhythe site was better than 2013, although it still represented only around 53% of the year). For all other previous years the data capture at the site was mostly good.

The Bulverhythe site is located close to the roadside of the A259 Bexhill Road in a suburban part of West St. Leonards. The measurements confirm that the site easily met the AQS annual mean objective of $40 \mu\text{g m}^{-3}$ for all years, with annual mean concentrations around $22 \mu\text{g m}^{-3}$ for most of the period reported. The adjusted 2014 result for the site was $23 \mu\text{g m}^{-3}$. This was derived using an adjustment factor of 0.9, which was derived from continuously monitored background sites in other Sussex local authority areas (see details in the next section).

(Note - the roadside site at Freshfields (which was closed in 2011) was reported previously in the Council's 2014 report).

Table 2.4 provides a comparison with the AQS hourly mean objective, which requires that the number of periods that exceed a one-hour mean of $200 \mu\text{g m}^{-3}$ does not arise more than 18 times over a calendar year. These episodic periods arise during

meteorological conditions that are conducive e.g. such as settled conditions in the wintertime when there is reduced dispersion from local sources.

The results show that the hourly standard of $200 \mu\text{g m}^{-3}$ was not exceeded at all for the period reported and therefore the hourly mean objective was not exceeded at the site.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %	Valid Data Capture 2014 %	Annual Mean Concentration $\mu\text{g m}^{-3}$				
					2010	2011	2012	2013	2014
Bulverhythe	Roadside	Y	-	53	24	22	22	28 (25.2)	22 (23.3)

In italics indicates less than 75% data capture. In brackets the mean "annualised" as in Box 3.2 of TG (09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>).

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %	Valid Data Capture 2014 %	Number of Exceedences of Hourly Mean ($200 \mu\text{g m}^{-3}$)				
					2010	2011	2012	2013	2014
Bulverhythe	Roadside	Y	-	53	0	0	0	0 (84)	0 (96)

The 99.8th percentile of hourly means is in brackets for those years with less than 90% data capture.

Diffusion Tube Monitoring Data

The monitoring results given in Table 2.5 are the annualised and bias adjusted results, with distance correction applied where needed, for the diffusion tubes exposed in 2014 (as detailed earlier in Table 2.2). No results exceeded $60 \mu\text{g m}^{-3}$ during the year indicating that the hourly objective was not exceeded.

The overall 2014 data capture rates for all of the diffusion tube monitoring sites during around 62%, due to the change in analyst part way through the year. All but three sites had 8 months data capture (67%); the other three sites had 33, 42 and 58% data capture respectively. To compensate for the reduced data capture, annualising factors were derived from other continuous monitoring sites in the Sussex Air Quality Monitoring Network that had good data capture, in accordance with Defra's TG09 guidance. The background sites chosen were Brighton Preston Park (which is also part of the Defra AURN network), plus Devonshire Park in Eastbourne and Denton Community Centre in Newhaven. The annualising factors derived from these sites were between 0.96 and 1.15.

The site with the highest estimated annual mean concentration was the site near the Boat on Bexhill Road. This site is located close to a bus stop; however it has no relevant exposure close by. With a distance correction the annual mean concentration falls to around $34 \mu\text{g m}^{-3}$, and thus meets the $40 \mu\text{g m}^{-3}$ objective. (Based on an assumed background concentration of $15 \mu\text{g m}^{-3}$)

Two of the sites on the southern side of Bexhill Road (numbers 71 and 81) are located within 20m of one another. These sites had uncorrected concentrations in 2014 that exceeded the objective. Both sites are located very close to house facades, near to where the road bends under the railway bridge and these high concentrations are considered to be a consequence of the frequently queuing traffic on the westbound side of the road. The results for both sites (with distance correction) exceeded the objective.

Of the other roadside sites, the site in Harley Shute just exceeded the objective. This site is located around 10m from the nearest site of relevant exposure and therefore concentrations at the nearest façade are much less and lower than the objective. The remainder of the sites also met the objective, with six of these measuring between 20 and 30 $\mu\text{g m}^{-3}$ and one other measuring less than 20 $\mu\text{g m}^{-3}$.

