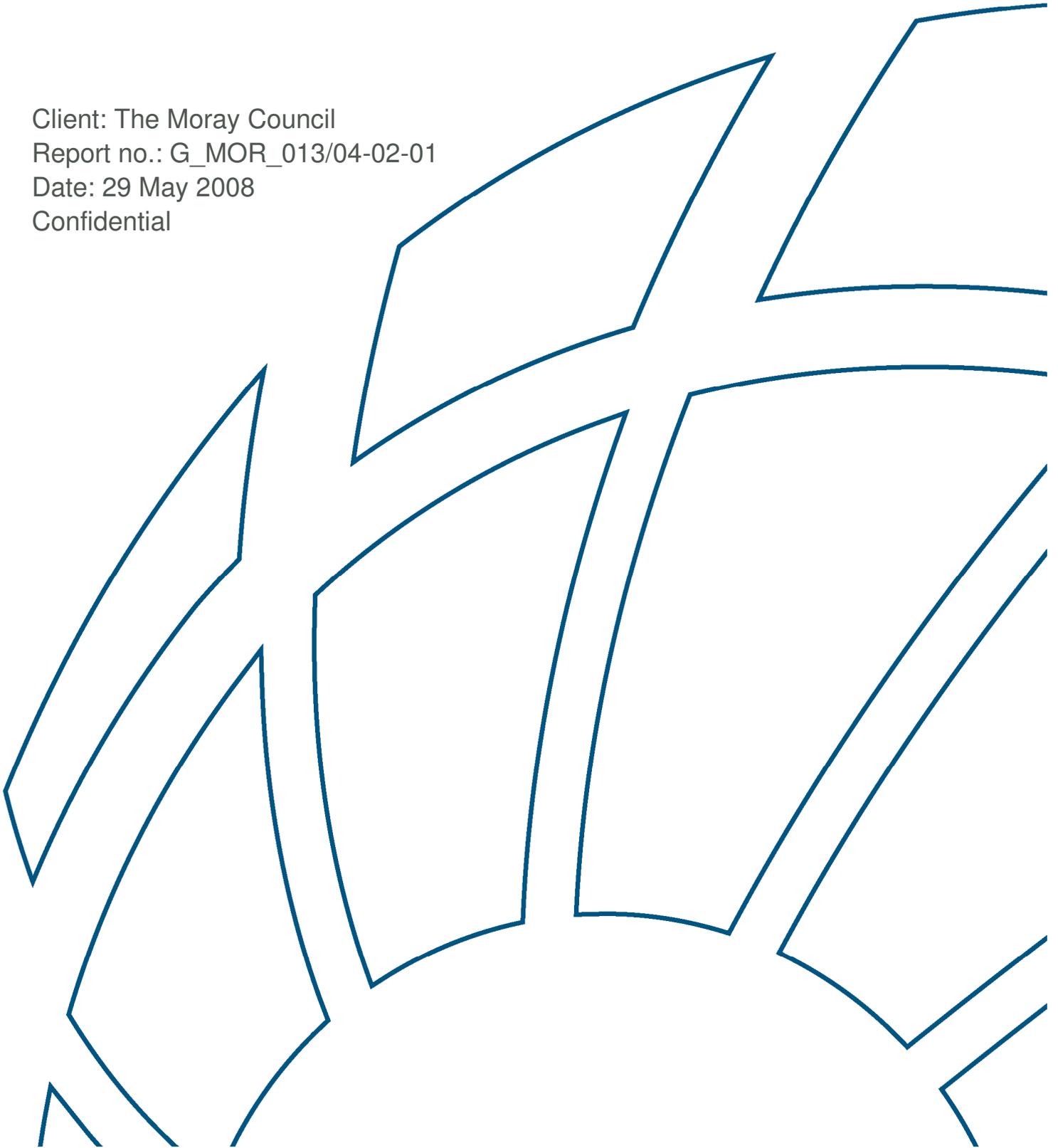


LAQM Progress Report 2008

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1 INTRODUCTION

BMT Cordah Limited has been commissioned by The Moray Council (the Council) to undertake the Local Air Quality Management (LAQM) Progress Report for 2008. The aim of the report is to provide an update on local air quality including information on recent air quality monitoring, changes in local policy towards air quality and changes in local sources of atmospheric emissions.

The assessment uses current monitoring data and information on industrial, transport, commercial and domestic atmospheric emissions to identify if there is potential for exceedence of the air quality objectives for pollutants contained within the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (AQS)¹.

