LOCAL AIR QUALITY MANAGEMENT

UPDATING & SCREENING ASSESSMENT 2006

Prepared By **David Sutton**
Supervised by **James Wilson &**
Stephen Hems

April 2006

EXECUTIVE SUMMARY

In accordance with the Policy and Technical Guidance issued by the Department of the Environment, Food and Rural Affairs (February 2003), all Local Authorities have a statutory duty to carry out a yearly assessment of air quality in their area.

All seven pollutants, described in the guidance, have been considered in the previous review and assessment exercises, completed by North Norfolk District Council.

This report is only required to consider new air pollution monitoring data, and issues which have changed since the last review and assessment. This report indicates that no major changes in industry and trade activity have occurred in the North Norfolk area which would be likely to increase the risk of any of the prescribed pollutants exceeding their limit values by the relevant deadline.

Furthermore, no changes in traffic flow have occurred which would be likely to increase the risk of any of the above pollutants exceeding their limit values by the relevant dates.

North Norfolk District Council will continue with its Nitrogen Dioxide diffusion tube monitoring program through out the district. Monitoring will continue to provide a good data set and co-location sites with the continuous monitoring equipment will ensure data accuracy.

It is also intended to do some further research into specification of the particulate matter using an Accu cartridge Particulate collection system.

CHAPTER 1 UPDATING AND SCREENING ASSESSMENT INTRODUCTION

1.1 PURPOSE

All Local Authorities have a statutory duty to examine, manage and report on local air quality within their area.

1.2 THE AIR QUALITY STRATEGY 2000

This Strategy aims to map out, as far as possible, the future of ambient air quality policy in the United Kingdom in the medium term. It aims to provide the best practicable protection to human health by setting health based objectives for eight main air pollutants. It contributes to the protection of the natural environment by setting objectives for two pollutants for the protection of vegetation and ecosystems. It describes the current and likely future levels of air pollution in the UK and provides a framework to help everyone identify what they can do to improve air quality.

1.3 LEGISLATIVE BACKGROUND

The Air Quality Review and Assessment process is a duty imposed on local authorities described in part IV of the Environment Act 1995 and no major amendment has been made since the Second round of review and assessment.

A system of Daughter Directives is currently the way forward for the EU Air Quality policy and is translated into English law through amendments of the Air Quality (England) Regulations 2000. The Air Quality Daughter Directive system follows the Air Quality Framework Directive adopted in 1996. The Daughter Directives introduce numerical limit values for each of the identified pollutants and aim to harmonise monitoring strategies, measuring methods, calibration and quality assessment methods to arrive at comparable measurements throughout the EU and to provide for good public information.

The provisions of the first Daughter Directive were to establish limit values for NO_2, SO_2, Pb and PM_{10} and were translated into English law within the Air Quality Regulations (England) 2000. Those limits have not changed throughout the air quality review and assessment program.

The second Daughter Directive relates to limit values for benzene and carbon monoxide and was introduced in December 2000. The Directive was translated into English law in the Air Quality (England)(Amendment) Regulations 2002 and has set new pollution targets for benzene and carbon monoxide. Those limit values were amended for the following ones:

Table 1.1 New Air Quality Objectives Benzene and CO

	Air Quality Objective Level	Air Quality Objective Date
Benzene	**16.25 g/m3 (5 ppb)**	**Annual mean 31st December 2003**
	5 g/m3 (1.5 ppb)	**Annual mean 31st December 2010**
Carbon monoxide	**11.6 mg/m3**	**Daily 8 hour mean 31st December 2003**

Third and fourth Daughter Directive will shortly follow for respectively Ozone and the remaining pollutants listed in Annex I of the Air Quality Framework Directive, i.e. As, Cd, Ni, Hg and PAH although these are not currently considered.

1.4 APPROACH TAKEN

The Air Quality Strategy 2000, the Air Quality (Amendment) Regulations 2002, gave detail on the objectives to be met and the Local Air Quality Management Policy and Technical guidance PG(03) and TG(03) Updated in January 2006 gave guidance and checklists to assist Local Authorities in the production of this 2006 Updating and Screening Assessment.

North Norfolk District Council has undertaken this review and assessment 'to identify those matters that have changed since the last review and assessment, which might lead to a risk of an air quality objective being exceeded'.

As described in the LAQM guidance, North Norfolk will only undertake 'a level of assessment that is commensurate with the risk of an air quality objective being exceeded'. This report will therefore only focus on new information, ie the latest air quality monitoring and traffic data. It has to be viewed in conjunction with all previous review and assessment reports.

1.5 LOCAL AIR QUALITY MANAGEMENT IN NORTH NORFOLK

North Norfolk reviewed all 7 pollutants in the Stage 1 report published in 1999. This Stage 1 report identified 4 pollutants that required further analysis and hence proceeded to a Stage 2 for NO_2, PM_{10}, benzene and SO_2.

The Stage 2 report published in 2000 identified that all designated target values were expected to be met and hence found no requirement to proceed to a Stage 3.

Both the 2003, Updating and Screening Assessment and the 2004 Progress Report, identified one NO_2 Hot Spot within North Norfolk, located in the village of Hoveton. Although the 2005 target was expected to be met, further NO_x tube monitoring were set up within the area to give a more detailed view. The new monitoring locations have been running for 24 months and the data indicates there is not a need for a detailed assessment.

The Updating and Screening Assessment 2003, suggested a degree of uncertainty as to whether the much more stringent, 2010 target value for PM_{10} would be met. To address this uncertainty in the 2004 Progress Report North Norfolk District Council committed to undertaking a feasibility study in monitoring PM_{10}.

In the 2005 Progress Report it was confirmed that the only NO_x hotspot in North Norfolk, located in the village of Hoveton was going to meet the 2005 Air Quality Objective. Further to this the Authority committed to extending its monitoring program to include Benzene by diffusion tube and Particulate matter, should our bid for funding to purchase equipment be approved.

1.6 LOCAL AIR QUALITY MONITORING

North Norfolk District Council runs a comprehensive diffusion tube sampling program looking at specific concerns or sites, as well as a continuous air quality monitoring station.

There are 14 monitoring sites across North Norfolk (see table 1) monitoring either Oxides of Nitrogen or Benzene. These sites comprise two large towns, Cromer and North Walsham, the market town of Fakenham, the village of Hoveton and the village of Bacton used as a Background site.

Nitrogen Oxides are monitored due to concerns over the emissions from road vehicles and sites are selected due to their volume of traffic, level of congestion, proximity to receptors, e.g. residential property, general public.

In April 2005 North Norfolk District Council implemented a Benzene diffusion tube sampling program as a measure to gain a greater level of confidence in meeting the more stringent 2010 Air Quality Objective as set out in the Air Quality Strategy 2000. Three monitoring sites were selected to monitor specific locations being one road junction, one busy roundabout with a large petrol filling station and The Bacton Gas Terminal. Two other sites were selected as background and comparison control sites.

In March 2005 North Norfolk District Council took over the Bacton Air Quality Monitoring Station to provide a continuous monitoring site accredited to national standards where selected pollutants can be measured at a rural background site. The site has previously been used for the continuous monitoring of SO_2, NO_X, and, PM_{10} along with meteorological data. This monitoring equipment was included in the site with the exception of the PM_{10} monitor.

In 2005 a capital funding application was submitted and accepted by DEFRA for a Tapered Element Oscillating Microbalance (TEOM), and this was installed in December 2005. The Station is also used as a co-location site with diffusion tubes including three NOx tubes.

Table 1.2 North Norfolk District Council Monitoring Locations

Site Name	Location	Determinand	Site Type	Mehtod	OS Grid Ref.
Cromer 1	9 Hamilton Road, Cromer	NOx and Benzene	Roadside	Diffusion Tube	TG 217 422
Cromer 6	33 Cliff Road, Cromer	NOx	Background	Diffusion Tube	TG 227 412
North Walsham 8	Angel Court, North Walsham	NOx and Benzene	Roadside	Diffusion Tube	TG 281 303
North Walsham 7	26 Corbett Road, North Walsham	NOx	Background	Diffusion Tube	TG 283 309
Fakenham 9	Post Office, Queens Road, Fakenham	NOx	Roadside	Diffusion Tube	TF 921 296
Fakenham 9	Post Office, Queens Road, Fakenham	NOx	Roadside	Diffusion Tube	TF 921 296
Fakenham 9a	33-35 Oak Street, Fakenham	NOx	Roadside AQC	Diffusion Tube	TF01868 29640
Fakenham 3	Hillside Service Station (Shell), Creake Road, Fakenham	Benzene	Roadside	Diffusion Tube	TF91240 30686
Fakenham 4	Fakenham Infants School, Norwich Road, Fakenham	NOx	Background	Diffusion Tube	TF 926 296
Hoveton10a	Miss Roy Stalham Road, Hoveton	NOx and Benzene	Roadside	Diffusion Tube	TG303181
Hoveton10b	Miss Roy Stalham Road, Hoveton	NOx	Roadside AQC	Diffusion Tube	TG309186
Hoveton 10c	Roys Food Hall, Stalham Road, Hoveton	NOx	Roadside	Diffusion Tube	TG30155 18285
Hoveton 11	Waveney Close, Stalham Road, Hoveton	NOx	Background	Diffusion Tube	TG31133 18622
Bacton 12	Church Farm, Church Road, Bacton	NOx and Benzene	Background co-location AQC	Diffusion Tube	TG33344 33667
Bacton 13	Church Farm, Church Road, Bacton	NOx	Background co-location AQC	Diffusion Tube	TG33344 33667
Bacton 14	Church Farm, Church Road, Bacton	Nox,	Background co-location AQC	Diffusion Tube	TG33344 33667
Bacton 15	Church Farm, Church Road, Bacton	Nox, SO_2, PM_{10}	Background co-location AQC	Continuous	TG33344 33667

CHAPTER 2 UPDATING AND SCREENING ASSESSMENT FOR BENZENE

2.1 OBJECTIVES FOR BENZENE

A running annual mean of 16.25 μg m^{-3} (5 ppb) to be achieved by December 2003. An annual mean of 5.0 μg m^{-3} (1 ppb) to be achieved by December 2010.

The Government has stated that the objective should apply in non-occupational, near ground level outdoor locations, background locations, roadside locations and other areas of elevated benzene concentration where a person might reasonably be expected to be exposed over the averaging time of the objective.

2.2 BACKGROUND

The 2003 Updating and Screening Assessment concluded that previous monitoring had agreed with the mean background benzene concentrations, produced by Netcen for the North Norfolk area, indicating that local contributions are not significant enough to affect background levels. For 2003, Netcen estimated benzene levels to range from 0.1 – 0.3 μg m^{-3} but typically lying around 0.16 μg m^{-3}. The higher background levels are estimated for around Coltishall airfield.

Both the 2003 and 2010 objectives were expected to be met. However it was advised that a degree of monitoring may provide further confidence in meeting the more stringent 2010 objective.

The 2005 / 6 progress reports gave detail on a passive monitoring program to cover 5 sites across North Norfolk.

The main sources of benzene emissions in the UK are petrol fuelled vehicles, petrol refining, distribution and the uncontrolled emissions from petrol station forecourts without vapour recovery systems.

According to LAQM.TG(03), the level at which traffic volume could start to influence local benzene levels on any one stretch of single carriageway is 80,000 vehicles per day. North Norfolk has no motorways or dual carriageways. From County Council traffic counts, the highest volumes of daytime traffic recorded for North Norfolk's busiest roads is <12,000 vehicles per day. Using North Norfolk traffic growth figure of 15.2% increase in traffic by 2010, this volume would not exceed 15,000 vehicles per day and therefore not influence local benzene levels.

LAQM.TG(03) also states that petrol stations with annual throughput >2,000 m^3 will emit sufficient benzene to put the 2010 objective at risk of being exceeded if combined with higher levels such as from roads carrying >30,000 vehicles per day. This is currently not applicable and is not predicted to be the case in 2010.

2.3 MONITORING OF BENZENE POLLUTION

In April 2005 North Norfolk District Council implemented a benzene diffusion tube sampling program as a measure to gain a greater level of confidence in meeting the more stringent 2010 Air Quality Objective. Five monitoring sites were selected to monitor specific locations being one road junction, one busy road, one busy roundabout with a large petrol filling station and The Bacton Gas Terminal. One other site was selected as background and comparison control sites.

All sites are selected in a generally open area, within the restrictions imposed by the site location and type, allowing free circulation of air around the diffusion tube. Ideally, tubes are placed at breathing height, but due to losses of tubes by theft, it has been necessary to place all tubes at a height of 2-3m.

Road sites are selected to reflect the maximum concentration of pollutant to which people may be exposed, even if only for short periods. Tubes are sited 1-5m from the kerb edge, and mounted on lamp posts on the pavement. Generally sites are selected using local knowledge and common sense of where we expect the traffic and population to interact.

Background sites are located at locations in excess of about 50m from a busy road. Tubes are sited on lamp posts, in quiet residential areas, schools or other public buildings, either close to the town centre or in suburbs bordered by a busy arterial road. Sites are within 1 mile of a road site diffusion tube.