Table 2.6 provides a comparison of the 2013 and 2014 results for the sites. For both years there was limited data capture and hence the results were annualised. The adjusted results indicate that, apart from one site, concentrations were higher for 2014 than 2013.

This means that those sites that were borderline in 2013 exceeded in 2014. Reasons for the higher concentrations may relate to changes in meteorology between years, changes in emissions or the general uncertainty relating to diffusion tubes (including a change of analyst). The Sussex Air Pollution Monitoring Network reports for 2013 and 2014 indicate that concentrations of nitrogen dioxide are mainly stable between years, with some inter annual variation. This is also confirmed for the Hastings Bulverhythe site as reported above. It is therefore difficult to ascertain precisely the reason for this change between 2013 and 2014. It does however confirm that previous suspicions relating to high concentrations close to or exceeding the objective are still valid.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Location	Site Type	Within AQMA?	Data Capture 2014 (%)	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 = 0.92)
						2014 ($\mu\text{g m}^{-3}$)
St Luke's, 19 Barnfield Close	Roadside	N	41.7	Y	N	24.2
Carlisle Parade	Roadside	N	66.7	Y	N	29.9
Manor Road	Roadside	N	66.7	Y	N	15.2
Ore Church, Old London Road	Roadside	N	66.7	Y	N	25.9
Harley Shute	Roadside	N	66.7	Y	Y	27.7
Bexhill Road Boat	Roadside	N	66.7	Y	Y	33.9
81 Bexhill Road	Roadside	N	66.7	Y	Y	44.6
45 Bexhill Road	Roadside	N	33.3	N	N	33.1
71 Bexhill Road	Roadside	N	66.7	Y	Y	44.1
139 Bexhill Road	Roadside	N	58.3	Y	N	32.2
Bexhill Rd rail bridge	Roadside	N	66.7	Y	N	27.9
West Marina Gardens	Roadside	N	66.7	Y	N	28.4
114 Bohemia Road	Roadside	N	66.7	Y	N	39.1
116 Bohemia Road	Roadside	N	66.7	Y	N	39.5

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2013 and 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g m}^{-3}$	
			2013 (Bias Adjustment Factor = 0.77)	2014 (Bias Adjustment Factor = 0.92)
St Luke's, 19 Barnfield Close	Roadside	N	18.9	24.2
Carlisle Parade	Roadside	N	26.9	29.9
Manor Road	Roadside	N	14.3	15.2
Ore Church, Old London Road	Roadside	N	25.7	25.9
Harley Shute	Roadside	N	37.4	40.4 (27.7)
Bexhill Road Boat	Roadside	N	42.9 (28.2)	54.9 (33.9)
81 Bexhill Road	Roadside	N	39.5 (39.5)	44.6 (44.6)
45 Bexhill Road	Roadside	N	29.7	33.1
71 Bexhill Road	Roadside	N	40.1 (39.7)	44.5 (44.1)
139 Bexhill Road	Roadside	N	29.3	32.2
Bexhill Rd rail bridge	Roadside	N	24.7	27.9
West Marina Gardens	Roadside	N	28.5	28.4
114 Bohemia Road	Roadside	N	35.1	39.1
116 Bohemia Road	Roadside	N	33.7	39.5

2.2.2 PM₁₀

The Council uses a TEOM instrument, which requires the use of the VCM (Volatile Correction Model) correction to meet the equivalence criteria as required by the TG09 guidance.

The VCM method is based on the assumption that the volatile component of PM₁₀ lost during the heated sampling of PM with the standard TEOM is consistent across a defined geographical area. The model uses the FDMS purge measurement as an indicator of this volatile component. As FDMS instruments have met the equivalence criteria, the VCM correction is also considered equivalent to the European reference method.

The results for the Hastings site is reported below as **reference equivalent**, this represents TEOM measurements that were corrected using the VCM. The data are all fully ratified. The data capture for the Bulverhythe site was low in 2014 and therefore it was adjusted using an annualised factor (of 1.17) derived from the nearby Sussex sites in Lewes and Eastbourne.

The Hastings Bulverhythe monitoring site met the annual mean objective in 2014 (as shown in Table 2.6). The adjusted annual mean concentration monitored was around 23 $\mu\text{g m}^{-3}$. The annual mean concentrations for the previous two years were similar.

