BMT Cordah Limited
ENVIRONMENTAL CONSULTANCY
AND INFORMATION SYSTEMS

LAQM Updating and Screening Assessment 2006

A Report for Moray Council

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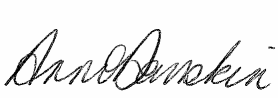

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CONTENTS

Table Contents List

APPENDIX 1: Figure Contents List

APPENDIX 2: DMRB Assessments

EXECUTIVE SUMMARY

The Updating and Screening Assessment (U&SA) considers atmospheric pollutant monitoring data and updated information relating to road traffic, transport, industrial, commercial and domestic sources of atmospheric pollutants within the Moray Council area.

The report assesses data in relation to the seven main pollutants listed in the National Air Quality Strategy (NAQS) and compares monitored and predicted concentrations to the objective concentrations set out in the Strategy.

The main findings of the report are presented in the summary table below.

Pollutant	Previous Assessments	Update
Carbon monoxide (CO)	No potential for exceedence of NAQS objectives	No change
Benzene	No potential for exceedence of NAQS objectives	No change
1,3-Butadiene	No potential for exceedence of NAQS objectives	No change
Lead	No potential for exceedence of NAQS objectives	No change
Nitrogen dioxide (NO_2)	No potential for exceedence of NAQS objectives	No change
Sulphur dioxide (SO_2)	No potential for exceedence of NAQS objectives	No change
Particulates (PM_{10})	Potential for exceedence of the 2010 annual mean NAQS objective identified at two adjoining junctions in Elgin in 2003 Updating and Screening Assessment and 2004 Supplementary Report. Detailed Assessment of PM_{10} emissions from road traffic concluded 2010 annual mean NAQS objective concentration for PM_{10} unlikely to be exceeded at locations of relevant public exposure at Queen Street roundabout and adjoining North College Street junction in Elgin.	Partisol analyser ceased operation in June 2005. DMRB assessments using updated background concentrations and monitoring data confirmed no potential for exceedence of NAQS objectives.

1 INTRODUCTION

1. BMT Cordah Ltd has been commissioned by Moray Council to carry out the 2006 Local Air Quality Management (LAQM) U&SA for 2006. The report has been completed in collaboration with personnel from Moray Council.

Purpose

2. The aim of the report is to summarise the air quality and provide an update on air quality issues within the Moray Council area since the previous review and assessment report.

3. The assessment uses updated information for industrial, transport, commercial and domestic atmospheric emissions combined with recent monitoring data to identify areas where there is potential for exceedence of the air quality objectives contained within the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2000 (NAQS)[1].

Scope

4. The report follows guidance set out in LAQM.TG(03) technical guidance[2], LAQM.PG(04) policy guidance[3] and subsequent guidance amendments[4] and compares the monitored or estimated concentrations of CO, benzene, 1,3-butadiene, lead, NO_2, SO_2 and PM_{10} to their respective NAQS objective concentrations.

LAQM framework and local authority requirements

5. 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 Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2000[5] (NAQS). For local authorities within Scotland further regulations are set out in the Air Quality (Scotland) Regulations 2000 and Air Quality (Scotland) Amendment Regulations 2002.

6. The LAQM framework requires that local authorities carry out regular reviews of air quality. The first round of Review and Assessment commenced in 2000 and comprised a four stage approach to the assessment of air quality.

7. The Review and Assessment process was revised in 2003 and now comprises two phases. The first phase of the Review and Assessment is an Updating and Screening Assessment (U&SA). 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.

[1] Air Quality Strategy for England, Scotland, Wales and Northern Ireland, January 2000
[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 policy guidance, LAQM.PG(03), Defra et al, January 2003.
[4] Part IV of the Environment Act 1995, Local air quality management technical guidance update, LAQM.TG(03) – update: January 2006, Defra et al, January 2006.
[5] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Working together for clean air, Defra, January 2000

8. The LAQM guidance requires that where a risk of exceedence of an air quality objective at a location with relevant public exposure is identified then a Detailed Assessment is required. A Detailed Assessment will consider any risk of exceedence of an objective to greater depth in order to determine whether it is necessary to declare an Air Quality Management Area (AQMA).

9. During years when an U&SA is not being conducted local authorities are required to submit a Progress Report detailing ongoing air quality monitoring results and providing updated information on air quality issues within the local authority area. A Progress Report includes information on new developments, policies or monitoring data relating to air quality. Air quality information and data are used to identify changes in air quality that result in a potential exceedence of the NAQS objectives.

10. The second round of Review and Assessment was completed in 2005 and this report commences the third round of Review and Assessment for air quality.

National air quality strategy

11. The National Air Quality Strategy (NAQS) details assessment criteria for eight pollutants in the form of atmospheric concentration levels for which an objective deadline is set. Of the eight pollutants identified only seven are required to be assessed and reported. The pollutants contained within the National Air Quality Strategy (NAQS) and their relevant objectives for Scotland are shown in Table 1.