Table 2.1 showing the locations of the Benzene diffusion tubes

Site Name	Location	Determinand	Site Type	Method	OS Grid Ref.
Cromer 1	9 Hamilton Road, Cromer	NOx and Benzene	Urban Roadside	Diffusion Tube	TG 217 422
North Walsham 8	Angel Court, North Walsham	NOx and Benzene	Urban Roadside / Junction	Diffusion Tube	TG 281 303
Fakenham 3	Hillside Service Station (Shell), Creake Road, Fakenham	Benzene	Roundabout / Roadside / Petrol Filling Station	Diffusion Tube	TF91240 30686
Hoveton10a	Miss Roy Stalham Road, Hoveton	NOx and Benzene	Roadside	Diffusion Tube	TG303181
Bacton 12	Church Farm, Church Road, Bacton	NOx and Benzene	Background co-location AQC	Diffusion Tube	TG33344 33667

Table 2.2 Passive diffusion tube monitoring Data April 2005 to Apr 2006 (µg m^{-3})

	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Mean	predicted 2010
Cromer	0.70	1.23	1.35	1.23	1.77	1.51	1.59	1.33	2.20	2.39	1.91	1.81	1.59	1.39
North Walsham	1.58	1.51	1.62	1.47	1.77	1.96	1.24	2.41	3.04	2.83	2.66	1.94	2.00	1.75
Fakenham	1.77	0.70	1.46	0.59	0.90	0.88	0.89	1.02	1.37	1.72		1.03	1.12	0.98
Hoveton	1.90	1.46	0.76	1.65	2.17	1.97	0.38	2.30	2.49	2.70	2.52	2.13	1.87	1.64
Bacton	0.65	1.03	0.66	0.51	0.77	0.82	0.55	1.27	1.18	1.36	1.38	1.54	0.98	0.87

Figure 2.1 Benzene Diffusion Tube Data 2005 - 2006

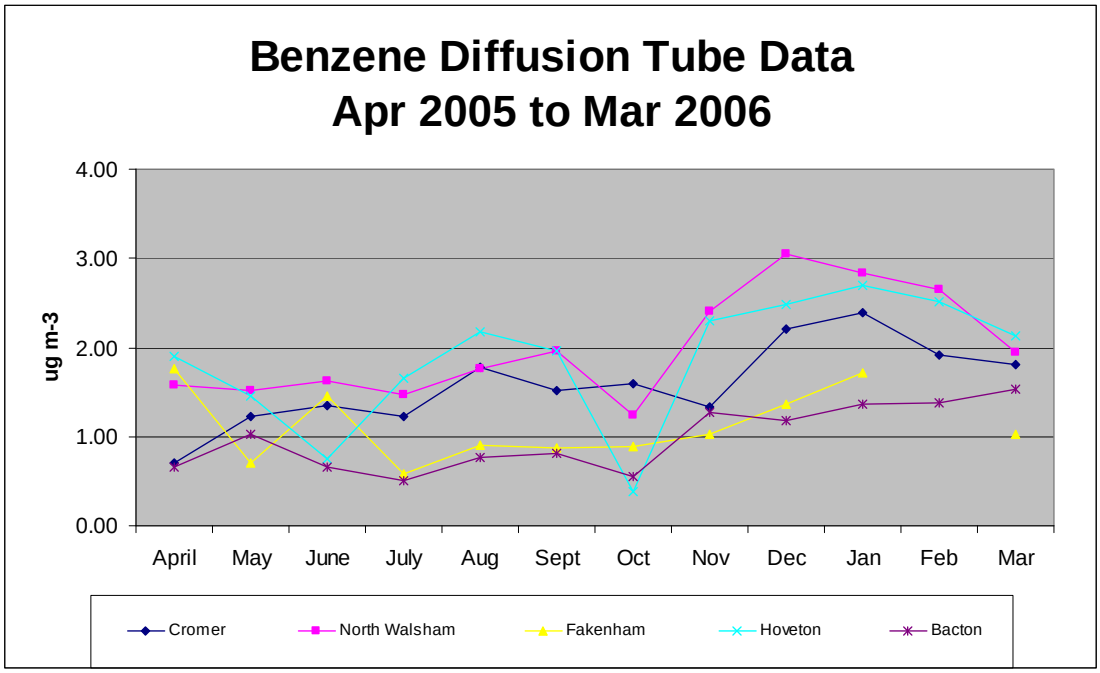


Table 2.3 Bacton Gas Terminal Monitoring Results 2005

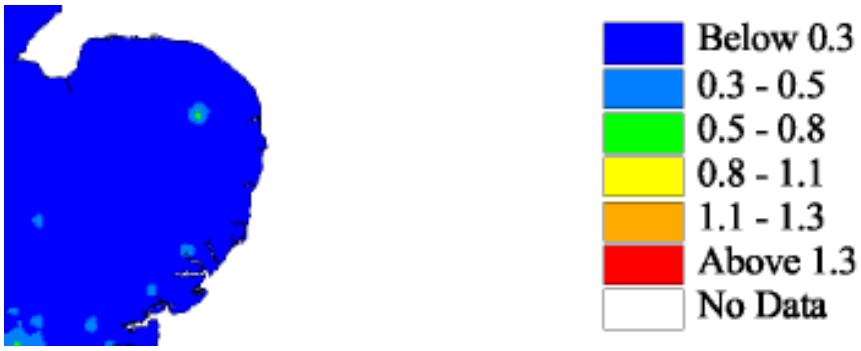
Location	Jan 2005 – Dec 2005 Annual Average Benzene (µg/m^{-3})
	Benzene
Paston West	0.98
Paston East	0.95
Bacton Lay-by	1.89
Castaway Holiday Park	0.94

Air Quality Monitoring around the Bacton Gas Terminal: January to December 2005, Tony Clark: AEAT/ENV/R/2122/Issue 1

2.4 NATIONAL TRENDS AND DATA

Estimated Mean Annual Background Benzene Concentration 2010 (µg m^{-3})

Fig 2.2 Estimated annual mean background benzene concentration, 2010 (µg m^{-3})



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

The map show the estimated mean background benzene concentration for 2010 for the Eastern region. North Norfolk is within the 0.3 µg $m^{-3.}$

Since January 2000, EU legislation has meant that the maximum benzene content in petrol has been reduced from 5% to 1%.

Petrol filling stations are perhaps the most important industrial source of benzene in the local atmosphere. The installation of Petrol Vapour Recovery Equipment, required under the Environmental Protection Act before December 2004, has further reduced background benzene levels.

2.5 INDUSTRIAL SOURCES OF BENZENE POLLUTION

2.5.1 Industrial processes

There have been no new industrial processes in the District since the 2003 Updating and Screening Assessment that would be expected to affect local benzene levels and no new industry is anticipated.

The only major industry that has changed since the 2003 Updating and Screening was reported is the Bacton Gas Terminals. In 1999, the Gas Terminals ceased monitoring for benzene when, after several years of monitoring programs, there was observed to be no excedence beyond the industrial site boundary. The Terminal has since contracted AEAT to carry out further monitoring.

There have been no new industrial processes close to the NNDC border that would affect local benzene levels within the District. NNDC have not been made aware of any plans within neighbouring Authorities that could affect benzene levels in the future.

2.5.2 Petrol Station

There have been no major road changes/construction since the last report and no significant road changes/construction are forecast.

As there is now Phase 2 vapour recovery ie petrol stations being required to operate vapour recovery at the petrol pump, it is expected that garages with a throughput of >2000 m3/yr, where located next to a busy road, could have an impact on background benzene levels. Although North Norfolk currently have 3 such garages, none of these garages are located next to busy roads ie those carrying >30,000 vehicles per day.

2.5.3 MAJOR FUEL STORAGE DEPOTS

Previous estimates of the background benzene level were modestly higher around Coltishall airfield. The air base in the process of closure with the last squadron of Jaguar Aircraft leaving in April 2006. The base is now being cleared and there are no regular flight in or out of the base, thus it is not considered to be a concern at this time.

There are no other airports within North Norfolk and there is no such developments anticipated.

2.6 CONCLUSION FOR BENZENE

All petrol stations, that are requires to, now have Phase 1 vapour recovery equipment at delivery installed and in use. This will contribute to reductions in both local and background benzene levels.

Monitoring results show that the Bacton Gas Terminal complex does not significantly influence local benzene concentrations. This is the only major industrial process in the District that emits benzene.

The diffusion tube monitoring program undertaken between April 2005 and April 2006 has shown that the five most likely sites to show a higher background benzene level are below the 2010 objective.

At this stage the 2010 objectives are expected to be met.

It is not proposed to continue to a Detailed Assessment for the pollutant Benzene.

Chapter 3 UPDATING AND SCREENING ASSESSMENT FOR 1,3 - BUTADIENE

3.1 OBJECTIVES FOR 1,3-BUTADIENE

A running annual mean of 2.25 μg m^{-3} (1 ppb) to be achieved by December 2003.

The Government has stated that the objective should apply in non-occupational, near ground level outdoor locations, background locations, roadside locations and other areas of elevated 1,3-butadiene concentration where a person might reasonably be expected to be exposed over the averaging time of the objective.

3.2 Background

The 2003 Updating and Screening Assessment showed that the mean background 1,3-butadiene concentrations, as produced by Netcen for the North Norfolk area, were typically 0.08 μg m^{-3} with slightly higher concentrations of 0.1 μg m^{-3} around Coltishall airfield.

Bacton Gas Terminal complex emits such insignificant amounts of 1,3-butadiene that it can not be monitored. This is the only major industrial process in the District that emits any 1,3-butadiene. The transboundary effects from Dow Chemical at Kings Lynn was not expected to have any significant effects on local 1,3-butadiene levels. Hence there are no sources of 1,3-butadiene that would significantly elevate levels above the background figure.

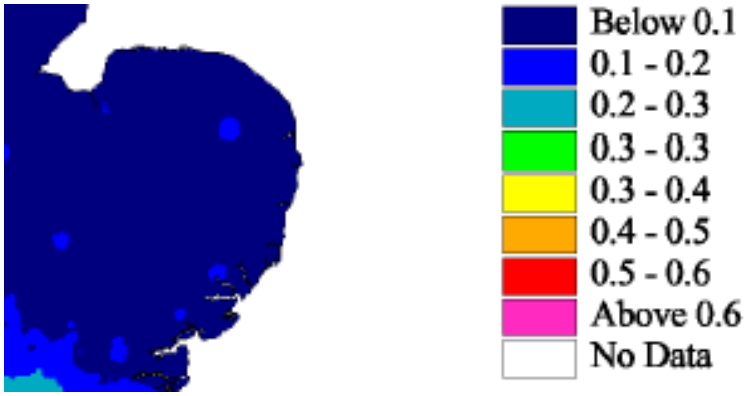
3.3 Monitoring of 1.3-Butadiene Pollution

In light of the conclusions of the last report showing that there are no concerns regarding local levels of 1,3-butadiene, no new monitoring data has been acquired. In addition, as there have been no significant changes that could affect local 1,3-butadiene levels either within the District or adjacent to it, there are also no plans at the present time to commence any new monitoring program.

3.4 National Trends and Data

A background map of 1,3-butadiene pollution obtained from the LAQM website shows the general trend in the Eastern region and is shown below.

Fig 3.1 Estimated annual mean background 1,3-butadiene concentration, 2003 (mg m^{-3})



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

The map show the estimated mean background 1.3- Butadiene concentration for 2003 for the Eastern region. North Norfolk is within the 0.1 mg m^{-3}

The main source of 1,3-butadiene in the UK is emissions from motor vehicle exhausts. Maximum running annual mean concentrations of 1,3-butadiene measured at all urban background, centre and roadside locations are below the 2003 objective of 2.25 mg m^{-3} (LAQM.TG(03))

Improvements in fuel quality and vehicle catalysts will bring about further improvements in 1,3-butadiene levels. LAQM.TG(03) states that national results from the last reports indicate that there are no requirements for Local Authorities to consider traffic emissions in the review and assessment for the 2003 objective and that only Authorities with relevant locations in the vicinity of major industrial processes which handle, emit or store 1,3-butadiene need be considered.

By far the greatest source of 1,3-butadiene is from motor vehicle exhausts. However despite the ever increasing levels of road traffic, improvements to fuel quality, including those as part of the Auto-Oil programme and the increasing number of vehicles fitted with 3-way catalytic converters, emissions are only expected to decrease with time

3.5 Industrial Sources of 1.3-Butadiene Pollution

There have been no new industrial processes in the District since the last report which would affect local 1,3-butadiene levels and no new industry is forecast.

Dow Chemical, Kings Lynn is the only major industry within the neighbouring Authorities that emits significant amounts of 1,3-butadiene. The transboundary effects were not considered to be of concern when analysed for the last updating and screening assessment and as there have been no major changes to the operation of the factory, it is not

considered to be of concern to local 1,3-butadiene levels in North Norfolk at the present day.

There have been no new industrial processes close to the NNDC border that would affect local 1,3-butadiene levels within the District. NNDC are also not aware of any new industrial processes planned by neighbouring Authorities which could affect 1,3-butadiene levels in the future.

LAQM.TG(03) indicates that petroleum processes and the manufacture and use of organic chemicals emit 1,3-butadiene. Anglian Developments of Neatishead and Wall Engineering at North Walsham are the only industries that use organic chemicals with a throughput large enough to be authorised under LAPPC as a Part B process. LAQM.TG(03) states that only major processes, ie those authorised as Part A processes under LAPPC, would have a throughput great enough to potentially have a significant effect on local background levels. These two companies are, therefore, not expected to influence local background levels of 1,3-butadiene.

The only petroleum processes in the District which are Part A processes are the Bacton Gas Terminals. Since the last Updating and Screening Assessment there have been several new gas fields come on stream resulting in an increased throughout of gas and the subsequent expansion of the Terminals to accommodate this. However, Bacton do not monitor for 1,3-butadiene as the concentration of 1,3-butadiene in gas is so low as to be deemed insignificant as confirmed by the Regulatory Authorities.

Netcen estimate higher background levels of 1,3-butadiene around the Coltishall RAF station. The air base in the process of closure with the last squadron of Jaguar Aircraft leaving in April 2006. The base is now being cleared and there are no regular flight in or out of the base and thus it is not considered a concern at this time.

3.6 CONCLUSION FOR 1,3-BUTADIENE

According to LAQM.TG(03), national results and the Updating and Screening Assessment there are no requirements for Local Authorities to consider traffic emissions in the review and assessment for the 2003 objective and that only Authorities with relevant locations in the vicinity of major industrial processes which handle, emit or store 1,3-butadiene need be considered.