The daily mean objective, which has been exceeded more widely across the UK than the annual mean objective, is reported in Table 2.7. The 2014 monitoring results for the Bulverhythe site indicate that the objective was met. There were no days that exceeded 24-hour mean concentrations over 50 $\mu\text{g m}^{-3}$ during the period of monitoring in 2014. The 90.4th percentile of daily means was 30 $\mu\text{g m}^{-3}$ and therefore much less than 50 $\mu\text{g m}^{-3}$ again confirming that the objective was met.

Table 2.7 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration $\mu\text{g m}^{-3}$				
						2010	2011	2012	2013	2014
Bulverhythe	Roadside	Y	-	62	Y	26	30	22	20.6 (20.2)	21.6 (22.8)

Mean "annualised" as in Box 3.2 of TG (09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), as valid data capture was less than 75%

Table 2.8 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2014 %	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean ($50 \mu\text{g m}^{-3}$)				
						2010	2011	2012	2013	2014
Bulverhythe	Roadside	Y	-	62	Y	8	2	1	0 (31)	0 (30)

Where data capture for full calendar year was less than 90%, the 90.4th percentile of 24-hour means in brackets

2.2.3 Summary of Compliance with AQS Objectives

Hastings Borough Council has measured concentrations of nitrogen dioxide above the annual mean objective at relevant locations, and **will need to proceed to a Detailed Assessment**, for the area of A259 Bexhill Road identified.

It is however important to note that the new Hastings to Bexhill Link Road opened in December 2015. This road will relieve traffic congestion on the A259 Bexhill Road and consequently this will lead to improvements in air quality. See section 3.5 below.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Concentrations are often higher where traffic is slow moving, with stop/start driving, and where buildings on either side reduce dispersion. Screening models so far have not proved helpful at identifying potential exceedences, which have only been identified by monitoring. This assessment is for NO₂ only.

Previous Review and Assessments undertaken by the Council did not identify any roads needing assessment and this situation has not changed.

Hastings 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

These include some street locations where individuals may regularly spend 1-hour or more, for example, streets with many shops and streets with outdoor cafes and bars, close to road traffic where there may be high concentrations of NO₂. (Note - those people that are occupationally exposed are not included, as they are not covered by the regulations). The assessment is for NO₂ only.

Busy streets where people may spend an hour or more close to traffic were not found in previous assessments. There has been no change to the previous findings since then and no new roads have been constructed with traffic flows greater than 10,000 vehicles per day in the Council's area.

Hastings 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.

These include street locations in the Borough where traffic flows are not necessarily high (i.e. fewer than 20,000 vehicles per day) but where there are an unusually high proportion of buses and/or HGVs. The assessment is for both NO₂ and PM₁₀ and is dependent on the proximity of relevant exposure within 10 m of the kerbside. The Council in earlier Review and Assessment reports identified those roads within the Borough with high flows of heavy-duty vehicles. No new roads relevant to this section have been identified in the Borough.

Hastings Borough Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

Air pollutant concentrations are usually higher close to junctions, due to the combined impact of traffic emissions on roads forming the junction, and to the higher emissions due to stop start driving. The assessment is for both NO₂ and PM₁₀ and is dependent on the proximity of relevant exposure within 10 m of the kerbside.

There is no change to the previously reported situation concerning junctions with no new or newly identified junctions having relevant exposure within 10 m.

Hastings 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

The approach to considering new roads depends on whether or not an assessment was carried out in advance of building the new road. The assessment is for NO₂ and PM₁₀ and is dependent on the proximity of relevant exposure to the kerbside.

Since the previous round one important new road has been constructed and a further road proposed in the Borough where air quality assessments were required. The traffic flow on each of the new roads is greater than 10,000 vehicles per day

The new road that has been constructed is the Bexhill to Hastings Link Road from the junction with the A259 in Bexhill to the junction with the B2092 Queensway in Hastings. The road was opened in December 2015 and part of it runs along the line of the disused Bexhill to Crowhurst railway line. A detailed Environmental Impact Assessment and associated Air Quality Assessment was undertaken as part of the approval process (note - it is confirmed that the assessment was sufficient for review and assessment purposes). The assessment concluded that the benefit of the Scheme in terms of air quality would be a reduction in elevated NO₂ and PM₁₀ concentrations in populated areas, particularly along the A259. Reduction in pollutants concentrations were also predicted within the AQMA, resulting in predicted moderate beneficial impact from the Scheme. This is expected to contribute to the delivery of the AQAP being developed by the Hastings Borough Council and also to assist in improving public health.