Table 1: Pollutant Objectives outlined in the NAQS

Pollutant	Air Quality Objective			Date to be achieved by
	Concentration	**Measured as**	**Equivalent percentile**	
Benzene	16.25 µg/m^3	running annual mean	-	31 / 12 / 2003
	3.25 µg/m^3	running annual mean	-	31 / 12 / 2010
1,3-butadiene	2.25 µg/m^3	running annual mean	-	31 / 12 / 2003
Carbon monoxide (CO)	10 mg/m^3	running 8 hour mean	-	31 / 12 / 2003
Lead	0.5 µg/m^3	annual mean	-	31 / 12 / 2004
	0.25 µg/m^3	annual mean	-	31 / 12 / 2008
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times per year	1-hour mean	99.79th percentile of 1-hour means	31 / 12 / 2005
	40 µg/m^3	annual mean	-	31 / 12 / 2005
Particulate (PM_{10})	50 µg/m^3 not to be exceeded more than 35 times a year	24-hour mean	90.4th percentile of 24-hour-means	31 / 12 / 2004
	40 µg/m^3	annual mean	-	31 / 12 / 2004
	50 µg/m^3 not to be exceeded more than 7 times a year	24-hour mean	98th percentile of 24-hour-means	31 / 12 / 2010
	18 µg/m^3	annual mean	-	31 / 12 / 2010
Sulphur dioxide (SO_2)	125 µg/m^3 not to be exceeded more than 3 times a year	24-hour mean	99th percentile of 24-hour means	31 / 12 / 2004
	350 µg/m^3 not to be exceeded more than 24 times a year	1-hour mean	99.7th percentile of 1-hour means	31 / 12 / 2004
	266 µg/m^3 not to be exceeded more than 35 times a year	15-minute mean	99.9th percentile of 15-minute means	31 / 12 / 2005

Council area

12. Moray Council 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 Moray Council area is the Moray Firth and the North Sea coast. A map detailing the Moray Council area is presented in Figure 1 in Appendix 1.

Population and urban centres

13. The principal towns within Moray are Elgin, Forres, Keith, Buckie, and Lossiemouth. The population of Moray Council area is approximately 86,940 with the majority residing in the coastal towns and the north of the council area, the three main population centres being Elgin, Forres and Buckie.

Topography

14. The northern part of the council area is relatively flat with large expanses of agricultural and coastal land. The Spey valley divides the northern part of 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 Mountains and includes areas of forest and moorland.

Meteorology

15. The meteorological parameters having the greatest impact upon atmospheric pollutant dispersion and transportation are wind speed and wind direction. Temperature, solar radiation and rainfall also impact upon pollutant concentrations by acting as a catalyst to chemical reactions, creating convective currents or washing pollution out of the atmosphere.

16. Wind roses for Kinloss and Lossimouth, which represent typical wind conditions for Moray Council area, are shown in the Figure 2 in Appendix 1. The wind roses for Lossiemouth and Kinloss are similar however wind speeds at Kinloss are typically lower than at Lossiemouth. Both sites show distinctly the dominance of south-westerly winds. The wind roses for Kinloss indicate there are also a significant proportion of easterly winds whereas at Lossiemouth the direction is south-easterly. Calm days are also shown at both locations to predominantly occur during south-westerly winds.

Summary of previous assessments

17. Moray Council completed an Updating and Screening Assessment (U&SA) in April 2003[6]. The U&SA concluded that it was unlikely that any NAQS objectives would be exceeded for CO, benzene, 1,3-butadiene, lead, NO_2 and SO_2 within the Moray Council area. It was identified that further assessment of PM_{10} 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.

18. The Supplementary Report to the Updating and Screening Assessment was submitted in January 2004[7]. The report assessed additional data from the 2001 Census, Moray Council Housing

[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

Department, gas suppliers and local coal merchants and concluded that it was unlikely that NAQS objectives for SO_2 and PM_{10} would be exceeded due to domestic coal burning. The report used background PM_{10} concentrations and digital mapping to identify 7 receptors within 200m of dust emitting processes. However, no complaints or concerns relating to dust had been raised with the Scottish Environmental Protection Agency (SEPA) or Moray Council and therefore it was concluded that the operating processes were unlikely to result in exceedences of the NAQS objectives for PM_{10}. The SpeyBay junction on the A96(T) identified in the U&SA as likely to exceed NAQS objectives was shown to have no relevant public exposure therefore it was identified that the Detailed Assessment was required for the two adjacent junctions of the A96(T) at Queen Street roundabout and North College Street junction in Elgin.

19. An assessment of NO_2, dust and VOC concentrations in the vicinity of RAF Lossiemouth and RAF Kinloss was conducted between November 2003 and June 2004[8]. The report was commissioned in response to public complaints of odour and dust nuisance. The assessment concluded that there had been no exceedences of NAQS objectives, odour nuisance criteria or environmental assessment levels for any of the pollutants detected.

20. The Moray Council LAQM Progress Report for 2005[9] reviewed the changes in industrial and domestic sources of pollutants and assessed the updated monitoring data for NO_2 and PM_{10}. The report concluded that there is no potential for the exceedence of the NAQS objectives for CO, benzene, 1,3-butadiene, lead, NO_2 and SO_2. However, monitoring of PM_{10} was still being undertaken as part of the Detailed Assessment and therefore no conclusions were made regarding the potential for exceedence for PM_{10}.

21. The Detailed Assessment of road traffic emissions of PM_{10} at Queen Street roundabout was completed in June 2005[10]. 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 NAQS objectives for PM_{10} would result from the existing or projected traffic emissions at locations of relevant public exposure.

[8] Air Quality Study in the Vicinity of RAF Lossiemouth and RAF Kinloss, BMT Cordah Ltd Report Ref: MOR_007, November 2004
[9] Moray Council LAQM Progress Report 2005, BMT Cordah Ltd Report Ref: E_MOR_010, May 2005
[10] Detailed Assessment of Road Traffic Particulate Emissions, BMT Cordah Ltd Report Ref: MOR_009, August 2005

Inventory of monitoring

22. Moray Council maintains a network of 13 monitoring sites located throughout the council area. The current network includes monitoring sites for NO_2. Figure 3 shows the location of the NO_2 monitoring sites and Figure 4 shows the location of all PM_{10} monitoring sites.