Industrial sources have been considered both within North Norfolk and in our neighbouring authorities and there is no evidence that affect the background 1,3-butadiene level in North Norfolk.

The 2003 objective was met.

It is not proposed to continue to a Detailed Assessment for the pollutant 1,3-Butadiene.

CHAPTER 4 UPDATE AND SCREENING ASSESSMENT FOR LEAD

4.1 OBJECTIVES FOR LEAD

An annual mean concentration of 0.5 μg m^{-3} to be achieved by December 2004.
An annual mean concentration of 0.25 μg m^{-3} to be achieved by December 2008.

The Government has stated that the objective should apply in non-occupational, near ground level outdoor locations, background locations, roadside locations and other areas of elevated lead concentration where a person might reasonably be expected to be exposed over the averaging time of the objective.

North Norfolk only went as far as a Stage 1 report for lead.

4.2 BACKGROUND

The 2003 Updating and Screening Assessment stated that the maximum mean background lead concentration for North Norfolk is estimated to be 0.076 μg m^{-3}. This was taken from the 1997 Anglian Region State of the Environment Report. This figure was expected to have decreased since then.

There were no Part A or B industrial processes within the District that emit lead. Since the Stage 1 report, there have been no new industrial processes that emit lead and no such industry was anticipated.

It was considered that there was no lead sources which would significantly elevate levels above the background figure and the objectives were expected to be met for both 2004 and 2008

4.3 MONITORING OF LEAD POLLUTION

The 2003 Updating and Screening Assessment indicated that there were no Part A or B industrial processes within neighbouring Authorities that would emit significant quantities of lead and hence affect the background lead levels within the District. Since the 2003 Updating and Screening Assessment, no new industrial processes have been constructed that would affect local lead levels. NNDC are also not aware of any plans within neighbouring Authorities that would alter this state.

In light of the conclusions of the 2003 Updating and Screening Assessment, no new monitoring data has been acquired. In addition, as there have been no significant changes either within the District or adjacent to it that could affect local lead levels, there are also no plans at the present time to commence any monitoring program.

4.4 NATIONAL TRENDS AND DATA

In 1995, petrol vehicles produced 72% of lead emissions. Between 1995 and 2000, the introduction of unleaded petrol resulted in significant

reductions in lead pollution levels. In January 2000, this decline culminated in the Directive of Petrol and Diesel Fuels, as part of the Auto-Oil Programme, banning sales of leaded petrol in the UK. As a result, concentrations at all background and kerbside sites are well below the objectives for both 2004 & 2008.

Emissions of lead are now restricted to a variety of industrial activities such as battery manufacture, paint manufacture and the use of radiation shielding.

Modelling and monitoring undertaken at a national level indicates that existing national policies should generally be sufficient to achieve the objectives for lead. However, some localised exceedances of the objective may occur close to major industrial processes.

4.5 CONCLUSION FOR LEAD

As a result of legislative changes resulting in the banning of lead in petrol, road traffic is no longer a significant contributor of lead emissions and hence emissions from traffic need no longer be considered.

There are no industrial processes within the District that emit lead nor are there any processes within neighbouring Authorities that emit significant quantities of lead. Hence there are no sources of lead pollution which would significantly elevate levels above the background figure.

The 2008 objectives are expected to be met.

It is not proposed to continue to a Detailed Assessment for the pollutant Lead.

CHAPTER 5 UPDATING AND SCREENING ASSESSMENT FOR NITROGEN DIOXIDE - NO2

5.1 OBJECTIVES FOR NITROGEN DIOXIDE

An annual mean concentration of 40 μg m^{-3} to be achieved by December 2005.

1 hour mean concentration of 200 μg m^{-3} not to be exceeded more than 18 times per year to be achieved by December 2005.

The Government has stated that the objective should apply in non-occupational, near ground level outdoor locations, background locations, roadside locations and other areas of elevated nitrogen dioxide concentration where a person might reasonably be expected to be exposed over the averaging time of the objective.

5.2 Background

In the 2003 Updating and Screening Assessment it was determined that there were no roads in the District that have annual average daily traffic flows of >20,000 vehicles per day. It stated that only Hoveton town centre looked like it was coming close to missing the 2005 objective. However due to extended road works in the immediate vicinity of this monitoring point, it was felt that these results are not wholly representative of typical NO_2 pollution levels and hence more extensive monitoring was to be conducted before any further action is taken. All other recognised hot spots were well within the prescribed objective.

The Bacton Gas Terminals was the only major industrial processes in the District that produces significant NO_2 emissions. Monitoring results showed that the Gas Terminals did not significantly influence local nitrogen dioxide levels.

The 2004 and 2005 Progress Reports provided detail on the intensification of the monitoring program with an increase in passive monitoring in Hoveton to ensure compliance with both the 2005 and 2010 objective. The reports also informed of the inclusion of continuous data from our air quality monitoring station located near the Bacton Gas Terminal and co-location with diffusion tubes.

In March 2005 North Norfolk District Council took over the Bacton Air Quality Monitoring Station to provide a continuous monitoring site accredited to national standards where selected pollutants can be measured at a rural background site. The site has previously been used for the continuous monitoring NO_2, NO, and NO_x.

5.3 MONITORING OF NITROGEN DIOXIDE POLLUTION

The 2004 and 2005 Progress Reports identified one NO_2 Hot Spot within North Norfolk, located in the village of Hoveton. Although the 2005 target was expected to be met it was thought that prolonged local highway maintenance directly affected the data. Therefore, further NO_x tube

monitoring was set up within the area to give a more detailed view. A new monitoring site was set up on the opposite side of the main road in the centre of the Hot Spot and a quality control site was located at the original location. The new monitoring locations have now been running for 12 months and have provided valuable data.

North Norfolk has 11 diffusion tube monitoring sites across the District All sites are placed in a generally open area, within the restrictions imposed by the site location type, allowing free circulation of air around the tube.

Road Sites
The location are selected to reflect the maximum concentration of pollutant to which people may be exposed, even if only for short periods. The tube are sited 1-5m from the kerb edge, and mounted onto lamp posts.

Background Sites
Are locations in excess of about 50m from a busy road, it is anticipated that any pollutant concentrations will tend to have equilibrated to a general urban background concentration level. Hence, measurements made in this type of location are likely to be representative of a fairly large spatial area and can be reliable

The monitoring program is intended to provide data over the long term, and provide short term information on local ‘hotspots’ of pollution.

The District also has a continuous monitor located in the Bacton Air Quality Station.

5.3.1 MONITORING LOCATIONS

Table 5.1 Monitoring Locations in North Norfolk

Site Name	Location	Determinand	Site Type	Mehtod	OS Grid Ref.
Cromer 1	**9 Hamilton Road, Cromer**	**NOx and Benzene**	**Roadside**	**Diffusion Tube**	**TG 217 422**
Cromer 6	**33 Cliff Road, Cromer**	**NOx**	**Background**	**Diffusion Tube**	**TG 227 412**
North Walsham 8	**Angel Court, North Walsham**	**NOx and Benzene**	**Roadside**	**Diffusion Tube**	**TG 281 303**
North Walsham 7	**26 Corbett Road, North Walsham**	**NOx**	**Background**	**Diffusion Tube**	**TG 283 309**
Fakenham 9	**Post Office, Queens Road, Fakenham**	**NOx**	**Roadside**	**Diffusion Tube**	**TF 921 296**
Fakenham 9a	**33-35 Oak Street, Fakenham**	**NOx**	**Roadside AQC**	**Diffusion Tube**	**TF01868 29640**
Fakenham 3	**Hillside Service Station (Shell), Creake Road, Fakenham**	**Benzene**	**Roadside**	**Diffusion Tube**	**TF91240 30686**
Fakenham 4	**Fakenham Infants School, Norwich Road, Fakenham**	**NOx**	**Background**	**Diffusion Tube**	**TF 926 296**
Hoveton10a	**Miss Roy Stalham Road, Hoveton**	**NOx and Benzene**	**Roadside**	**Diffusion Tube**	**TG303181**
Hoveton10b	**Miss Roy Stalham Road, Hoveton**	**NOx**	**Roadside AQC**	**Diffusion Tube**	**TG309186**
Hoveton 10c	**Roys Food Hall, Stalham Road, Hoveton**	**NOx**	**Roadside**	**Diffusion Tube**	**TG30155 18285**
Hoveton 11	**Waveney Close, Stalham Road, Hoveton**	**NOx**	**Background**	**Diffusion Tube**	**TG31133 18622**
Bacton 12	**Church Farm, Church Road, Bacton**	**NOx and Benzene**	**Background**	**Diffusion Tube**	**TG33344 33667**
Bacton 13	**Church Farm, Church Road, Bacton**	**NOx**	**Background**	**Diffusion Tube**	**TG33344 33667**
Bacton 14	**Church Farm, Church Road, Bacton**	**Nox, SO_2, PM_{10}**	**Background**	**Continuous**	**TG33344 33667**