The report follows guidance set out in LAQM.TG(03) technical guidance², LAQM.PRG(03) progress report guidance³, LAQM.PG(03) policy guidance⁴ and subsequent guidance amendments⁵.

1.1 Review and Assessment process

The Environment Act 1995 and subsequent regulations require local authorities to assess compliance of air quality in their area with the standards and objectives set out in the AQS. For local authorities within Scotland further regulations are set out in the Air Quality (Scotland) Regulations 2000 and Air Quality (Scotland) Amendment Regulations 2002.

The LAQM framework requires that local authorities carry out regular reviews of air quality. This 'Review and Assessment' process comprises two phases. The first phase of the Review and Assessment is an Update and Screening Assessment (U&SA) which is undertaken every three years. The U&SA considers any changes that have occurred in pollutant emissions and sources since the last round of Review and Assessment that may affect air quality. The second phase is either a Detailed Assessment or a Progress Report depending upon the outcome of the U&SA.

If the U&SA identifies a risk of exceeding an air quality objective at a location of relevant public exposure a Detailed Assessment is required. The Detailed Assessment considers the risk of exceeding an objective to greater depth in order to determine whether it is necessary to declare an Air Quality Management Area (AQMA). Declaration of an AQMA is necessary where an air quality objective is predicted to be exceeded.

¹ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra, July 2007.

² Part IV of the Environment Act 1995, Local air quality management technical guidance, LAQM.TG(03), Defra et al, January 2003.

³ Part IV of the Environment Act 1995, Local air quality management progress report guidance, LAQM.PRG(03), Defra et al, January 2003

⁴ Part IV of the Environment Act 1995, Local air quality management policy guidance, LAQM.PG(03), Defra et al, January 2003.

⁵ Part IV of the Environment Act 1995, Local air quality management technical guidance update, LAQM.TG(03) – update: January 2006, Defra et al and Local air quality management policy guidance: Addendum, LAQM.PGA(05), Defra et al, January 2005

If the U&SA does not identify any risk of exceeding air quality objectives, a Progress Report is prepared annually in the intervening years between U&SAs. The aim of the Progress Report is to provide an update on pollutant monitoring data, policy towards air quality and new developments which will have an impact on local air quality. The Progress Report aims to provide continuity in the LAQM process by ensuring that any potential changes in local circumstances which may affect air quality are identified at the earliest opportunity.

1.2 Assessment criteria

Assessment criteria, or objectives, in the form of atmospheric concentration levels for eight pollutants are detailed in the National Air Quality Strategy (AQS). Of these eight pollutants, seven are assessed by local authorities. The eighth pollutant, ozone, is assessed at a national level due to its transboundary nature. The seven pollutants that are assessed and the objectives that apply in Scotland are presented in Table 1.

1.3 Moray Council area

The Moray Council area is located on the north-east coast of Scotland between Inverness and Aberdeen. The Council area is bordered to the south and east by Aberdeenshire Council and to the north and west by Highland Council. The northern border of the Moray Council area is the Moray Firth and the North Sea coast. A map of the Moray Council area is presented in Figure 1.

The Spey valley divides the Council area in a south-west to north east direction. The southern half of the Council area is dominated by the glens of the Grampian mountain range and includes large areas of forest and moorland. The northern part of the Council area is relatively flat with large expanses of agricultural and coastal land.

As is the case for the majority of the UK there is a dominance of south-westerly winds, although there is a significant proportion of easterly winds and south-easterly winds indicating the influence of weather systems in the North Sea and Moray Firth. The mean temperature is approximately 8°C in the lowland areas but below 7°C in the upland areas in the south. The area has low to medium rainfall and hours of sunshine compared to the rest of the UK, however, there is a greater than average number of days when snow is laying (up to 105 in upland areas and more than 9 in coastal areas).

The population of the Moray Council area is approximately 89,000 with the majority residing in the towns of Elgin, Forres, Fochabers, Keith, Buckie, and Lossiemouth. The industrial and commercial areas are primarily located in the north of the Council area in Elgin, Keith, Fochabers, Buckie and Lossiemouth. The other notable operations in the area are the two RAF bases at Lossiemouth and Kinloss and the distilleries operating in Rothes, Dufftown, Keith and the surrounding upland areas.

The transport network within Moray comprises a mainline passenger rail route passing east-west through the north of the Council area, the A96 trunk road linking Aberdeen, Elgin and Inverness and several other roads providing links to coastal towns and upland areas. There are also several small harbours and ports used by small fishing boats and leisure craft.