A further road namely the Queensway Gateway Road a single carriageway road of approximately 650 metres is proposed. This connects the A21 Sedlescombe Road with the B2092 Queensway. An Environmental Statement has been undertaken as part of the full planning application with associated Air Quality Assessment (note - it is confirmed that the assessment was sufficient for review and assessment purposes). The conclusion of these assessments was that there is no predicted exceedance of the air quality limit values.

Hastings Borough Council has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG (09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

Only roads with significantly changed traffic flows that have not already been considered above were investigated. The assessment is for both NO₂ and PM₁₀. A comparison of traffic flows from the latest traffic data available from DfT confirms that there are no new roads with significantly changed traffic flows.

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

3.7 Bus and Coach Stations

This section only applies to bus stations or sections of bus stations that are not enclosed, and where there is relevant exposure, including at nearby residential properties. The assessment is for both the annual mean and the 1-hour NO₂ objectives. (Note - the term “bus” in this instance is used to signify both buses and coaches).

These were examined in previous USAs and found not to require further investigation.

Hastings Borough Council confirms that there are no relevant bus stations in the Council's area.

4 Other Transport Sources

4.1 Airports

Aircraft are potentially significant sources of nitrogen oxides (NO_x) emissions, especially during take-off. The TG09 guidance used new information, which has resulted in the criteria to trigger a Detailed Assessment being relaxed, while the requirement to assess PM₁₀ has been removed. Thus this section only applies to NO₂. (Note – any road traffic using airports was considered in the previous section.)

The nearest major airport to the Council's area is Gatwick Airport, which is in Sussex but outside the Borough. It is sufficiently distant (i.e. it is greater than 60km) as not to be relevant.

Hastings Borough Council confirms that there are no airports in the Council's area.

4.2 Railways (Diesel and Steam Trains)

Stationary locomotives, both diesel and coal fired, can give rise to high levels of sulphur dioxide (SO₂) close to the point of emission. Recent evidence also suggests that moving diesel locomotives, in sufficient numbers, can also give rise to high NO₂ concentrations close to the track where, along busy lines, emissions can be equivalent to those from a busy road.

4.2.1 Stationary Trains

Previous rounds of Review and Assessment also found that there are no areas within the Borough where diesel or steam locomotives are stationary for periods of 15 minutes or more and within 15 m of locations where regular outdoor exposure arises. This situation has not changed.

Hastings 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

Diesel locomotives use rail lines that run through Hastings, however these are not included within the list of lines (from Table 5.1 of TG09), which identify those with a “high” usage of diesel locomotives.

Hastings 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)

Hastings is famous as one of Britain's oldest fishing ports, with boats that work from the beach. It does not however have any large ships (cross-channel ferries, Ro-Ro, container ships, cruise liners) within its area.

Hastings Borough Council confirms that there are no ports or shipping that meet the specified criteria within the Council's area.

5 Industrial Sources

5.1 Industrial Installations

The Council and the Environment Agency (EA) control industrial sources within the Borough under the Environmental Permitting (England and Wales) Regulations 2010, as amended. The Council also has control over some smaller industrial and commercial sources, largely through the Clean Air Act 1993, with its associated control of the discharge stack or chimney heights. As a result of these controls, there are relatively few sources that may be relevant under the LAQM regime. Many of these sources were also addressed during previous rounds of Review and Assessment. The focus is thus on new installations and those with significantly changed emissions.

Industrial sources are considered unlikely to make a significant local contribution to annual mean concentrations, but could be significant in terms of the short-term objectives in the Borough. Sources in neighbouring authorities and the combined impact of several sources are considered. The approach used is based on use of the planning and permitting processes. The assessment considers all the LAQM pollutants, including those most at risk of requiring further work (SO₂, NO₂, PM₁₀ and benzene).