Fig 5.1 Map of monitoring locations in Cromer

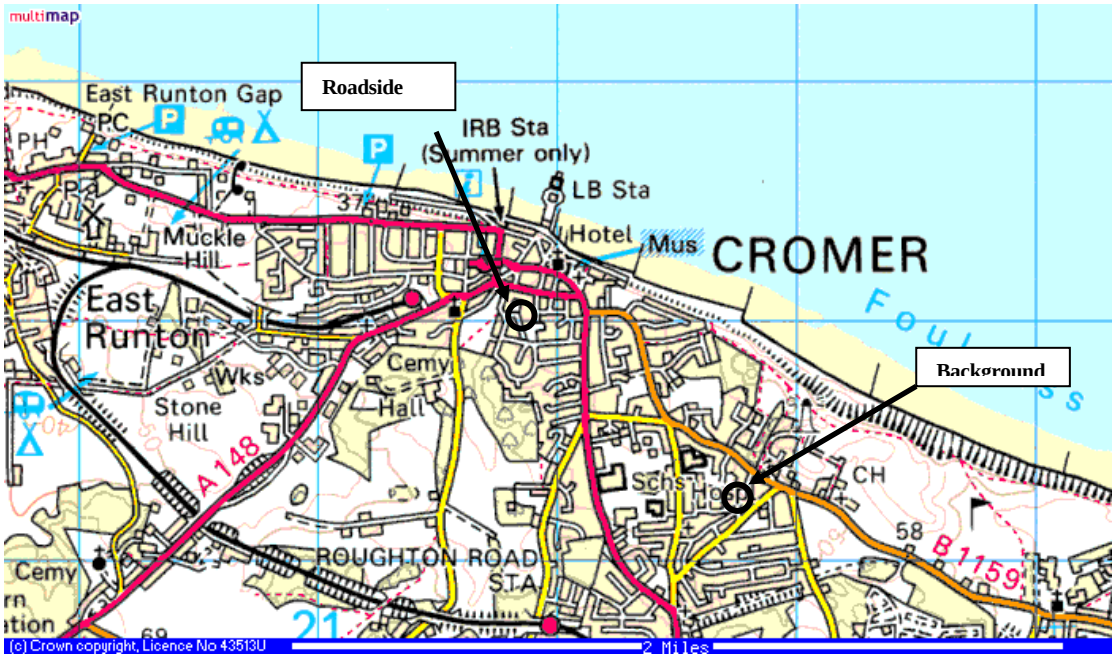


Fig 5.2 Map of monitoring locations in North Walsham

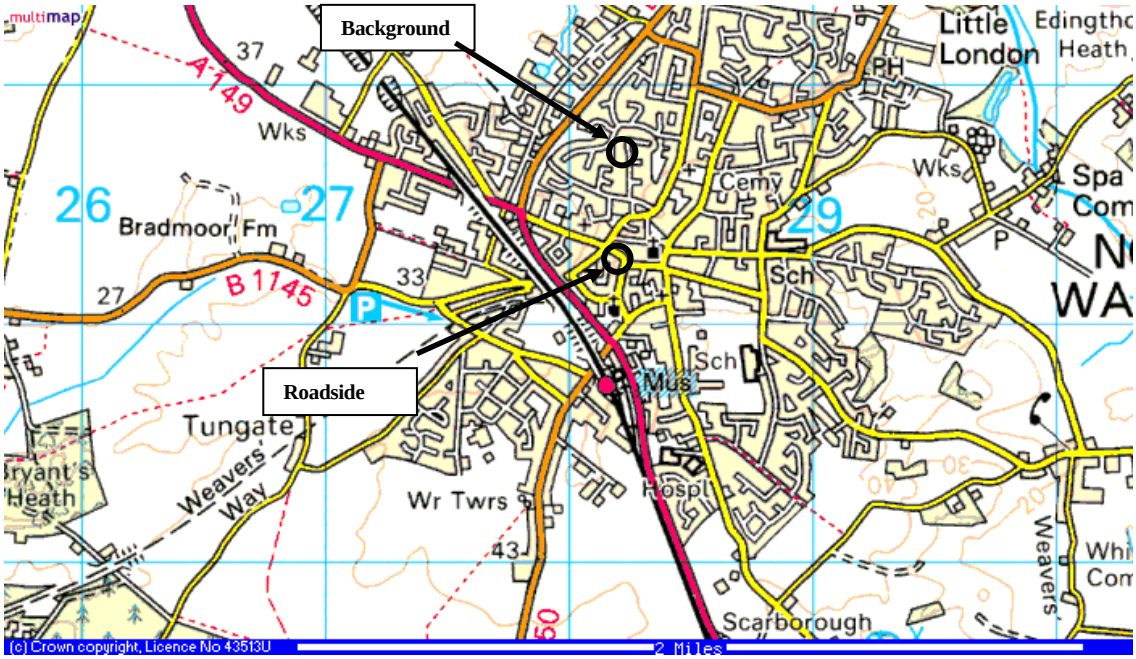


Fig 5.3 Map of monitoring locations in Hoveton

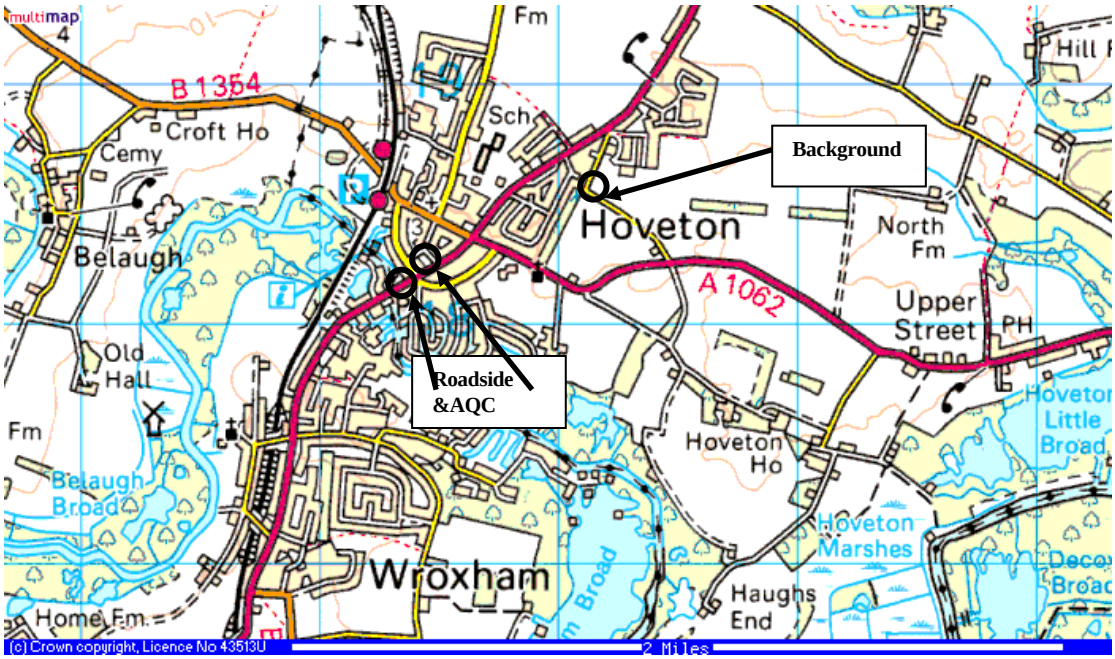


Fig 5.4 Map of monitoring locations in Fakenham

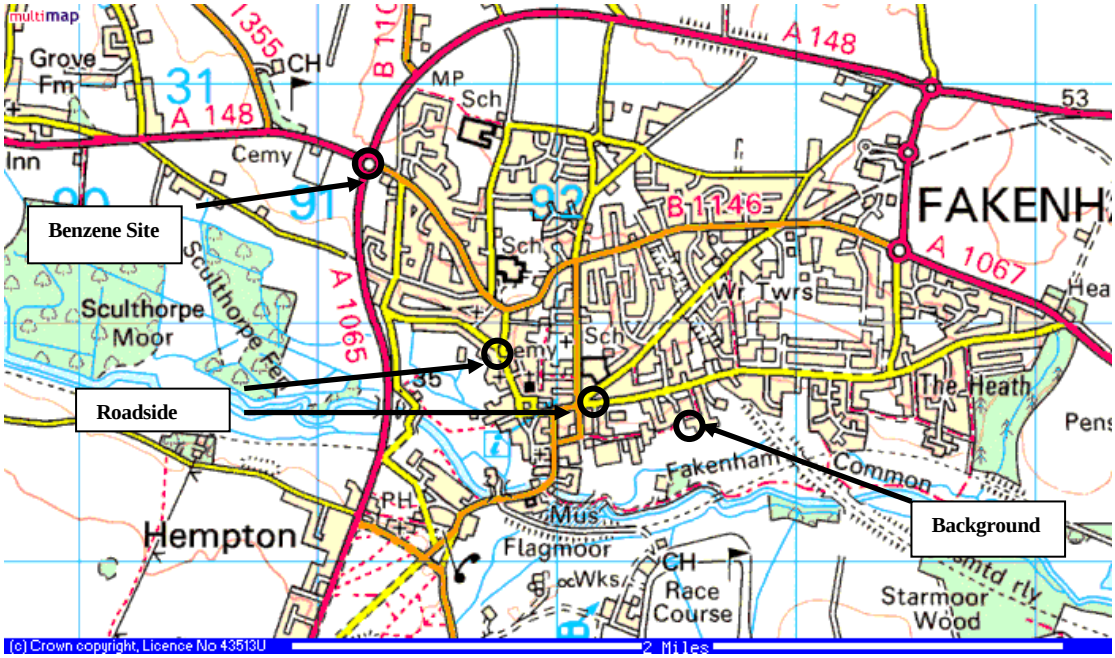


Fig 5.5 Map of monitoring locations in Bacton

5.3.2 Results of the 2005/6 NO2 diffusion tube monitoring (µg m^{-3}).

NO_2 Diffusion Tube Monitoring Data 2005 - 2006															
Monitoring Site	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Mean	Corrected	Predicted 2010
Cromer 1	42.00	30.99	-	30.94	33.75	34.20	38.43	28.41	32.56	37.20	25.88	30.64	33.18	32.85	27.94
Cromer 6	19.52	9.03	9.69	7.71	11.07	12.15	18.27	18.12	23.53	22.53	16.15	14.76	15.21	15.06	13.25
North Walsham 8	31.41	27.35	29.99	26.68	24.39	26.70	30.84	37.91	35.76	38.09	33.25	27.99	30.86	30.55	25.98
North Walsham 7	21.88	11.37	10.56	9.28	10.05	15.07	18.82	20.25	-	-	18.41	18.31	18.47	18.28	16.09
Fakenham 9	30.33	25.44	22.82	20.59	20.21	26.99	25.69	26.69	35.60	31.99	31.86	27.80	27.17	26.90	22.88
Fakenham 9a	25.04	13.53	14.24	14.40	15.98	19.36	21.43	22.69	26.67	29.02	22.46	20.95	20.48	20.28	17.25
Fakenham 4	15.14	8.58	8.23	7.59	7.77	11.69	-	19.75	23.02	22.98	17.32	11.97	14.00	13.86	12.20
Hoveton 10a	37.26	33.31	35.04	37.39	36.52	41.18	37.97	41.68	41.15	41.61	36.99	36.94	38.09	37.71	32.07
Hoveton 10b	42.14	33.01	38.70	32.91	35.01	37.58	36.49	42.18	45.67	39.54	35.12	37.86	38.02	37.64	32.01
Hoveton 10c	39.10	26.25	35.56	29.68	30.14	33.79	40.30	34.24	36.71	40.23	30.72	37.80	34.54	34.20	29.09
Hoveton 11	17.13	8.69	11.50	8.87	9.31	13.83	15.02	21.52	20.30	17.41	19.49	14.77	14.82	14.67	12.91
Bacton 12	17.53	10.47	12.14	9.18	10.19	13.55	13.62	18.93	21.34	20.96	15.76	12.51	14.68	14.53	12.79
Bacton 13	17.44	11.51	0.06	14.93	-	10.40	14.61	20.15	25.31	20.71	11.57	12.90	18.03	17.85	15.71

Gradko International, our diffusion tube supplier, have stated that the mean % bias correction for our data of 20% TEA/WATER is 0.9.

5.3.3 CONTINUOUS MONITORING DATA

Table 5.2 Fully Ratified Data 01/01/2005 to 31/12/2005, Bacton Air Quality Monitoring Station (Ratified by Netcen)

Pollutant	NO_x	NO_2
Number Very High	**-**	**0**
Number High	**-**	**0**
Number Moderate	**-**	**0**
Number Low	**-**	**8205**
Max 15-Min Mean	**1133 (µg m-^{3})**	**201(µg m^{-3})**
Max Hourly Mean	**623 (µg m^{-3})**	**134 (µg m^{-3})**
Max Running 8hr Mean	**172 (µg m^{-3})**	**73 (µg m^{-3})**
Max Running 24hr Mean	**86 (µg m-3)**	**58 (µg m^{-3})**
Max Daily Mean	**84 (µg m^{-3})**	**53 (µg m^{-3})**
Average	**15 (µg m^{-3})**	**12 (µg m^{-3})**
Data Capture	**93.7%**	**93.7%**

Table 5.3 Number of Exceedences of the Objectives

Pollutant	Air Quality (England) Regulations 2000 / (Amendment) Regulations 2002	Exceedences	Days
Nitrogen Dioxide	**Annual Mean >40 µg m^{-3}**	**0**	**-**
Nitrogen Dioxide	**Hourly Mean >200 µg m^{-3}**	**0**	**0**

Table 5.4 Fully Ratified Data 01/01/2006 to 31/03/2006, Bacton Air Quality Monitoring Station (Ratified by Netcen)

Pollutant	NO_x	NO	NO_2
Number Very High	**-**	**-**	**0**
Number High	**-**	**-**	**0**
Number Moderate	**-**	**-**	**0**
Number Low	**-**	**-**	**1783**
Max 15-Min Mean	**126 (µg m-^{3})**	**44 (µg m^{-3})**	**88(µg m^{-3})**
Max Hourly Mean	**126 (µg m^{-3})**	**43 (µg m^{-3})**	**82 (µg m^{-3})**
Max Running 8hr Mean	**112 (µg m^{-3})**	**35 (µg m^{-3})**	**58 (µg m^{-3})**
Max Running 24hr Mean	**90 (µg m-3)**	**24 (µg m^{-3})**	**53 (µg m^{-3})**
Max Daily Mean	**77 (µg m^{-3})**	**20 (µg m^{-3})**	**44 (µg m^{-3})**
Average	**14 (µg m^{-3})**	**2 (µg m^{-3})**	**12 (µg m^{-3})**
Data Capture	**82.5%**	**92.8%**	**82.5%**

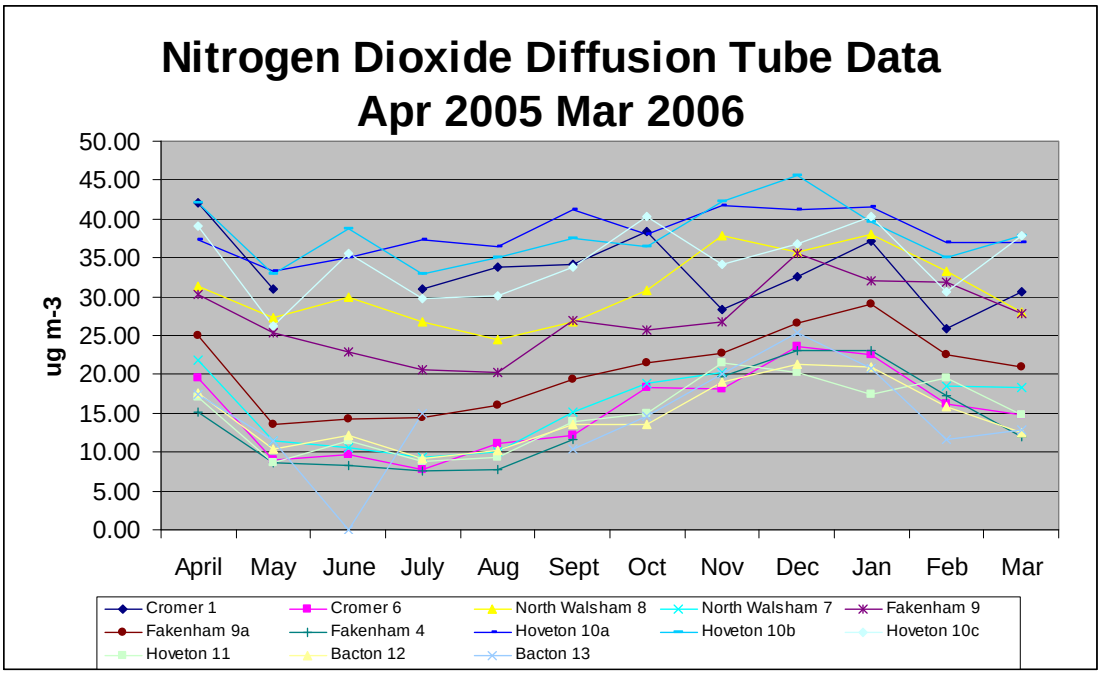
Table 5.5 Number of Exceedences of the Objectives

Pollutant	Air Quality (England) Regulations 2000 / (Amendment) Regulations 2002	Exceedences	Days
Nitrogen Dioxide	**Annual Mean >40 µg m^{-3}**	**-**	**-**
Nitrogen Dioxide	**Hourly Mean >200 µg m^{-3}**	**0**	**0**

Table 5.6 Bacton Gas Terminal Monitoring Results 2005

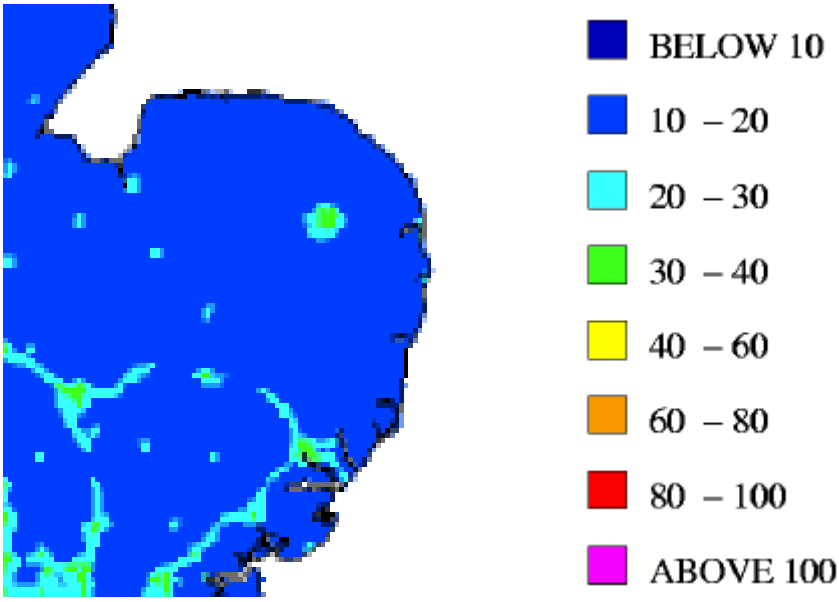
Location	Jan 2005 – Dec 2005 Annual Average NO_2 (µg m^3)
	NO_2
Paston West	**15.4**
Paston East	**19.1**
Bacton Lay-by	**27.3**
Castaway Holiday Park	**20.8**