Table 1: AQS air pollutant objectives

Pollutant	Air quality objective			
	Concentration	Measured as	Equivalent percentile	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	running annual mean	-	31/12/2003
	3.25 $\mu\text{g}/\text{m}^3$	running annual mean	-	31/12/2010
1,3-butadiene	2.25 $\mu\text{g}/\text{m}^3$	running annual mean	-	31/12/2003
Carbon monoxide (CO)	10 mg/m^3	running 8-hour mean	-	31/12/2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	annual mean	-	31/12/2004
	0.25 $\mu\text{g}/\text{m}^3$	annual mean	-	31/12/2008
Nitrogen dioxide (NO ₂)	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times per year	1-hour mean	99.79 th percentile of 1-hour mean concentrations	31/12/2005
	40 $\mu\text{g}/\text{m}^3$	annual mean	-	31/12/2005
Particulate (PM ₁₀)	50 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times a year	24-hour mean	90.4 th percentile of 24-hour-mean concentrations	31/12/2004
	40 $\mu\text{g}/\text{m}^3$	annual mean	-	31/12/2004
	50 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 7 times a year	24-hour mean	98 th percentile of 24-hour-mean concentrations	31/12/2010
	18 $\mu\text{g}/\text{m}^3$	annual mean	-	31/12/2010
Sulphur dioxide (SO ₂)	125 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 3 times a year	24-hour mean	99 th percentile of 24-hour mean concentrations	31/12/2004
	350 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 24 times a year	1-hour mean	99.7 th percentile of 1-hour mean concentrations	31/12/2004
	266 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times a year	15-minute mean	99.9 th percentile of 15-minute mean concentrations	31/12/2005

1.4 Previous air quality assessments

The Moray Council completed an Updating and Screening Assessment (U&SA) in April 2003⁶ which concluded that it was unlikely that any AQS objectives would be exceeded for CO, benzene, 1,3-butadiene, lead, NO₂ and SO₂ within the Moray Council area. It was identified that further assessment of PM₁₀ concentrations from road traffic emissions was required at three junctions within Elgin and that further information relating to domestic fuel use and quarries was required.

A Supplementary Report to the Updating and Screening Assessment⁷, submitted in January 2004, assessed additional data from the 2001 Census, Moray Council Housing Department, gas suppliers and local coal merchants with regards to emissions from domestic fuel use. The report concluded that it was unlikely that AQS objectives for SO₂ and PM₁₀ would be exceeded due to domestic coal burning. The supplementary report also considered emissions from quarries and other dusty processes and it was concluded that the operating processes were unlikely to result in exceedences of the AQS objectives for PM₁₀. The supplementary report also re-considered the locations of predicted exceedences due to road traffic emissions and it was concluded that a Detailed Assessment of particulates was required for the two adjacent junctions of the A96(T) at Queen Street roundabout and North College Street junction in Elgin.

The Moray Council LAQM Progress Report for 2005⁸ reviewed the changes in industrial and domestic pollutant sources and assessed updated monitoring data for NO₂ and PM₁₀. The report concluded that there was no potential for exceedence of the AQS objectives for CO, benzene, 1,3-butadiene, lead, NO₂ and SO₂. Monitoring of PM₁₀, being undertaken as part of a Detailed Assessment, was incomplete and therefore no conclusions were reached regarding the potential for exceedence of PM₁₀ objectives.

The Detailed Assessment of PM₁₀ emissions from road traffic at Queen Street roundabout was completed in August 2005⁹. The assessment included a 3-month period of monitoring using a Partisol analyser located at Queen Street roundabout and an atmospheric dispersion modelling assessment. The assessment concluded that it was unlikely that an exceedence of the AQS objectives for PM₁₀ would result from the existing or projected traffic emissions at locations of relevant public exposure.

The U&SA for Moray Council was completed in April 2006¹⁰ which concluded that it was unlikely that any AQS objectives would be exceeded within the Moray Council area.