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

Since the last round of Review and Assessment the Council have not permitted any installation that required an air quality assessment.

Hastings 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

None of the existing installations in the Borough have increased emissions by greater than 30% and no new relevant exposure has been introduced nearby.

Hastings 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

Since the last round of Review and Assessment the Council has not received any applications for new installations that required an air quality assessment.

No other applications have been received for new or proposed sources where it has been determined that the installation is likely to give rise significant pollutant emissions.

Hastings 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

This was previously assessed in earlier rounds of Review and Assessment and it was found that there are no major petrol storage depots in the Borough. This situation has not changed.

There are no major fuel (petrol) storage depots within the Council's area.

5.3 Petrol Stations

There is some evidence that petrol stations could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads. Some sites in the Borough have however already incorporated petrol vapour recovery (PVR) systems, furthermore those service stations with petrol sales above 3.5 million litres per annum were required to install Stage 2 PVR systems before the 1st January 2010 deadline to comply with UK legislation to reduce petrol vapour (and benzene) from vehicles.

The previous round of Review and Assessment assessed all petrol stations for a throughput of more than 2000 m³ of petrol, and a busy road nearby. Of these none were found to have relevant exposure within 10m of the pumps and therefore it was not necessary to go to a Detailed Assessment. There has been no change in this situation for this round.

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

5.4 Poultry Farms

Some local authorities in England have identified potential exceedences of the PM₁₀ objectives associated with emissions from poultry farms. These relate to large farms (with more than 100,000 birds) that are regulated by the EA. None however exist within the Council's area.

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Biomass burning can lead to an increase in PM₁₀ emissions, from the combustion process itself and also by aerosol formation from the volatile materials distilled from the wood. Compared to conventional gas burning, biomass burning can also result in an increase in NO_x emissions due to the fuel-derived portion that is not present in gas combustion.

The Council has not designated a Smoke Control Area in the Borough, however it has an enforcement policy in regard of the requirements of the Clean Air Act 1993, which seeks to minimise smoke emissions.

The Council has assessed for individual combustion plant burning biomass ranging from 20 MW down to 50 kW units and no new plant have been identified that have not previously been considered.

Hastings Borough Council confirms that there is no biomass combustion plant in the Council's area.

6.2 Biomass Combustion – Combined Impacts

Any biomass burning using non-authorized appliances in the Borough is considered minimal. There is however 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 future. The potential for combined impacts, other than that discussed above, will be assessed should future plant be

proposed. Currently there is minimal domestic solid fuel burning as discussed in the next section.

Hastings Borough Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The previous rounds of Review and Assessment identified areas where domestic solid fuel burning gives rise to exceedences of the objective for SO₂. PM₁₀ from domestic solid fuel burning was also covered above.

There are currently no areas of significant domestic solid fuel use in the Borough. This position has not changed from the previous USA, which confirmed that no areas of significant domestic solid fuel burning were identified. Gas is widely available in the Borough and it remains the predominant fuel used for domestic water and space heating.

Hastings 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 uncontrolled and fugitive sources can give rise to elevated PM₁₀ concentrations. These sources can include, but are not limited to the following sites: quarrying and mineral extraction sites, landfill sites, coal and material stockyards, or materials handling, major construction works and waste management sites. Dust can arise from the passage of vehicles over unpaved ground and along public roads that have been affected by dust and dirt tracked out from dusty sites. Other sources of dust are from the handling of dusty materials, the cutting of concrete, etc. and wind-blown dust from stockpiles and dusty surfaces.

No fugitive and uncontrolled particulate matter emissions have however been identified based on local professional knowledge, recent air quality assessments or recent complaints to the Council.

Hastings 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 monitoring results within the Borough confirmed that the annual mean nitrogen dioxide objective continues to be met at most locations monitored in the Borough. The majority of the sites monitored are considered to represent relevant exposure. A new analyst for the NO₂ diffusion tubes was used part way during the year; hence the results had to be adjusted for the whole year.

The two monitoring sites with relevant exposure, previously identified as borderline exceeded the annual mean nitrogen dioxide objective in 2014. These sites are on the A259 Bexhill Road, east of the existing AQMA, which was designated for PM₁₀ only.