Fig 5.6 Graph of NO_2 Diffusion Tube Data Apr 2005 – Mar 2006



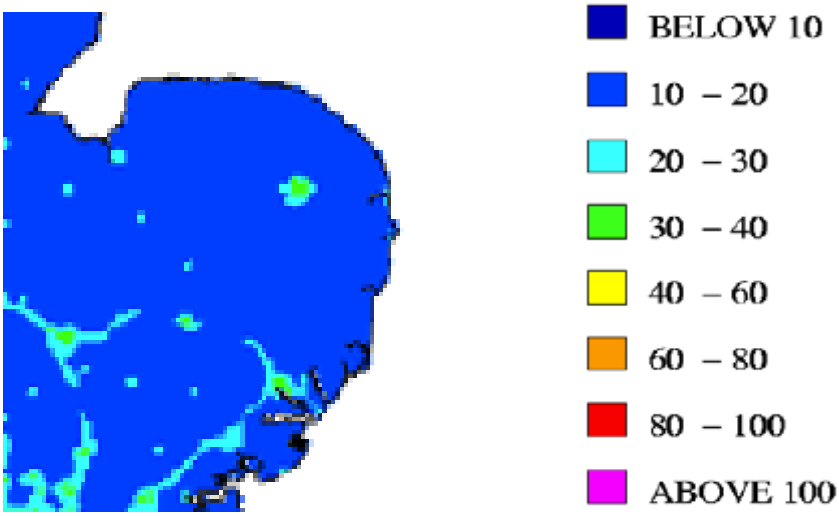
5.4 National Trends and Data

Fig 5.7 Estimated annual mean background NO_x concentration 2004 µg m^{-3}



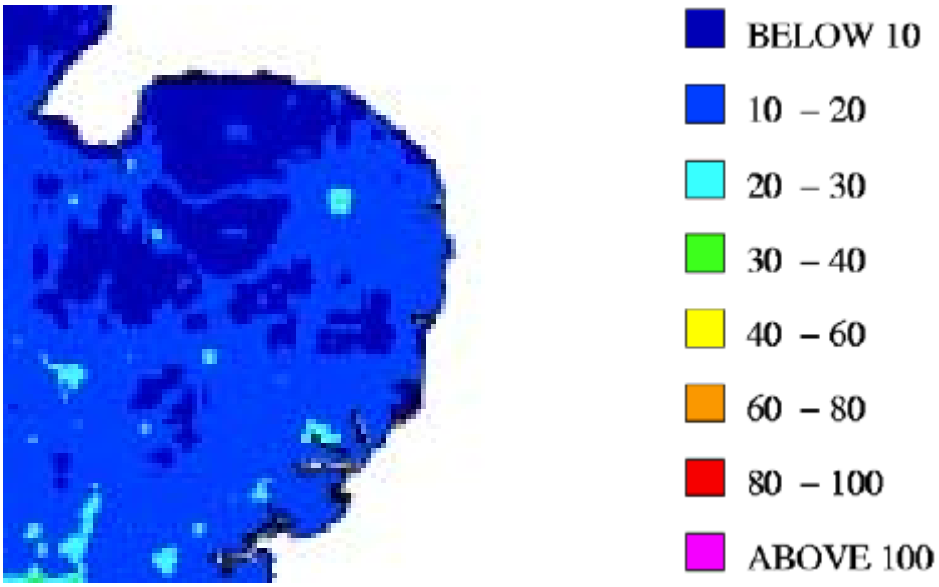
Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

Fig 5.8 Estimated annual mean background NO_x concentration 2005 µg m^{-3}



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

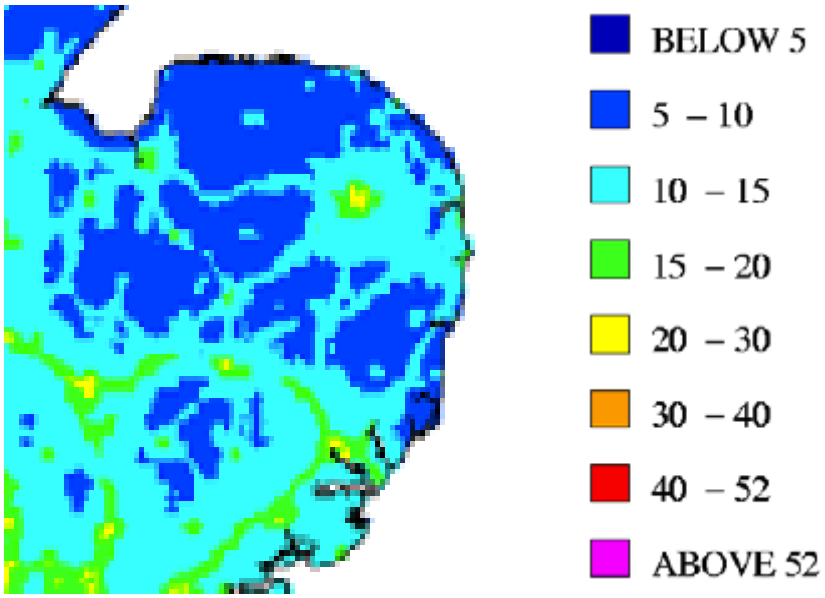
Fig 5.9 Estimated annual mean background NO_x concentration 2010 µg m^{-3}



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

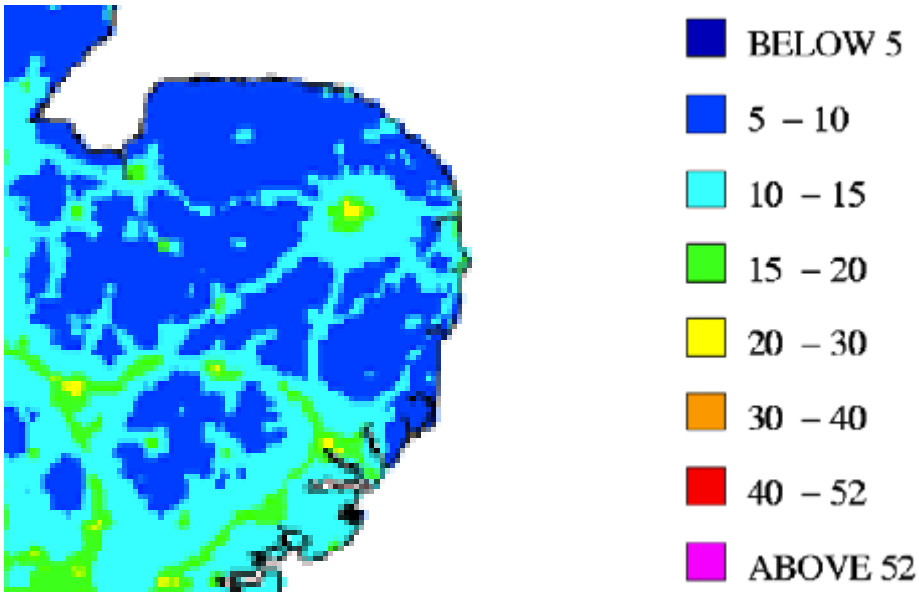
The maps show the estimated mean background for NO_x concentration for 2004, 2005 and 2010 for the Eastern region. North Norfolk is within the Below 10 µg $m^{3.}$

Fig 5.10 Estimated annual mean background NO_2 concentration 2004 µg m^{-3}



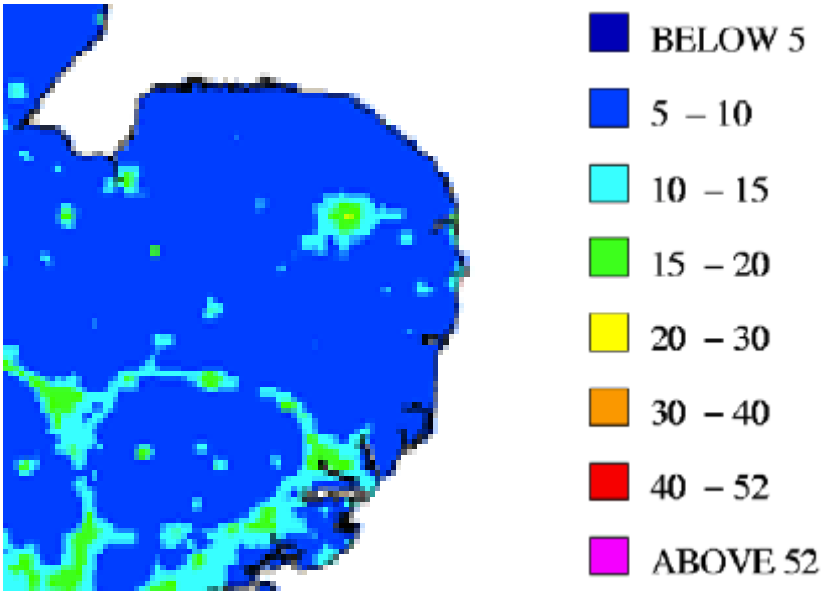
Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

Fig 5.11 Estimated annual mean background NO_2 concentration 2005 µg m^{-3}



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

Fig 5.12 Estimated annual mean background NO_2 concentration 2010 µg m^{-3}



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

The maps show the estimated mean background NO_2 concentration for 2004, 2005 and 2010 for the Eastern region. North Norfolk is within the Below 5 µg m^{-3}.

The principal source of NO_x emissions is road transport and, according to LAQM.TG(03), this accounted for 49% of total UK emissions in 2000.

According to LAQM.TG(03), various government policy measures have meant that NOx emissions have significantly declined in recent years eg. urban traffic emissions are estimated to fall by about 20% between 2000 and 2005 and by 46% by 2000 and 2010. North Norfolk is expected to be in keeping with this figure.

5.5 Industrial Sources of NO_2 Pollution

There have been no new industrial processes in the District since the last report that would be expected to affect local nitrogen dioxide levels and no new industry is anticipated at the present time.

There have been no new industrial processes close to the NNDC border that would affect local nitrogen dioxide levels within the District. NNDC have not been made aware of any plans within neighbouring Authorities that could affect nitrogen dioxide levels in the future.

The Bacton Gas Terminals are the only industries that contribute significantly to NO_2 levels. Long term monitoring has been carried out by netcen on behalf of the Gas Terminals at various locations around the Bacton area and also using continuous monitoring at Church Farm, 450 metres to the SSE of the Terminals. The monitoring has shown that there are only NO_2 excedences within the perimeter of the industrial site where the general public are not permitted. Monitoring sites outside the Gas Terminals show that the site does contribute to local levels of NO_2 but that the effect is not significant and certainly does not elevate the levels to an extent where there is any concern for breach of the air

quality objective. There are no busy roads in the vicinity of the Terminals that would further exacerbate the situation and the prevailing wind is offshore.

According to LAQM.TG(03), diesel trains can cause significantly elevated NO_2 levels when a large number of trains are stationary with engines idling, such as at depots or terminal stations. Sheringham has 2 diesel terminal stations and both are located within 50 m of residential properties. However, there is only ever one train operating at any one time, due to the line being single track, and hence these circumstances are not considered to be sufficient to significantly elevate already low background NO_2 levels.

5.6 Discussion

Having completed two years NO_2 diffusion tube monitoring in Hoveton, we have established that all sites are within the annual mean concentration of 40µg m^{-3}. In addition, the results from all other monitoring sites indicate that North Norfolk District Council will not exceed the Air Quality Regulations. North Norfolk District Council will Continue with its nitrogen dioxide diffusion tube monitoring program although Hoveton is no longer considered a hotspot, monitoring will continue to provide co-location data for comparison with the continuous monitoring data. Three NO_2 located alongside the Bacton Air Quality Station for Quality Control.

No changes to road layouts, no new road construction and no new industrial processes have given reason to substantiate any need for further monitoring sites. However, in order to ensure all potential NO_2 hot spots have been identified, North Norfolk District Council will continue to monitor development and ensure that Air Quality is a material planning consideration and instigate a monitoring program where concern is raised.

North Norfolk has no large bus stations and no new or future development is expected at this time.

The Coltishall Air Base in the process of closure with the last squadron of Jaguar Aircraft leaving in April 2006. The base is now being cleared and there are no regular flight in or out of the base, thus it is not considered to be a concern at this time.

There are no other airports within North Norfolk and there is no such developments anticipated.

5.7 CONCLUSION FOR NITROGEN DIOXIDE

Monitoring has provided a good data set covering a large area of the North Norfolk District. Diffusion tube monitoring has shown that there is no requirement to complete a detailed assessment. The data has shown that a potential NO_2 hotspot located in Hoveton is under the objective level and continues to decrease

The Bacton Gas Terminals are the only major industrial processes in the District that produce significant NO_2 emissions. Monitoring results show that the Bacton Gas Terminals do not significantly influence local nitrogen dioxide levels.

At this stage, the objectives are expected to be met.

It is not proposed to continue to a Detailed Assessment for the pollutant Nitrogen Dioxide.