23. An inventory of monitoring sites within Moray Council area is included in Table 2.

Table 2: Monitoring sites within Moray Council area

Site No.	Location	Monitoring method	Pollutant	Clasification
Elgin 1	West Park Court, Elgin	PDT	NO_2	Kerbside
Elgin 2	Junction of East & Maisondieu Road, Elgin	PDT	NO_2	Kerbside
Elgin 3	99 – 101 Maisondieu Road, Elgin	PDT	NO_2	Roadside
Elgin 4	26-28 Priory Place, Elgin	PDT	NO_2	Urban background
Elgin 5	Main Street, New Elgin	PDT	NO_2	Kerbside
Elgin 6	Queen St Roundabout, Elgin	PDT Partisol	NO_2 PM_{10}	Kerbside
Fochabers 1	50A High Street, Fochabers	PDT	NO_2	Roadside
Fochabers 2	Sunndach, George Street, Fochabers	PDT	NO_2	Urban background
Forres	Tolbooth, High Street, Forres	PDT	NO_2	Roadside
Keith 1	106 Moss Street, Keith	PDT	NO_2	Roadside
Keith 2	87 Moss Street, Keith	PDT	NO_2	Kerbside
Lossie 1	1 Merryton Court, Lossiemouth	PDT	NO_2	Kerbside
Lossie 2	27 James Street, Lossiemouth	PDT	NO_2	Roadside

PDT: passive diffusion tube

24. A partisol analyser located at Queen Street roundabout in Elgin was operational between March and May 2005 inclusive to provide monitoring data for the Detailed Assessment of PM_{10} emissions from road traffic. The site was decommissioned during 2005 due to the low concentrations recorded.

25. There have been no changes to the NO_2 diffusion tube network since the last U&SA.

Inventory of industrial activities

26. The main areas of industrial activity within Moray are based in Elgin, Forres and Keith. An inventory of all the regulated industrial sites for atmospheric emissions is presented in Table 3.

Table 3: Regulated industrial sites within Moray Council area

Company	Process	Location	Permit / Licence	Atmospheric Pollutants
PPC Part A processes				
Buckie Shipyard Ltd	Coating activities (6.5)	Commercial Rd, Buckie	PPC/N/20003 IPC/N/20028	VOCs
Highland Metals Ltd	Surface treatment of metals (2.1)	Pinefield Estate, Elgin	PPC/N/20017 APC/N/20090	VOCs
North East Incineration Services	Animal Carcass Incineration & Knackering (5.1 & 6.8)	Douglasbrae Knackery, Douglasbrae, Keith	PPC/A/1004263 APC/N/20187	Odour, dust, ammonia, CO, SO_2, NO_X, PM_{10}
The Moray Council	landfill	Nether Dallachy Landfill Site, Spey Bay	PPC/N/20028 WML/N/20094	Odour, dust, methane, PM_{10}
PPC Part B processes				
James Jones & Sons Ltd	Timber process (6.6)	Mosstodloch Sawmill, Garmouth Road, Mosstodloch, Fochabers	PPC/B/1003194 APC/N/20089	Dust, PM_{10}
Limehillock Quarry Plant Ltd	Crushing Plant (mobile) (3.4)	Mobile Plant	PPC/B/1004271 APC/N/20022	Dust, PM_{10}
Limehillock Quarry Plant Ltd	Crushing Plant (mobile) (3.4)	Mobile Plant	PPC/B/1004269 APC/N/20057	Dust, PM_{10}
Tarmac Caledonian Ltd	Concrete Batching (3.1)	Lochinver Quarry, Miltonduff, Elgin,	PPC/B/1004309 APC/N/20026	Dust, PM_{10}
Tarmac Caledonian Ltd	Cement Batching Plant (3.1)	Cloddach Quarry, Dallas Road, Elgin	PPC/N/30095 APC/N/20216	Dust, PM_{10}
Cemex UK Materials Ltd	Cement process (3.1)	Cemex UK Materials Ltd, Rothes Glen Quarry, Rothes	PPC/N/30021 APC/N/20084	Dust, PM_{10}
Moray Crematorium Ltd	Cremation of human remains	Moray crematorium, Broadley	PPC/B/1004287 APC/N/20028	Dust, PM_{10}, CO, SO_2, NO_X,
Tennants (Elgin) Ltd	Crushing & Screening (3.5)	Mobile Plant	PPC/B/1004767	Dust, PM_{10}
Leiths (Scotland) Ltd	Crushing Plant (Quarry)(3.5)	New Forres Quarry, Rafford, Forres	PPC/B/1000144 APC/N/50046	Dust, PM_{10}
Leiths (Scotland) Ltd	Crushing Plant (Quarry)(3.5)	Bluehill Quarry, Dufftown, Keith	PPC/N/30023 APC/N/20261	Dust, PM_{10}
Tarmac Caledonian Ltd	Crushing Plant (Quarry) (3.5)	Cairdshill Quarry	PPC/B/1000079 APC/N/20287	Dust, PM_{10}
Leiths (Scotland) Ltd	Crushing Process (Quarry) (3.5)	Parkmore Quarry, Dufftown	PPC/N/30094 APC/N/20262	Dust, PM_{10}
Ian Aitkenhead Ltd	Petrol Vapour Recovery (1.2)	New Elgin Service Station, Main Street, New Elgin	PPC/B/1003198 APC/N/20114	VOCs
Ian Aitkenhead Ltd	Petrol Vapour Recovery (1.2)	Mosstodloch Service Station, Main Road, Mosstodloch	PPC/B/1003197 APC/N/20113	VOCs
Ian Aitkenhead Ltd	Petrol Vapour Recovery (1.2)	Buccaneer Service Station, Lossiemouth Road, Bishopmill	PPC/B/1003199 APC/N/20115	VOCs
Ian Cox	Petrol Vapour Recovery (1.2)	Victoria Filling Station, Victoria Road, Forres	PPC/N/30011 APC/N/50380	VOCs
Moravian Motors	Petrol Vapour Recovery (1.2)	High Street, Buckie	PPC/N/30017 APC/N/20041	VOCs
Mr John Campbell Thomson	Petrol vapour recovery (1.2)	Harbour Filling Station, 5 Shore Street, Lossiemouth	PPC/B/1003213	VOCs
Shell UK Retail	Petrol Vapour Recovery (1.2)	Shell Keith Service Station, Regent Road, Keith	PPC/N/30018 APC/N/20126	VOCs