⁶ Moray Council LAQM Updating and Screening Assessment 2003, BMT Cordah Ltd Report Ref: MOR_005, May 2003

⁷ Supplementary Report to the Updating and Screening Assessment, BMT Cordah Ltd Report Ref: MOR_008, January 2004

⁸ Moray Council LAQM Progress Report 2005, BMT Cordah Ltd Report Ref: E_MOR_010, May 2005

⁹ Detailed Assessment of Road Traffic Particulate Emissions, BMT Cordah Ltd Report Ref: MOR_009, August 2005

¹⁰ Moray Council LAQM Updating and Screening Assessment 2006, BMT Cordah Report Ref: E_MOR_011, April 2006

2 MONITORING DATA

The Moray Council currently monitor NO₂ concentrations throughout the Council area. No monitoring of any other pollutant is conducted. NO₂ is monitored using a network of thirteen passive diffusion tubes located within the five major towns. The monitoring results for 2007 are presented in Table 2.

The NO₂ diffusion tubes used by the Moray Council are analysed by Aberdeen City Council public analyst who are UKAS accredited for this technique. The diffusion tubes used by Moray Council are prepared by Gradko using the 20% triethanolamine in water method.

No local studies have been undertaken to determine a laboratory bias, therefore, the results from the NO₂ diffusion tubes have been corrected using a bias factor provided by the laboratory. Co-location studies carried out in nearby local authorities are used by the laboratory to determine an annual bias correction factor. The bias correction factor for 2007 was calculated to be 0.96.

Table 2: NO₂ diffusion tube monitoring results 2007

Site name	Site description	Site classification	Raw annual mean concentration (µg/m ³)	Annual mean corrected for bias (0.96) (µg/m ³)	Data capture rate (%)
Elgin 1	West Park Court, Elgin	Kerbside	39.0	37.4	92
Elgin 2	Junction of East & Maisondieu Road, Elgin	Kerbside	31.0	29.8	100
Elgin 3	99-101 Maisondieu Road, Elgin	Roadside	17.8	17.1	100
Elgin 4	26-28 Priory Place, Elgin	Urban background	12.0	11.5	100
Elgin 5	Main Street, New Elgin	Kerbside	22.7	21.8	100
Elgin 6	Queen Street Roundabout, Elgin	Kerbside	24.0	23.0	100
Fochabers 1	50A High Street, Fochabers	Roadside	39.3	37.8	100
Fochabers 2	Sundach, George Street, Fochabers	Urban background	7.6	7.3	83
Forres	Tolbooth, High Street, Forres	Roadside	19.4	18.6	100
Keith 1	106 Moss Street, Keith	Roadside	29.8	28.6	100

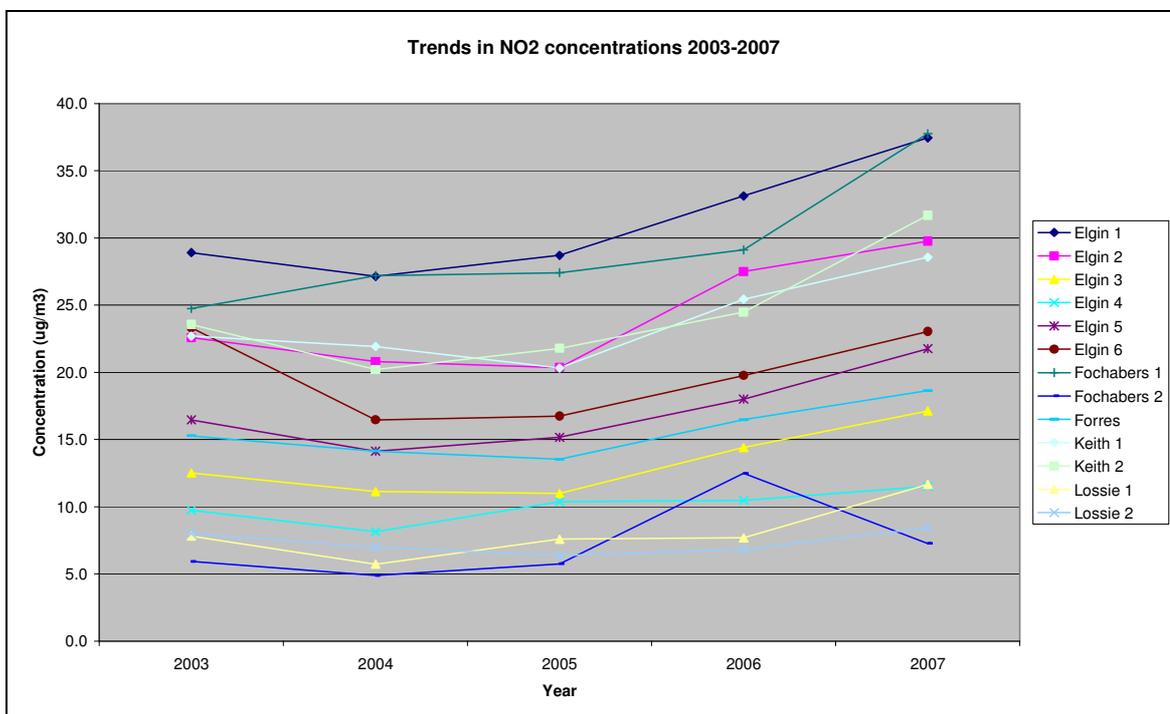
Site name	Site description	Site classification	Raw annual mean concentration ($\mu\text{g}/\text{m}^3$)	Annual mean corrected for bias (0.96) ($\mu\text{g}/\text{m}^3$)	Data capture rate (%)
Keith 2	87 Moss Street, Keith	Kerbside	33.0	31.7	100
Lossie 1	1 Merryton Court, Lossiemouth	Kerbside	12.1	11.7	75
Lossie 2	27 James Street, Lossiemouth	Kerbside	8.8	8.4	100