CHAPTER 6 UPDATING AND SCREENING ASSESSMENT FOR SULPHUR DIOXIDE – SO_2

6.1 OBJECTIVES FOR SO_2

A 15 minute mean of 266 μg m^{-3} (100 ppb) not to be exceeded more than 35 times per year to be achieved by December 2005.
A 1 hour mean of 350 μg m^{-3} (132 ppb) not to be exceeded on more than 24 times per year to be achieved by December 2004.
A 24 hour mean of 125 μg m^{-3} (47 ppb) not to be exceeded on more than 3 times per year to be achieved by December 2004.

The focus of the review should be on any non-occupational, near ground level outdoor location given that exposures over 15 minutes are potentially likely in these locations.

6.2 Background

In the 2003 Updating and Screening Assessment it was concluded that although Netcen estimated hot spots of 6.5 μg m^{-3} and 4.8 μg m^{-3} for the west side of North Walsham and North Walsham town centre respectively. According to LAQM.TG(03), 2004 & 2005 background values are predicted to be 75% of 2001 levels and hence even the predicted hot spots would still fall well within the target values.

Bacton Gas Terminals was the only major industrial processes in the District that emit significant amounts of SO_2. Constant monitoring of this pollutant in and around the Bacton area has shown that the Gas Terminals do not significantly elevate background SO_2 levels.

All other recognised potential hot spots for SO_2, including coal/oil fired boilers of >5MW, conglomerations of domestic solid fuel burning houses and diesel and steam driven train terminus's, were found to be within the statistical threshold for giving cause for concern.

Both the 2004 and 2005 objectives for SO_2 were expected to be met.

6.3 Monitoring of SO_2 Pollution

In March 2005 North Norfolk District Council took over the Bacton Air Quality Monitoring Station to provide a continuous monitoring site accredited to national standards where selected pollutants can be measured at a rural background site. The site has previously been used for the continuous monitoring of SO_2, This monitoring equipment was included with the site.

Table 6.1 Fully Ratified Data 01/01/2005 to 31/12/2005, Bacton Air Quality Monitoring Station (Ratified by Netcen)

Pollutant	SO_2
Number Very High	0
Number High	0
Number Moderate	0
Number Low	33006
Max 15-Min Mean	106 (µg m^{-3})
Max Hourly Mean	61 (µg m^{-3})
Max Running 8hr Mean	20 (µg m^{-3})
Max Running 24hr Mean	12 (µg m^{-3})
Max Daily Mean	12 (µg m^{-3})
Average	4 (µg m^{-3})
Data Capture	95.0%

Pollutant	Air Quality (England) Regulations 2000 / (Amendment) Regulations 2002	Exceedences	Days
Sulphur Dioxide	15 – Minute Mean >266 µg m^{-3}	0	0
Sulphur Dioxide	Hourly Mean >350 µg m^{-3}	0	0
Sulphur Dioxide	Daily Mean >125 µg m^{-3}	0	0

Table 6.2 Fully Ratified Data 01/01/2006 to 31/03/2006, Bacton Air Quality Monitoring Station (Ratified by Netcen)

Pollutant	SO_2
Number Very High	0
Number High	0
Number Moderate	0
Number Low	8344
Max 15-Min Mean	32(µg m^{-3})
Max Hourly Mean	24 (µg m^{-3})
Max Running 8hr Mean	22 (µg m^{-3})
Max Running 24hr Mean	17 (µg m^{-3})
Max Daily Mean	15 (µg m^{-3})
Average	5 (µg m^{-3})
Data Capture	96.6%

Pollutant	Air Quality (England) Regulations 2000 / (Amendment) Regulations 2002	Exceedences	Days
Sulphur Dioxide	15 – Minute Mean >266 µg m^{-3}	0	0
Sulphur Dioxide	Hourly Mean >350 µg m^{-3}	0	0
Sulphur Dioxide	Daily Mean >125 µg m^{-3}	0	0

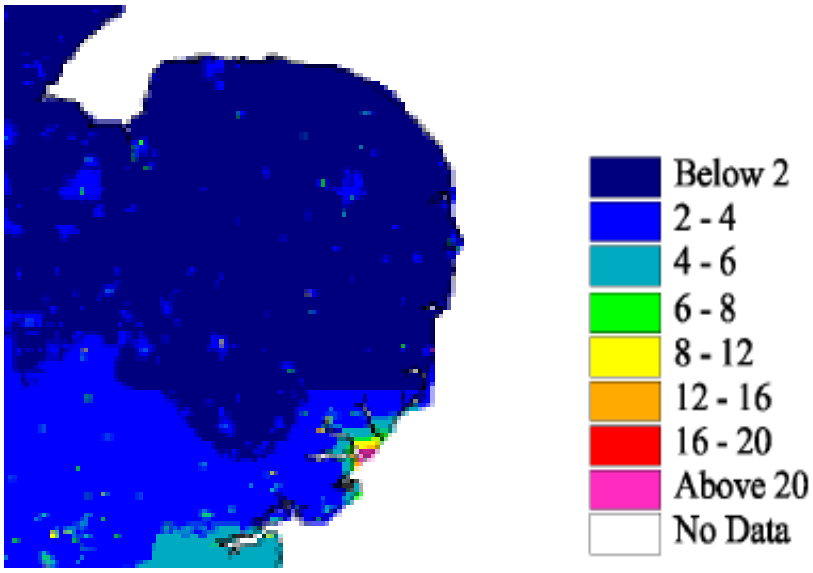
6.4 National Trends/Legislative Changes

The Clean Air Act, 1956, was brought in as a result of the link between coal burning and ill health. This Act significantly reduced the use of coal as a domestic and industrial fuel in urban areas and hence significantly reduced SO_2 levels. North Norfolk is however not a smoke controlled area and therefore the benefits of this legislation are seen from a reduction in transboundary emissions and not from control of local sources.

According to LAQM.TG(03), the main source of SO_2 is from fossil fuel power stations. In 2000, power stations accounted for >71% of national SO_2 emissions. By contrast, domestic coal burning sources now only accounts for 4% of emissions but can locally be much more significant. LAQM.TG(03) also states that local excedences of SO_2 may occur in the vicinity of small combustion plant (>5 MW) which burn coal or fuel oil but only where other sources of SO_2 occur, such as where solid fuels are the predominant form of domestic heating. Road transport now accounts for <1% of SO_2 emissions.

National annual UK emissions of SO_2 are still in decline principally as a result of legislative changes to reduce the sulphur content in combustible fossil fuels.

Figure 14: Estimated Annual Mean Background SO2 concentration, 2001 (µg m 3)



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

The maps show the estimated mean background for SO_2 concentration for 2001 for the Eastern region. North Norfolk is within the Below 2 µg m^3 range.

6.5 Industrial Sources of SO_2 Pollution

There have been no new industrial processes in the District would be expected to affect local SO_2 levels and no new industry is anticipated at the present time.

Bacton Gas Terminals are the only industrial processes that emit significant amounts of SO_2. As a result of previous continuous monitoring the site has concludes that the Gas Terminals do not significantly elevate background levels of SO_2 in the local area which therefore indicates that this pollutant is being effectively dispersed and the local community is not being exposed to levels over the target values. Ongoing plant improvement measures are expected to only further reduce SO_2 emissions.

6.6 Other Sources

6.6.1 Railway Locomotive

According to LAQM.TG(03), diesel and coal fired steam trains can cause elevated SO_2 levels when trains are stationary with engines idling for periods of 15 minutes or more such as at terminus's. Sheringham is a terminal station for

both a diesel and steam driven train line. Both terminus's are located close to residential housing. The diesel line is single track and there is only ever one train operating at any one time on the steam line. In addition trains do not leave their engines idling for > 15 minutes and hence the railway line at Sheringham is not expected to significantly elevate SO_2 levels.

Freight wagons from the BPA at North Walsham are hauled by diesel trains. For Health & Safety reasons, the trains at no time leave their engines idling at the BPA site and again the line is single track.

6.6.2 Domestic Coal Burning

Domestic fires are the only other category highlighted in the Stage 2 report that could potentially make a significant contribution to SO_2 levels. However, nowhere in North Norfolk does the density of houses burning solid fuel as a primary source of heating exceed 100 per 500m x 500m, the threshold criteria documented in LAQM.TG(03). There is therefore not considered to be a concern over SO_2 levels resulting from domestic fires.

Transboundary emissions can be a significant source of SO_2. In North Norfolk, however, the background SO_2 levels are very low suggesting minor transboundary effects are occuring.

There have been no new industrial processes or industrial processes with increased emissions within neighbouring Authorities that would significantly elevate SO_2 levels within the District. NNDC are also not aware of any plans within neighbouring Authorities that could affect SO_2 levels in the future.

6.7 CONCLUSION FOR SO_2

In the 2003 Updating and Screening Assessment, North Norfolk District Council concluded that it expected to meet the 2004 and 2005 objectives and did not propose to undertake any monitoring. When the Authority took over the Air Quality Station included a florescence continuous automatic analyser. Having gained the equipment it was decided to continue monitoring. It is intended to continue monitoring as long as it is cost effective to do so.

Bacton Gas Terminals are the only major industrial processes in the District that emit significant amounts of SO_2. Constant monitoring of this pollutant in and around the Bacton area has shown that the Gas Terminals do not significantly elevate background SO_2 levels.

All other recognised potential hot spots for SO_2, including coal/oil fired boilers of >5MW, conglomerations of domestic solid fuel burning houses and diesel and steam driven train terminus's, were found to be within the statistical threshold for giving cause for concern.

Both the 2004 and 2005 objectives for SO_2 were met.

It is not proposed to continue to a Detailed Assessment for the pollutant SO_2.

CHAPTER 7 UPDATE AND SCREENING ASSESSMENT FOR CARBON MONOXIDE

7.1 OBJECTIVES FOR CARBON MONOXIDE

An 8 hour running mean concentration of 10 mg m^{-3} to be achieved by December 2003.

The Government has stated that the objective should apply in non-occupational, near ground level outdoor locations, background locations, roadside locations and other areas of elevated carbon monoxide concentration where a person might reasonably be expected to be exposed over a period of 8 hours.

North Norfolk only went as far as a 2003 Updating and Screening Assessment for carbon monoxide.

7.2 Background

The 2003 Updating and Screening Assessment concluded that from the average daily traffic flow threshold criteria as an indicator of CO levels resulting from vehicle emissions, North Norfolk is expected to fall well within the objective.

2003 Updating and Screening Assessment identified no EPA, Part A or B processes in the District that were significant emitters of CO. In 1998, monitoring in the area around the Bacton Gas Terminals showed that no CO was detected above the monitoring equipment's detection limit of 0.2 ppm

For the North Norfolk area, netcen estimated mean 2001 background carbon monoxide concentrations to typically range from 0.22 – 0.23 mg m^{-3}. The highest levels were expected around Coltishall airfield at 0.26 mg m^{-3}. Using the LAQM.TG(03) correction factor of 0.826 to predict 2003 levels, CO concentrations were expected to be around 0.19 mg m^{-3}

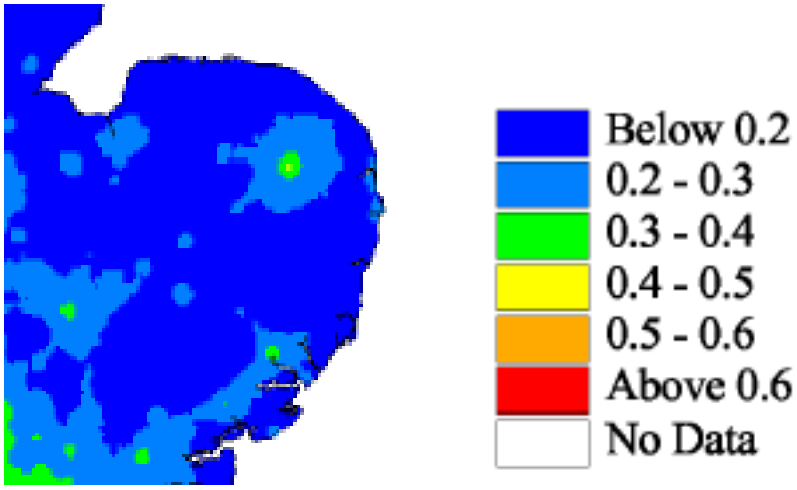
No further action was proposed

7.3 Monitoring of Carbon Monoxide Pollution

In light of the conclusions of the 2003 Updating and Screening Assessment, no new monitoring data has been acquired. In addition, as there have been no significant changes either within the District or adjacent to it that could affect local carbon monoxide levels, there are also no plans at the present time to commence any new monitoring program

7.4 National Trends/Legislative Changes

Fig 7.1 Estimated annual mean background Carbon Monoxide concentration 2001 µg m^{-3}



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

The maps show the estimated mean background Carbon Monoxide concentration for 2001 for the Eastern region. North Norfolk is within the Below 0.2 µg m^{-3} Range.

According to government guidance, Local Authority Quality Management Technical Guidance 2003 (LAQM.TG(03)), road transport accounted for 67% of total releases in 2000. From the UK national network sites, it was generally found that concentrations at kerbside sites were higher than at urban background or urban centre sites. Traffic flow numbers are therefore considered to be a good indicator of predicted carbon monoxide levels. As a result, LAQM.TG(03) which was updated in January 2006 states that Authorities need only undertake a screening assessment for road traffic sources, in respect of the 2003 objective, where daily average traffic flow exceeds the stated threshold criteria.

Exhausts from other engines, such as trains and aircraft, do contribute but to a lesser extent.

Annual emissions of carbon monoxide have been falling steadily since the 1970's and are expected to continue to do so.

7.5 Busy Roads

Modelling and monitoring undertaken at a national level indicates that existing national policies should generally be sufficient to achieve the current air quality objective for carbon monoxide. There may however be some exceedances of the objective close to very busy roads.

- Single carriageway Roads With a daily traffic flow which for which exceed 80,000 vehicles per day.
- Dual carriageway (2 or 3-lane) roads with daily average traffic flows which exceed 120,000 vehicles per day.
- Motorways with daily average traffic flows which exceed 140,000 vehicles per day.