Company	Process	Location	Permit / Licence	Atmospheric Pollutants
Tesco Stores Ltd	Petrol Vapour Recovery (1.2) cii	Blackfriars Road, Elgin, IV30 1TY	PPC/N/30013	VOCs
Dicksons of Forres	Respraying vehicles (6.5)	St Catherine's Road, Forres, IV36 1LS	PPC/B/1000178 APC/N/50002	VOCs
Moray Timber Ltd	Timber process (6.6)	Waterford Industrial Estate, Forres	PPC/N/30074 APC/N/50389	Dust, PM_{10}
The Combination of Rothes Distillers	Vegetable matter process (6.9)	Dark Grains Plant, Rothes	PPC/N/30034 APC/N/20088	Odour, VOCs
UDV (Distilling) Ltd	Vegetable matter process (6.9)	Glenlossie Dark Grains Plant, Birnie, Elgin	PPC/N/30033 APC/N/20258	Odour, VOCs
UDV (Distilling) Ltd	Vegetable matter process (6.9)	Speyside Dark Grains Plant, Carron, Aberlour	PPC/N/30035 APC/N/20259	Odour, VOCs
Ashgrove Motor Body Co	Vehicle respraying (6.5)	Body Repair Centre, Ashgrove Road, Elgin	PPC/N/30072 APC/N/20003	VOCs
LAPC Processes				
Caledonian Quarry Products Ltd	Cement and Lime (3.1)	Spey Bay Quarry, Nether Dallachy	APC/N/20070	Dust, PM_{10}
Caledonian Quarry Products Ltd	Cement and Lime (3.1)	Auchtertyre Quarry, Miltonduff, Elgin	APC/N/20196	Dust, PM_{10}
Caledonian Quarry Products Ltd	Cement process (3.1)	Spey Bay Quarry, Nether Dallachy	APC/N/20050	Dust, PM_{10}
Limehillock Quarry Plant Ltd	Crushing Process (Quarry) (3.4)	Mobile Plant	APC/N/0220019	Dust, PM_{10}
Asda Stores Ltd	Petrol Vapour Recovery (1.4)	Asda, Edgar Road, Elgin	APC/N/20072	VOCs
Esso Petroleum Co. Ltd	Petrol Vapour Recovery (1.4)	Pinefield Service Station, Elgin	APC/N/20129	VOCs
F W Kerridge Ltd	Petrol Vapour Recovery (1.4)	Greshop filling station, Forres	APC/N/50149	VOCs
Matrix (Highland) Ltd	Petrol Vapour Recovery (1.4)	West Road, Elgin	APC/N/20109	VOCs
Shelia Elaine Gittings	Petrol Vapour Recovery (1.4)	Seapark Filling Station, Kinloss, Forres	APC/N/50166	VOCs
Tyock filling station (Ian Cox)	Petrol Vapour Recovery (1.4)	Tyock filling station, Elgin	APC/N/20140	VOCs
Ennstone Thistle Ltd	Roadstone coating	Cloddach Quarry, Dallas Road, Elgin	APC/N/0220020	SO_2, VOCs, Dust, PM_{10}
James Jones & Sons Ltd	Timber Process (6.7)	Greshop Industrial Estate, Forres	APC/N/0220025	Dust, PM_{10}

27. Since the last U&SA twenty two processes have been altered from Local Authority Pollution Control (LAPC) regulation to Pollution Prevention and Control (PPC) Part B authorisations, and one process; Highland Metals Ltd, has changed from LAPC regulation to PPC Part A authorisation. No change has occurred in the emissions from these sites.

28. Three combustion processes and three waste oil burners previously operated at garages have ceased to be operated under LAPC regulation. A vehicle re-spraying process in Keith, a timber process in Elgin and a vegetable matter process in Ballindalloch have also ceased to operate as LAPC regulated processes.

29. No new processes have been identified since the 2005 LAQM Progress Report.

Description of road network

30. The principal route bisecting Moray Council area roughly north-south is the A96 between Keith and Forres. Other major roads passing through the area are the A98 coastal route and A95, A941, A940,

and A939. With the exception of the A939, which passes through the mountainous area in the south all the major routes cross through the north of the council area.

Description of other transport

31. There are three operational rail lines within Moray Council area. The main line approximately follows the route of the A96 from Keith to Forres passing through the towns of Keith, Elgin and Forres. The route is used by both passenger and freight trains. There is one short freight line linking Elgin to Burghead, which is no longer operational, and one heritage railway linking Dufftown to Keith operating within the area;.