The monitoring results in Table 2 indicate that all sites had a data capture rate suitable for use in screening assessments (>70%). The results demonstrate that there have been no exceedences of the annual mean NO₂ air quality objective within The Moray Council area.

2.1 Trends in NO₂ concentrations

The graph in Chart 1 presents the trends in NO₂ concentrations between 2003 and 2007. The graph shows a gradual increase in annual mean concentrations over the 5 year monitoring period at most monitoring sites. Only one site, Fochabers 2, recorded decreased concentrations in 2007 in comparison to 2006.

Chart 1: Trends in NO₂ concentrations 2003 - 2007



3 EMISSIONS SOURCES

The purpose of the Progress Report is to identify any recent changes to local emissions sources which may affect air quality and result in a potential exceedence of air quality objectives. This section, therefore, identifies if there have been any changes to industrial emissions, quarries and other dusty processes, road traffic emissions or any new planned developments or changes to commercial and domestic emissions.

3.1 Industrial emissions

The Scottish Environment Protection Agency (SEPA) was contacted to determine if there any new industrial processes had commenced operation in the Moray Council area during 2007. They confirmed that there were no new industrial processes. They also confirmed that there were no existing processes with a significant change to atmospheric emissions since April 2007.

There is, however, one new process which has recently been granted planning permission which may result in significant emissions to air. The process is a new Batch Oxidation Plant which will be thermally treating waste and it will be based at Moycroft. The plant is expected to come into operation in around 3 – 4 years time. The impact of the plant should be considered once it is operational.

3.2 Quarries and other dusty processes

It was confirmed by the Moray Council and SEPA that no new quarries have commenced operation and there have been no significant changes to emissions from existing quarries since the 2007 Progress Report.

3.3 Road traffic emissions

Road traffic data was obtained from Moray Council for 2007. There were no new roads in the Moray Council area with predicted traffic flows greater than 10,000 vehicles a day. There are several roads within the Moray Council area with an annual average daily traffic flow (AADT) of greater than 10,000 vehicles. These roads, however, have previously been assessed. The LAQM Technical Guidance states that roads should be re-assessed where there is a significant (25%) increase in traffic flows. No roads in the Moray Council area met this criterion.

3.4 Planned developments and changes to commercial and domestic emissions

The Moray Council were consulted regarding any new planned developments or changes to commercial or domestic emissions. New planned developments which are likely to result in a change to local air quality include those which result in: a 5% change in traffic flow; a 10 kph change in vehicle speed; any road with greater than 10,000 vehicles; an alteration to traffic composition (e.g.

increased HGV); new parking areas with greater than 300 spaces or developments close to areas of poor air quality. It was confirmed that there were no new residential or commercial developments meeting the above criteria.

4 LOCAL STRATEGIES AND POLICIES

There have been no new or significant changes to local policies and strategies relating to local air quality that have been implemented by The Moray Council.

5 CONCLUSIONS

The Moray Council currently monitor NO₂ concentrations within their area. Based on the 2007 monitoring data and updated information on residential, commercial and industrial emissions sources, it is considered unlikely that the nitrogen dioxide air quality objectives will be exceeded in the Moray Council area.

Based on the available evidence, it is also concluded that it is unlikely that the AQS objectives for PM₁₀, SO₂, CO, 1,3-butadiene, benzene and lead will be exceeded within the Moray Council area.