The highest traffic volumes monitored for a number of busy roads and road junctions is <20,000 vehicles per day. Hence road traffic is not considered to be a significant contributor to local CO levels.

There have been no major road changes/construction since 2003 Updating and Screening Assessment and no significant road changes/construction are forecast.

7.6 Industrial Sources of Carbon Monoxide Pollution

There have been no new industrial processes in the District since the 2003 Updating and Screening Assessment which would be expected to affect local carbon monoxide levels and no new industry is planned for the foreseeable future.

2003 Updating and Screening Assessment identified no EPA, Part A or B processes in the District that were significant emitters of CO. In 1998, monitoring in the area around the Bacton Gas Terminals showed that no CO was detected above the monitoring equipment's detection limit of 0.232 $\mu g\ m^{-3}$.

Concentrations of carbon monoxide fall off rapidly with distance away from the source indicating that carbon monoxide is a local rather than a transboundary pollutant. Nonetheless, there have been no new industrial processes close to the NNDC border that would affect local carbon monoxide levels within the District. NNDC are also not aware of any plans within neighbouring Authorities that would alter this state.

7.7 CONCLUSION FOR CARBON MONOXIDE

According to LAQM.TG(03), national results show that existing policies will be sufficient to reduce maximum daily 8 hour mean concentrations to below 10mg m3 by 2003. Using the average daily traffic flow threshold criteria as an indicator of CO levels resulting from vehicle emissions, North Norfolk is expected to fall well within the objective.

For the North Norfolk area, netcen estimated mean 2001 background carbon monoxide concentrations to typically range from 0.22 – 0.23 mg m^{-3}. The highest levels were expected around Coltishall airfield at 0.26 mg m^{-3}. Using the LAQM.TG(03) correction factor of 0.826 to predict 2003 levels, CO concentrations are expected to be around 0.19mg m^{-3}.

Monitoring results have shown that the Bacton Gas Terminal complex does not influence background carbon monoxide concentrations. This is the only major industrial process in the District that emits carbon monoxide.

The 2003 objective was met.

It is not proposed to continue to a Detailed Assessment for the pollutant Carbon Monoxide.

CHAPTER 8 UPDATING AND SCREENING ASSESSMENT FOR PARTICULATE MATTER – PM_{10}

8.1 OBJECTIVES FOR PM_{10}

An annual mean of 40 μg m^{-3} to be achieved by December 2004.
A 24 hour mean of 50 μg m^{-3} not to be exceeded on more than 35 days per year to be achieved by December 2004.

The objectives are based on measurements carried out using the European gravimetric transfer reference sampler or equivalent.

The Government has also stated that this report should assess the likelihood of meeting the 2010 objective.

An annual mean of 20 μg m^{-3} to be achieved by January 2010.
A 24 hour mean of 50 μg m^{-3} not to be exceeded on more than 7 days per year to be achieved by January 2010.

8.2 Background

The 2003 Updating and Screening Assessment concluded that background gravimetric annual mean PM_{10} concentrations for the North Norfolk area, as produced by netcen, were estimated to be 18 μg m^{-3} in 2004 and 16-17 μg m^{-3} in 2010.

The Bacton Gas Terminals was the only EPA, Part A processes in the District and previous monitoring had shown that the Gas Terminals do not significantly contribute to regional background PM_{10} levels.

No roads in the District had annual average daily traffic flows of >20,000 vehicles and hence road traffic is not considered to significantly contribute to PM_{10} levels. All other recognised potential PM_{10} hot spots, including conglomerations of domestic solid fuel burning houses and diesel train terminal stations, were found to be outside the statistical threshold for concern.

The 2004 and 2010 objectives were expected to be met, but that further monitoring would be instigated to add a level of confidence in this.

8.3 Monitoring of Particulate Matter Pollution

In March 2005 North Norfolk District Council took over the Bacton Air Quality Monitoring Station to provide a continuous monitoring site accredited to national standards where selected pollutants can be measured at a rural background site. The site has previously been used for the continuous monitoring of SO_2, NO_X, and, PM_{10} along with meteorological data. This monitoring equipment was included in the site with the exception of the PM_{10} monitor.

In 2005 a capital funding application was submitted and accepted by DEFRA for a Tapered Element Oscillating Microbalance (TEOM), and this was installed in December 2005 and operational in mid January 2006.

Table 8.1 Fully Ratified Data 01/01/2006 to 31/03/2006, Bacton Air Quality Monitoring Station (Ratified by Netcen)

Pollutant	PM_{10+}
Number Very High	0
Number High	0
Number Moderate	0
Number Low	1245
Max 15-Min Mean	102 (µg m^{-3})
Max Hourly Mean	65 (µg m^{-3})
Max Running 8hr Mean	50 (µg m-3)
Max Running 24hr Mean	42 (µg m^{-3})
Max Daily Mean	40 (µg m^{-3})
Average	19 (µg m^{-3})
Data Capture	58%

Pollutant	Air Quality (England) Regulations 2000 / (Amendment) Regulations 2002	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily Mean >50 µg m^{-3}	1	1
PM_{10} Particulate Matter (Gravimetric)	Annual Mean >40 µg m^{-3}	-	-

With the New TEOM installed and collecting data at the Bacton Air Quality Monitoring Station North Norfolk District Council will be able to report PM_{10} levels in the 2007 progress report. It is also intended to do some specification of the particulate matter using an Accu cartridge Particulate collection system. Having collected a complete background data set the Authority will look into monitoring other locations to broaden the data set.

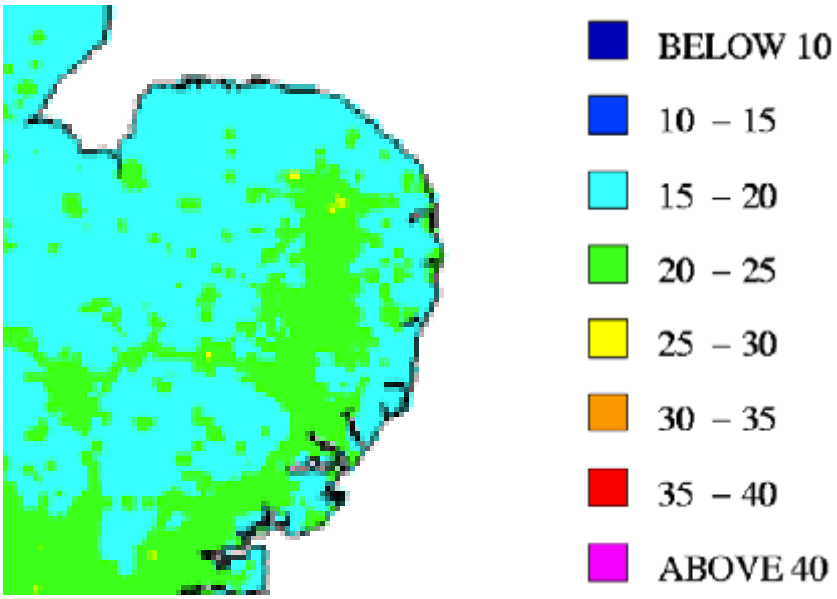
Bacton Gas Terminals constantly monitored for NO_x & SO_2. The Gas Terminals stopped monitoring for PM_{10} when, after several monitoring programs had been instigated, the pollutant levels were seen to fall well within the Air Quality objectives. Table 1 presents the 1998 & 1999 Bacton data presented in 2003 Updating and Screening Assessment and predicts forward to 2004 & 2010. These forecasts were calculated by applying correction factors given in LAQM.TG(03) and also by applying conversion factors for TEOM to gravimetric. Ongoing plant improvement measures are expected to further reduce any PM_{10} emissions.

Fig 8.2 1998/1999 PM_{10} Bacton Monitoring Results with Projection to 2004 & 2010

	Gravimetric (TEOM) Measurement in µg m^{-3}	Projected Gravimetric measurement to 2004 in µg m^{-3}	Projected Gravimetric measurement to 2010 in µg m^{-3}
23-30 November 1998			
Max 24 Hour Conc	36 (28)	28	24
Average for Period (ie Annual Mean)	26 (20)	20	17
1-31 December 1998			
Max 24 Hour Conc	40 (31)	31	27
Average for Period (ie Annual Mean)	20 (15)	15	17
1-31 January 1999			
Max 24 Hour Concn	34 (26)	27	24
Average for Period (ie Annual Mean)	18 (14)	15	13
1-28 February 1999			
Max 24 Hour Concn	38 (29)	30	27
Average for Period (ie Annual Mean)	20 (15)	16	14
2-31 July 1999			
Max 24 Hour Concn	43 (33)	34	30
Average for Period (ie Annual Mean)	23 (18)	19	16
1-31 August 1999			
Max 24 Hour Concn	59 (45)	47	41
Average for Period (ie Annual Mean)	26 (20)	21	18
1-30 September 1999			
Max 24 Hour Concn	59 (45)	47	41
Average for Period (ie Annual Mean)	22 (17)	18	16

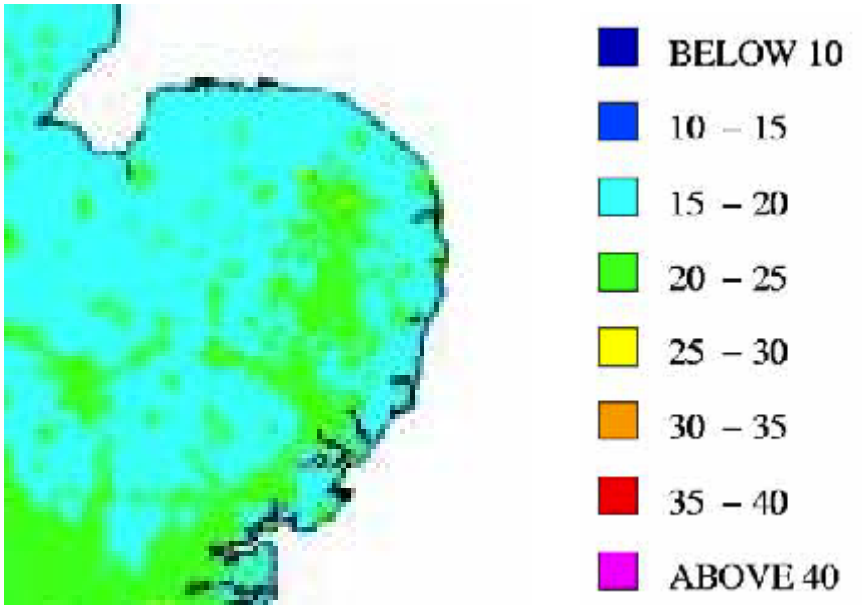
8.4 National Trends and Legislative Changes

Fig 8.3 Estimated annual mean background gravimetric PM_{10} concentration 2004 µg m^{-3}



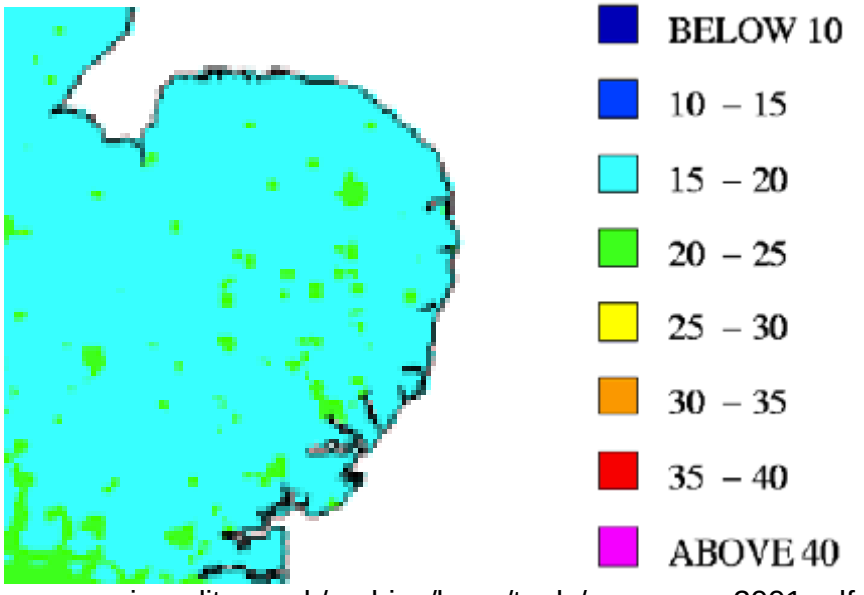
Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

Fig 8.4 Estimated annual mean background gravimetric PM_{10} concentration 2005 µg m^{-3}



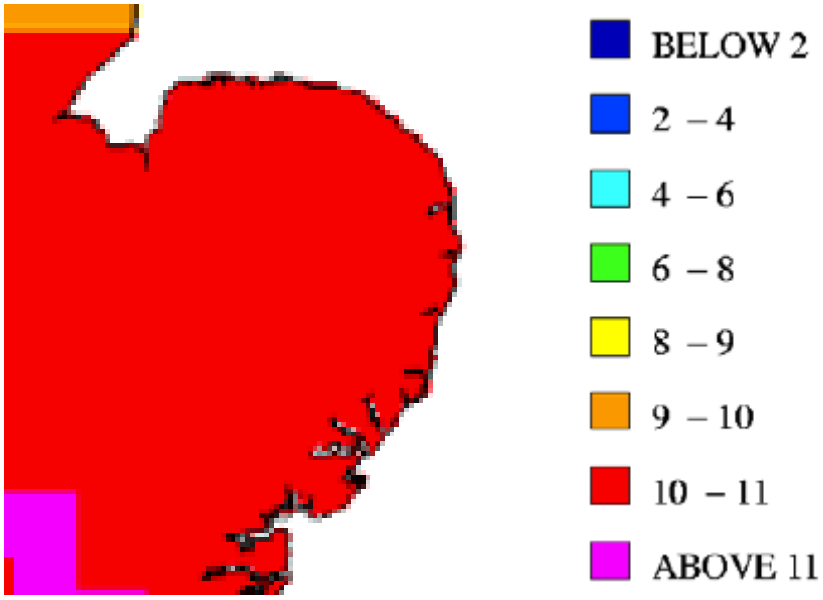
Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

Fig 8.5 Estimated annual mean background gravimetric PM_{10} concentration 2010µg m^{-3}



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

Fig 8.6 Estimated annual mean secondary gravimetric PM_{10} concentration 2004 µg m^{-3}



Source www.airquality.co.uk/archive/laqm/tools/aq_maps_2001.pdf

According to LAQM.TG(03), total national annual UK emissions of PM10 declined by almost 40% in the period between 1990 & 1999. Further reductions are expected as a result of agreed additional policies with others those currently under discussion. Within the industrial sector, IPPC and the EU Waste Incineration Directive will further control particle emissions. A significant reduction in pollutants that lead to secondary particles is also expected as a result of the EU legislation on the Acidification Strategy. Emissions from road transport will be reduced as a result of tightening emission controls (Euro III & Euro IV standards) and by the reduction in sulphur content in diesel fuel which affects the emissions of particles from vehicles.