32. There are no major port areas within Moray Council area, however there are several small harbours currently used by small fishing vessels and leisure craft. The operational harbours within the council area are Burghead, Lossiemouth, Buckie, Findochty, Portknockie and Cullen. Buckie harbour is a small commercial port dealing with timber, grain, salt and stone cargos.

33. There are no major airports within Moray Council area the nearest being Inverness Airport 30km to the west of the Council boundary. There are two RAF bases within Moray Council based at Kinloss and Lossiemouth.

2 CARBON MONOXIDE

34. The NAQS objective for CO for Scottish local authorities is detailed as a maximum 8-hour running mean not to exceed 10mg/m^3. The objective deadline was set as 31st December 2003.

Monitoring data

35. Moray Council have not and do not currently monitor CO. The nearest automatic monitoring site recording CO is operated by Aberdeen City Council. The concentrations for Aberdeen City recorded since the last U&SA are presented in Table 4.

Table 4: Monitored CO concentrations for Aberdeen

2003 maximum 1-hour mean concentration (mg/m^3)	2004 maximum 1-hour mean concentration (mg/m^3)	2005 maximum 1-hour mean concentration (mg/m^3)	No. exceedences of the 8-hour running mean objective (2003 – 2005)
3.1	2.4	3.1	0

36. There have been no exceedences of the 8-hour running mean NAQS objective for CO since the second round of review and assessment.

37. National Environment Technology Centre (netcen) provide a national database of background concentrations for pollutants listed in the NAQS. The estimated background CO concentrations for Moray Council are presented in Table 5.

Table 5: 2005 Background CO concentrations for Moray (mg/m^3)

	Maximum	Minimum	Mean
Annual mean concentration	0.11	0.07	0.08

38. The maximum 2005 background concentrations of CO are significantly below the 8-hour running mean NAQS objective for CO of 10 mg/m^3, accounting for less than 2% of the NAQS objective.

Transport sources

Very busy roads or junctions in built up areas

39. In the last U&SA road traffic flows were assessed to be below the threshold of 30,000 annual average daily traffic (AADT) therefore no busy roads or junctions were assessed for CO. The LAQM.TG(03) Update – January 2006 technical guidance states that consideration of CO from busy roads or junctions should be made if the background concentration is greater than 1mg/m^3. The maximum background concentration with Moray Council area is 0.11mg/m^3 and therefore no assessment is required for CO from transport sources.

3 BENZENE

40. The objective for benzene for all local authorities, contained within the Air Quality Regulations 2000 and Amendment Regulations 2002, is detailed as a running annual mean not to exceed 16.25µg/m^3. The objective deadline was 31st December 2003.

41. An additional objective for benzene for Scottish local authorities, contained within the air quality amendment regulations (Scotland) 2002, is detailed as a running annual mean of 3.25µg/m^3. The objective deadline is 31st December 2010.

42. The EU has also set a limit for benzene of 5µg/m^3 as an annual mean to be achieved by 1 January 2010. The limit is included within the second Air Quality Daughter Directive[11].

Monitoring data

43. A study of particulate, NO_2 and VOC concentrations in the vicinity of RAF Lossiemouth and RAF Kinloss located in Moray Council area was completed in 2004. Monthly VOC samples were collected from 6 sites around the two air bases between November 2003 and April 2004 using Tenax diffusion tubes. A summary of the results is presented in Table 6.

Monitoring data outside an AQMA

Table 6: Monitored benzene concentrations within Moray Council area

Site	6-month mean concentration (µg/m^3)
Covesea	0.2
Crashgate 4, RAF Lossiemouth	0.0
Stotfield Road, Lossiemouth	1.2
Westerfolds Farm	0.2
RAF Kinloss western boundary	0.2
Glebe Road, Kinloss	0.2

44. The greatest 6-month mean benzene concentration was found at Stotfield Road in Lossiemouth. However, benzene concentrations were shown to be below the 2003 and 2010 annual mean NAQS objectives of 16.25µg/m^3 and 3.25µg/m^3.

45. Moray Council does not currently monitor benzene. The nearest automatic monitoring site for benzene is operated by Edinburgh City Council.

46. Edinburgh City Council operates one automatic benzene analyser at an urban centre location. The measured benzene concentrations for 2003 to 2005 are presented in Table 7.

Table 7: Monitored benzene concentrations for Edinburgh

Annual mean concentration (µg/m^3)				No. exceedences of the annual mean objective (2003 – 2005)		
2003	2004	2005	Predicted for 2010	16.25µg/m^3	5µg/m^3	3.25µg/m^3
0.95	0.84	0.64	0.54	0	0	0

[11] 2nd Air Quality Daughter Directive (2000/69/EC)

47. There have been no exceedences of the annual mean NAQS objective for benzene since the second round of review and assessment. The monitored benzene concentration is below the NAQS objective for 2005 and the predicted benzene concentration is below the NAQS objective for 2010.

48. The estimated background benzene concentrations for Moray Council taken from the Netcen database are presented in Table 8.

Table 8: 2005 Background benzene concentrations for Moray (µg/m^3)

	Maximum	Minimum	Mean
Annual mean concentration 2005	0.18	0.02	0.04
Annual mean concentration 2010	0.18	0.02	0.04

49. The maximum annual mean background concentrations of benzene are significantly below the NAQS objectives for both 2003 and 2010, accounting for less than 1% and 6% of the respective objectives.