Based on these findings, the Council will need to undertake a Detailed Assessment for this area.

8.2 Conclusions from Assessment of Sources

The Council has assessed local developments of road transport, other transport, industrial processes, commercial/domestic, fugitive emissions, plus residential and commercial sources. The findings for these have indicated that there are no new changes that require the Council to undertake a Detailed Assessment.

8.3 Proposed Actions

This report follows the technical guidance (TG09) and fulfils this part of the continuing LAQM process.

Hastings Borough Council

The findings from following this methodology are that the Council has not identified a need to proceed to a Detailed Assessment, with the exception of the A259 Bexhill Road. The Council will therefore undertake the following actions:

1. Undertake consultation on the findings arising from this report with the statutory and other consultees as required.
2. Undertake a Detailed Assessment of the A259 Bexhill Road where monitoring indicated that the annual mean nitrogen dioxide objective was exceeded.
3. Maintain the existing monitoring programme so far as reasonably practicable.

9 References

Defra, 2007. Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1). Defra, London. Cm 7169.

Defra, 2009a. Local Air Quality Management, Technical guidance LAQM.TG09. Defra, London.

Hastings Borough Council (2014) Local Air Quality Management – Progress Report.

KCL, 2014. Sussex Air Pollution Monitoring Network Annual Report, 2013. KCL November 2014

KCL, 2015. Sussex Air Pollution Monitoring Network Annual Report, 2014. KCL November 2015

LAQM Helpdesk March 2015. Summary of Laboratory Performance in AIR/WASP NO₂ Proficiency Testing Scheme (April 2013 – February 2015)

Appendices

Appendix A:

2014 unadjusted NO₂ diffusion tube results

$\mu\text{g m}^{-3}$	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
St Lukes Alma Terrace				21.95	21.95		18.10	22.62				30.13
Carlisle Parade				31.01	31.01		57.38	25.79	27.68	26.99	26.99	29.17
Manor Rd Mount Pleasant Ct				15.26	15.26		11.92	13.91	14.70	19.39	19.39	20.75
Old London Rd Christchurch				29.47	29.47		23.29	27.55	26.52	27.45	27.45	30.82
Junc Harley Shute				39.11	39.11		70.84	44.68	29.77	39.45	39.45	44.12
Bexhill Rd Boat				53.10	53.10		122.32	59.91	50.64	45.22	45.22	41.13
81 Bexhill Rd				49.64	49.64		88.23	37.11	36.86	41.69	41.69	37.27
45-47 Bexhill Rd							59.84	35.54	29.05			8.01
71 Bexhill Rd				43.25	43.25		77.85	44.47	37.99	45.82	45.82	43.50
139 Bexhill Rd				37.27	37.27		58.99		30.39	28.68	28.68	32.97
Railway Bridge Bexhill Rd				27.56	27.56		51.35	26.92	26.15	24.03	24.03	31.49
West Marina Gardens				26.52	26.52		54.62	27.48	20.85	29.04	29.04	29.81
114 Bohemia Rd				48.71	48.71		39.47	40.12	34.96	37.94	37.94	47.55
116 Bohemia Rd				43.82	43.82		32.98	37.87	28.72	53.83	53.83	44.19

Annual adjustment factors used for diffusion tubes

site	factor
less jan/feb/mar/jun	1.013806712
less jan/feb/mar/jun/aug	0.964070556
less jan/feb/mar/jun/sep/oct/nov	1.146197079

Appendix B:

Part A/ B installations in Hastings

In the Hastings & St Leonards area, the Environment Agency is responsible for the Deutsch factory in Stanier Road whilst the Council is responsible for the following operations:

Hansons, The Quarry, Sedlescombe Road North, Hastings (batching)

The Crematorium, The Ridge, Hastings (crematorium)

St Leonards Motors, Brunel Road, St Leonards (vehicle respray)

Stamco, Highfield Drive, St Leonards (wood)

Collins and Hayes, Menzies Road, Hastings (wood)

In addition all petrol stations and dry cleaners are permitted and there are a number of premises which used to hold permits but which have since closed or where activities have fallen to a size at which a permit is no longer relevant.