LAQM.TG(03) states that in forecasting future emissions, it is essential to keep each source category separately i.e. primary, secondary and coarse particles. Both primary and secondary particles are, essentially, governed by legislative controls, coarse particles are principally uncontrolled. A significant proportion of current annual mean PM_{10} is derived from regional background sources. According to LAQM.TG(03), this source of PM_{10} typically ranges from 14-21 µg m^{-3} and is outside the control of Local Authorities. North Norfolk is no exception. The principal source of PM_{10} is from secondary particles resulting from the chemical reactions of primary emissions outside the District, and natural particulates. In identifying if the objectives are to be met, it is necessary to look at PM_{10} hot spots where the local contribution is sufficiently great such that when added to the regional background level, excedences of the objective could occur.

8.5 Pollution PM_{10} from road traffic

2003 Updating and Screening Assessment showed that local industry and road traffic accounted for only relatively minor contributions to PM_{10} levels within North Norfolk. Since the 2003 Updating and Screening Assessment, there have been no major road changes no significant road construction is forecast which could contradict this. Daily traffic flows are still well below the 25,000 vehicles per day threshold for concern. LAQM.TG(03) states that particular consideration

should be given to roads with an unusually high proportion of heavy duty vehicles, ie where buses and/or HGV's amount to >20% of annual average daily traffic flow. North Norfolk has no roads that meet these criteria. LAQM.TG(03) also states that consideration should be given to busy junctions with vehicle flows of >10,000 vehicles per day. Busy junctions do exist in North Norfolk, especially in urban areas and during peak holiday season. Hence monitoring will be conducted to accurately determine PM_{10} levels. Until more conclusive data is available, it is assumed from the DMRB modelling conducted for the 2003 Updating and Screening Assessment that the results of this modelling still hold true and consequently that the busiest roads in the District will not elevate PM_{10} levels above the objective. The Stage 2 DMRB modelling showed that when predicting forward to 2004, North Norfolk's busiest roads increased regional background PM_{10} levels from 22.6 $\mu g\ m^{-3}$ to a maximum of 27$\mu g\ m^{-3}$.

8.6 Other Sources of PM_{10} Pollution

There have been no new industrial processes in the District since 2003 Updating and Screening Assessment which would be expected to affect local PM_{10} levels and no new industry is anticipated at the present time.

8.6.1 Pollution from quarries and landfill sites

North Norfolk has aggregate quarries at Beeston Regis, Edgefield, Ryburgh and Hunworth. No monitoring for fugitive emissions has specifically been conducted at these sites but general observation has shown that fugitive particles are primarily contained within the confines of the quarries themselves. In addition, no nuisance complaints concerning fugitive emissions have been received about any of the 4 quarries. All 4 quarries lie in rural locations but at Beeston Regis residential properties do lie within 200m of the source. However as local background PM_{10} levels are low and frequent visual inspection of the site is conducted in accordance with the two Part B processes operating there, professional judgement confirms that there are no fugitive emission problems. The quarries are therefore not expected to contribute significantly to background PM_{10} levels.

8.6.2 Pollution from aircraft and railways

Previous estimates of the background PM_{10} concentration were modestly higher around Coltishall airfield. The air base in the process of closure with the last squadron of Jaguar Aircraft leaving in April 2006. The base is now being cleared and there are no regular flight in or out of the base, thus it is not considered to be a concern at this time.

There are no other airports within North Norfolk and there is no such developments anticipated.

Diesel and steam driven trains can cause significantly elevated PM_{10} levels when a large number of trains are stationary with engines idling such as at depots or terminal stations. However, LAQM.TG(03) states that whilst diesel locomotives and coal fired steam engines emit PM_{10}, there has been no evidence to suggest that there is any risk of the 24 hour or annual mean objectives being exceeded in 2004 or 2010. Sheringham is a terminal station for both diesel and steam driven trains. Both terminus's are located within 50 m of residential properties. However, there is only ever one train in operation at any one time and hence there is not expected to be any significant elevation in PM_{10} levels.

8.6.3 Pollution from domestic coal burning

Domestic fires are the only other category highlighted in the 2003 Updating and Screening Assessment as having the potential to contribute significantly to PM_{10} levels. In North Norfolk, the greatest number of houses burning solid fuel as a primary source of heating are located in rural locations. As a result, the density of such houses does not exceed 50 per 500m x 500m and is only expected to decrease further as more houses convert to other forms of heating. There is therefore not considered to be a concern over PM_{10} levels as a result of domestic fires.

8.7 CONCLUSION FOR PM_{10}

Background gravimetric annual mean PM_{10} concentrations for the North Norfolk area, as produced by Netcen, are estimated to be 18 $\mu g\ m^{-3}$ in 2004 and 16-17 $\mu g\ m^{-3}$ in 2010.

Bacton Gas Terminals are the only EPA, Part A processes in the District. Monitoring in the past has shown that the Gas Terminals do not significantly contribute to regional background PM_{10} levels.

No roads in the District have annual average daily traffic flows of >25,000 vehicles per day and hence road traffic is not considered to significantly contribute to PM_{10} levels. All other recognised potential PM_{10} hot spots, including conglomerations of domestic solid fuel burning houses and diesel train terminal stations, were found to be outside the statistical threshold for concern.

It is also intended to do some specification of the particulate matter using an Accu cartridge Particulate collection system. Having collected a complete background data set the Authority will look into monitoring other locations in the District.

The 2004 objective was met. At this stage, given current local levels of PM_{10}, it is expected that the 2010 objective will be met.

It is not proposed to continue to a Detailed Assessment for the pollutant PM_{10}.

CHAPTER 9 UPDATING AND SCREENING ASSESSMENT CONCLUSION

This assessment has considered each of the 7 pollutants in turn and studied local levels relative to the Air Quality Strategy target levels. Inferences were drawn utilising monitoring data, desktop study data, information cited in the Air Quality Stage 1 and Stage 2 reports and details of new pollution sources or significant changes to current pollution sources both within the District and within neighbouring Authority areas. Information was also gathered from our Strategic Planning department to assess whether any proposed industrial or highway construction/changes could have an impact on predicted local pollution levels.

As a result this assessment concludes the following:

9.1 Conclusion for Benzene

All petrol stations now have Phase 1 vapour recovery equipment at delivery installed and in use. This will contribute to reductions in both local and background benzene levels.

Monitoring results show that the Bacton Gas Terminal complex does not significantly influence local benzene concentrations. This is the only major industrial process in the District that emits benzene.

The diffusion tube monitoring program undertaken between April 2005 and April 2006 has shown that the five most likely sites to show a higher background benzene level are below the 2010 objective.

At this stage the 2010 objectives are expected to be met.

It is not proposed to continue to a Detailed Assessment for the pollutant Benzene.

9.2 Conclusion for 1,3-Butadiene

According to LAQM.TG(03), national results and the Updating and Screening Assessment there are no requirements for Local Authorities to consider traffic emissions in the review and assessment for the 2003 objective and that only Authorities with relevant locations in the vicinity of major industrial processes which handle, emit or store 1,3-butadiene need be considered.

Industrial sources have been considered both within North Norfolk and in our neighbouring authorities and there is no evidence that affect the background 1,3-butadiene level in North Norfolk.

The 2003 objective was met.
It is not proposed to continue to a Detailed Assessment for the pollutant 1,3-Butadiene.

9.3 Conclusion for Lead

As a result of legislative changes resulting in the banning of lead in petrol, road traffic is no longer a significant contributor of lead emissions and hence emissions from traffic need no longer be considered.

There are no industrial processes within the District that emit lead nor are there any processes within neighbouring Authorities that emit significant quantities of lead. Hence there are no sources of lead pollution which would significantly elevate levels above the background figure.

The 2008 objectives are expected to be met.

It is not proposed to continue to a Detailed Assessment for the pollutant Lead.

9.4 Conclusion for Nitrogen Dioxide NO_2

Monitoring has provided a good data set covering a large area of the North Norfolk District. Diffusion tube monitoring has shown that there is no requirement to complete a detailed assessment. The data has shown that a potential NO_2 hotspot located in Hoveton is under the objective level and continues to decrease

The Bacton Gas Terminals are the only major industrial processes in the District that produce significant NO_2 emissions. Monitoring results show that the Bacton Gas Terminals do not significantly influence local nitrogen dioxide levels.

At this stage, the objectives are expected to be met.

It is not proposed to continue to a Detailed Assessment for the pollutant Nitrogen Dioxide.

9.5 Conclusions for Sulphur Dioxide - SO_2

In the 2003 Updating and Screening Assessment, North Norfolk District Council concluded that it expected to meet the 2004 and 2005 objectives and did not propose to undertake any monitoring. When the Authority took over the Air Quality Station included a florescence continuous automatic analyser. Having gained the equipment it was decided to continue monitoring. It is intended to continue monitoring as long as it is cost effective to do so.

Bacton Gas Terminals are the only major industrial processes in the District that emit significant amounts of SO_2. Constant monitoring of this pollutant in and around the Bacton area has shown that the Gas Terminals do not significantly elevate background SO_2 levels.

All other recognised potential hot spots for SO_2, including coal/oil fired boilers of >5MW, conglomerations of domestic solid fuel burning houses and diesel and steam driven train terminus's, were found to be within the statistical threshold for giving cause for concern.

Both the 2004 and 2005 objectives for SO2 were met.

It is not proposed to continue to a Detailed Assessment for the pollutant Sulphur Dioxide.

9.6 Conclusion for Carbon Monoxide

According to LAQM.TG(03), national results show that existing policies will be sufficient to reduce maximum daily 8 hour mean concentrations to below 10mg m^{-3} by 2003. Using the average daily traffic flow threshold criteria as an indicator

of CO levels resulting from vehicle emissions, North Norfolk is expected to fall well within the objective.

For the North Norfolk area, netcen estimated mean 2001 background carbon monoxide concentrations to typically range from 0.22 – 0.23 mg m^{-3}. The highest levels were expected around Coltishall airfield at 0.26 mg m^{-3}. Using the LAQM.TG(03) correction factor of 0.826 to predict 2003 levels, CO concentrations are expected to be around 0.19mg m^{-3}.

Monitoring results have shown that the Bacton Gas Terminal complex does not influence background carbon monoxide concentrations. This is the only major industrial process in the District that emits carbon monoxide.

The 2003 objective was met.

It is not proposed to continue to a Detailed Assessment for the pollutant Carbon Monoxide.

9.7 Conclusion for Particulate Matter

Background gravimetric annual mean PM_{10} concentrations for the North Norfolk area, as produced by netcen, are estimated to be 18 μg m^{-3} in 2004 and 16-17 μg m^{-3} in 2010.

Bacton Gas Terminals are the only EPA, Part A processes in the District. Monitoring in the past has shown that the Gas Terminals do not significantly contribute to regional background PM_{10} levels.

No roads in the District have annual average daily traffic flows of >25,000 vehicles and hence road traffic is not considered to significantly contribute to PM_{10} levels. All other recognised potential PM_{10} hot spots, including conglomerations of domestic solid fuel burning houses and diesel train terminal stations, were found to be outside the statistical threshold for concern.

It is also intended to do some specification of the particulate matter using an Accu cartridge Particulate collection system. Having collected a complete background data set the Authority will look into monitoring other locations in the District.

The 2004 objective was met. At this stage, given current local levels of PM_{10}, it is expected that the 2010 objective will be met.

It is not proposed to continue to a Detailed Assessment for the pollutant PM_{10}.

9.8 Final Conclusion

All seven pollutants, described in the guidance, have been considered.

The conclusions of the previous Review and Assessment stated that the objectives for 1-3 Butadiene, Lead, Sulphur Dioxide, and Carbon Monoxide were expected to be met and no further action was proposed. For the pollutants, Benzene, Nitrogen Dioxide and Particulate mater further monitoring was recommended to give greater confidence in meeting their objectives.

The progress reports produced in 2004 and 2005 showed that further monitoring was indicating that the objectives were likely to be met.

This report indicates that no major changes in industry and trade activity have occurred in the North Norfolk area which would be likely to increase the risk of any of the prescribed pollutants exceeding their limit values by the relevant deadline.

The data in this report indicates that all the objectives are expected to be met and there is no requirement to complete a Detailed Assessment for any of the pollutants.

Furthermore, no changes in traffic flow have occurred which would be likely to increase the risk of any of the above pollutants exceeding their limit values by the relevant dates.

North Norfolk District Council will Continue with its nitrogen dioxide diffusion tube monitoring program through out the district. Monitoring will continue to provide a good data set and co-location sites with the continuous monitoring equipment will ensure data accuracy.

It is also intended to do some further research into specification of the particulate matter using an Accu cartridge Particulate collection system.