Monitoring data within an AQMA

50. There are no AQMAs for benzene within Moray Council area.

Transport sources

Very busy roads or junctions in built up areas

51. The LAQM.TG(03) Update – January 2006 technical guidance states that consideration of benzene from busy roads or junctions should be made if the background concentration is greater than 2µg/m^3. The maximum background concentration is 0.31µg/m^3 and therefore no assessment is required for benzene from transport sources.

Industrial sources

52. SEPA was consulted regarding any new or significantly changed regulated processes within Moray Council area.

New industrial sources

53. It was confirmed there have been no new processes with benzene emissions installed within Moray Council area since the previous LAQM assessment.

Industrial sources with substantially increased emissions, or new relevant exposure

54. It was confirmed there have been no processes with significantly changed benzene emissions within Moray Council area.

Petrol stations

55. It was confirmed from the SEPA registers that there have been no new petrol stations installed within the Moray Council area since the previous LAQM report.

56. There are currently 15 regulated petrol stations within Moray. None of the petrol stations are located near to a road of 30,000 AADT or greater. It is therefore predicted that there is no potential for exceedence of the NAQS objectives for benzene due to petrol stations.

Major fuel storage depots (petroleum only)

57. As stated in previous Review and Assessments there are no major fuel depots located within Moray Council area.

4 1,3-BUTADIENE

58. The objective for 1,3-butadiene for all local authorities, contained within the Air Quality Regulations 2000 and Amendment Regulations 2002, is detailed as a running annual mean not to exceed 2.25µg/m^3. The objective deadline was 31st December 2003.

Monitoring data

59. Moray Council has not previously and does not currently monitor 1,3-butadiene. The nearest automatic monitoring site for 1,3-butdaiene is operated by Glasgow City Council.

60. Glasgow City Council operate one automatic 1,3-butadiene analyser at a kerbside location. The measured 1,3-butadiene concentrations for 2003 to 2005 are presented in Table 9.

Table 9: Monitored 1,3-butadiene concentrations for Glasgow kerbside

Annual mean concentration (µg/m^3)			No. exceedences of the annual mean objective (2003 – 2005)
2003	**2004**	**2005**	**2.25µg/m^3**
0.42	0.28*	0.22	0

* % data capture rate < 75%

61. There have been no exceedences of the annual mean NAQS objective for 1,3-butadiene since the second round of review and assessment.

62. The estimated background 1,3-butadiene concentrations for Moray Council area taken from the Netcen database are presented in Table 10.

Table 10: Background 1, 3-butadiene concentrations for Moray Council area (µg/m^3)

	Maximum	Minimum	Mean
Annual mean concentration 2005	0.04	0.01	0.01

63. The maximum 2005 annual mean background concentrations of 1,3-butadiene are significantly below the NAQS objectives for 2003, accounting for less than 2% of the objective.

Industrial sources

64. SEPA was consulted regarding any new or significantly changed regulated processes within Moray Council area.

65. It was confirmed there have been no new processes installed or processes with significantly changed 1,3-butadiene emissions within Moray Council area since the previous U&SA.

5 LEAD

66. Two objectives for lead for all local authorities are contained within the Air Quality Regulations 2000 and Amendment Regulations 2002. The objectives were set as:

- the annual mean concentration not to exceed 0.5µg/m^3 by 31st December 2004; and
- the annual mean concentration not to exceed 0.25µg/m^3 by 31st December 2008.

Monitoring data

67. Moray Council has not previously and does not currently monitor lead. The two automatic monitoring sites for lead operated within Scotland are maintained by Glasgow City Council and North Lanarkshire Council. A rural lead monitoring site is also operated at Eskdalemuir in Dumfries and Galloway.

68. Glasgow City Council operates one automatic lead analyser at a roadside location and North Lanarkshire Council operate an analyser in Motherwell The measured lead concentrations for 2003 to 2005 are presented in Table 11.

Table 11: Monitored lead concentrations for Scotland

Site	Annual mean concentration (µg/m^3)			No. of exceedences of the annual mean objectives (2003 – 2005)	
	2003	2004	2005	0.5µg/m^3	0.25µg/m^3
Glasgow	0.015	0.015	0.013	0	0
Motherwell	0.010	0.008	0.003	0	0
Eskdalemuir	0.003	0.002	0.003	0	0

There have been no monitored exceedences of the annual mean NAQS objective for lead in Scotland since the second round of review and assessment. It is therefore unlikely that lead concentrations within Moray Council area will exceed either the 2004 or the 2008 NAQS objectives for lead.

Industrial sources

69. SEPA was consulted regarding any new or significantly changed regulated processes within Moray Council area. It was confirmed that there have been no new industrial sources of lead or industrial sources with substantially increased lead emissions, or new relevant exposure within the Moray Council area since the previous updating and screening assessment.

6 NITROGEN DIOXIDE

70. Two objectives for NO_2 for all local authorities are contained within the Air Quality Regulations 2000 and Amendment Regulations 2002. The objectives were set as:

- the annual mean concentration not to exceed 40µg/m^3 by 31st December 2005; and
- the 1-hour mean concentration not to exceed 200µg/m^3 on more than 18 occasions by 31st December 2005.

71. The same two objectives for NO_2 are contained within the 1st EU Daughter Directive[12] for Air Quality with an objective deadline of 31st December 2010.

Monitoring data

72. Moray Council monitor NO_2 using a network of 13 passive diffusion tubes located within the five major towns in the council area.

73. The NO_2 diffusion tubes used by Moray Council are prepared and analysed by Aberdeen City Council public analyst who are UKAS accredited for this technique. The diffusion tubes are prepared using the 20% triethanolamine in water method. Co-location studies carried out in nearby local authorities are used by the laboratory to determine an annual bias correction factor.

Monitoring data outside an AQMA

74. The NO_2 concentrations recorded within Moray Council area since the last round of review and assessment are presented in Table 12.

Table 12: Monitored NO_2 concentrations for Moray

Monitoring site	Annual mean concentration (µg/m^3)				Data capture rate (%)
	2003 corrected for bias (0.79)	2004 corrected for bias (0.8)	2005 (raw data)	2005 corrected for bias (0.82)	
Elgin 1	28.9	27.1	35.0	28.7	91.7
Elgin 2	22.6	20.8	24.8	20.4	91.7
Elgin 3	12.5	10.5	13.4	11.0	75.0
Elgin 4	9.7	8.1	12.6	10.4	83.3
Elgin 5	16.5	14.1	18.5	15.2	91.7
Elgin 6	23.3	16.5	20.4	16.7	91.7
Fochabers 1	24.8	27.2	33.4	27.4	91.7
Fochabers 2	5.0	4.7	5.9	4.8	50.0
Forres	15.3	14.1	16.5	13.4	75.0
Keith 1	22.7	21.9	22.8	18.7	75.0
Keith 2	23.6	20.2	26.6	21.8	50.0
Lossie 1	6.5	5.0	6.4	5.3	91.7
Lossie 2	7.2	5.7	7.0	5.7	83.3

[12] 1st Air Quality Daughter Directive (1999/30/EC)

75. The maximum concentrations recorded in Moray Council area since the last U&SA were at West Park Court at the western end of the High Street in Elgin and at the High Street in Fochabers.

76. There have been no exceedences of the annual mean NAQS objective for NO_2 since the second round of review and assessment.

77. Netcen provide a national database of background concentrations for pollutants listed in the National Air Quality Strategy. The estimated background NO_2 concentrations for Moray Council are presented in Table 13.

Table 13: Background NO_2 concentrations for Moray ($\mu g/m^3$)

	Maximum	Minimum	Mean
2005 Annual mean concentration	7.6	1.1	1.6
2010 Annual mean concentration	6.3	0.9	1.3

78. The maximum 2005 background concentrations of NO_2 are significantly below the 1-hour mean NAQS objective for NO_2 of 200$\mu g/m^3$, accounting for less than 4% of the objective and less than 20% of the annual mean NAQS objective of 40$\mu g/m^3$.

Monitoring data within an AQMA

79. There are no AQMAs for NO_2 within Moray.

Transport sources

80. Updated road traffic survey data was obtained from the Scottish Executive. Five sections of the A96 were identified as having traffic flows above 10,000 AADT. These were at 2 sites in Forres, 1 site in Mostodloch, and 2 sites in Elgin.

81. The traffic counts for the A96 in central Elgin have reduced slightly since the Detailed Assessment and therefore have not been re-assessed.

Narrow congested streets with residential properties close to the kerb

82. No narrow congested streets with residential properties close to the kerb were specifically identified during the last U&SA. The A96(T) passing through Mosstodloch and Fochabers is of restricted width and has residential properties close to the kerb. A by-pass for these two towns has been granted planning permission to relieve congestion which will have a positive effect on NO_2 concentrations at properties within the town centres.

Junctions

83. Three junctions, two in Elgin and one at Spey Bay, were identified and assessed during the last round of review and assessment. The DMRB Assessments concluded that it was unlikely that the annual mean NAQS objective for NO_2 would be exceeded at the locations identified.

84. The traffic flows in Mosstodloch were shown to be greater than 10,000 AADT during 2004 however, the by-pass planned for Mosstodloch and Fochabers will alter flows through the centre of the two towns. The Environmental Impact Assessment carried out as part of the planning application for the

by-pass indicated that NAQS objectives would not be exceeded at residential properties due to traffic emissions.

85. A DMRB assessment for the two sites in Forres has been carried out which are included in Appendix 2. The DMRB assessments indicate that it is unlikely that road traffic emissions will result in exceedences of the annual mean NAQS objective for NO_2 within Forres.

Busy streets where people may spend 1-hour or more close to traffic

86. No busy streets were identified previously where people may spend 1-hour or more close to traffic. The majority of towns within Moray Council area are small and it is unlikely that people would spend long periods of time close to traffic. A large part of the main shopping area in Elgin is pedestrianised and all shopping areas are located away from the busy A96 (T), therefore people are unlikely to be close to high levels of traffic for periods of 1-hour or more.

Roads with high flows of buses and / or HGVs

87. No roads with high flows of buses and HGVs were identified in the last U&SA. Updated traffic flow data show that bus and HGV volumes account for less than the 25% of total AADT on all roads for which data is available therefore it is unlikely that the NAQS objectives for NO_2 will be exceeded.

New roads to constructed or proposed since the previous round of R&A

88. The impact of road traffic emissions in Mosstodoch and Fochabers was assessed in detail as part of the Public Enquiry for the planned Mosstodoch / Fochabers by-pass. It was concluded that current air quality met the NAQS objectives and that no exceedences were predicted at sensitive receptors as a result of the by-pass therefore this location on the A96 has not been assessed further.

Roads with significantly changed traffic flows, or new relevant exposure

89. No new locations of relevant exposure have been identified for previously assessed roads and junctions.

90. The LAQM.TG(03) technical guidance states that a significant change in traffic flow is represented by a change of 25%. The greatest changes in traffic flow are -18% on the A95 west of Keith and +11% on the A96 between Elgin and Lhanbryde. Road traffic flows on the A95 are less than 10,000 AADT however the traffic flow for 2005 on the A96 between Lhanbryde and Elgin is over 10,000 AADT and has not previously been assessed using DMRB. An assessment is provided in Appendix 2. The results of the assessment indicate that the predicted NO_2 concentrations at nearby receptors 5m from the road are below the annual mean NAQS objective of 40µg/m^3 and that there is no requirement for further assessment.

Bus stations

91. There is one bus station within the Moray Council area which is located in Elgin. Bus movements to and from the bus station were less than 1000 per day and therefore the bus station was not assessed further during the last U&SA. There are still less than 1000 bus movements per day at the Elgin bus station. No further assessment is therefore required.

Aircraft

92. As stated in previous Review and Assessments there are no significant airports within the Moray Council area.

93. A study of particulate, NO_2 and VOC concentrations in the vicinity of RAF Lossiemouth and RAF Kinloss located in Moray Council area was completed in 2004. Monthly NO_2 samples were collected from 6 sites around the two air bases between November 2003 and April 2004. The greatest concentrations of NO_2 were found at roadside locations in Lossiemouth and Kinloss. However, maximum NO_2 concentrations were shown to be below the 2005 annual mean NAQS objective for NO_2.

Industrial sources

94. SEPA was consulted regarding any new or significantly changed regulated processes within Moray Council area.

New industrial sources

95. It was confirmed there have been no new processes with NO_2 emissions installed within Moray Council area since the previous updating and screening assessment.

Industrial sources with substantially increased emissions, or new relevant exposure

96. It was confirmed there have been no processes with significantly changed NO_2 emissions or areas of new exposure within Moray Council area.

7 SULPHUR DIOXIDE

97. Three objectives for SO_2 for all local authorities are contained within the Air Quality Regulations 2000 and Amendment Regulations 2002. The objectives were set as:

- the 24-hour mean concentration not to exceed 125µg/m^3 on more than 3 occasions by 31st December 2004;
- the 1-hour mean concentration not to exceed 350µg/m^3 on more than 24 occasions by 31st December 2004; and
- the 15-minute mean concentration not to exceed 266µg/m^3 on more than 35 occasions by 31st December 2005.

Monitoring data

98. Moray Council have previously monitored SO_2 using passive diffusion tubes. However, currently there is no monitoring for SO_2 conducted within Moray Council area.

Monitoring data outside an AQMA

99. The nearest continuous automatic monitoring site for SO_2, recording 1-hour mean and 15-minute mean concentrations, is operated by Aberdeen City Council. The results of the automatic SO_2 monitor in Aberdeen are presented in Table 14.

Table 14: Monitored SO_2 concentrations for Aberdeen

Objective	Concentration (µg/m3)			No. exceedences of the objective (2003 – 2005)
	2003	2004	2005	
99th %ile of 24-hour means	17	15	13	0
99.79th %ile of 1-hour means	40	40	31	0
99.9th %ile of 15-minute means	74	82	61	0

100. There have been no exceedences of the SO_2 objectives at the automatic SO_2 monitor site in Aberdeen. SO_2 concentrations within Moray Council area are likely to be below those found in Aberdeen therefore it is unlikely that there is potential for exceedence of the NAQS objectives for SO_2 within Moray Council area.

101. The estimated background SO_2 concentrations for Moray Council area taken from the Netcen database are presented in Table 15.

Table 15: Background SO_2 concentrations for Moray Council area (µg/m^3)

	Maximum	Minimum	Mean
Annual mean concentration 2005	5.19	0.33	0.49

102. Maximum background concentrations of SO_2 for 2005 are significantly below the relevant NAQS objectives accounting for less than 5% of the 24-hour, 1-hour and 15-minute mean objective concentrations.

Monitoring data within an AQMA

103. There are no AQMAs for SO_2 within Moray Council area.

Industrial sources

104. It was confirmed there have been no new processes with SO_2 emissions installed within Moray Council area since the previous U&SA.

Industrial sources with substantially increased emissions, or new relevant exposure

105. It was confirmed there were no processes with significantly changed SO_2 emissions within Moray Council area.

Small boilers > $5MW_{(thermal)}$

106. Two hospitals, operated by NHS Grampian, are located in Elgin, Dr Gray's and The Oaks. It was identified in the 2003 U&SA that one site operated a boiler plant of greater than $5MW_{(thermal)}$ but that predicted SO_2 concentrations at the nearest receptor, within the hospital grounds, were below NAQS objectives. Updated information on boilers operated by NHS Grampian within the Moray Council area was requested. It was confirmed that boiler operated at Dr Gray's Hospital has been down-sized to $3MW_{(thermal)}$ and that other hospitals in the area do not operate boilers greater than $5MW_{(thermal)}$.

107. Moray Council estates services were all contacted regarding small boiler plant capacity. There are no boilers operated by the Council at schools, offices or leisure centres which have an energy rating greater than $5MW_{(thermal)}$.

108. Two short periods of automatic SO_2 monitoring were carried out by SEPA in Rothes during 2002 to verify concentrations of SO_2 primarily emitted from distilleries, which operate boiler plants, complied with NAQS objectives. No exceedences of NAQS objectives were recorded during the monitoring periods. There has been no significant change in distillery emissions in the area since monitoring was undertaken and therefore it is concluded that SO_2 emissions from small boilers are unlikely to result in exceedences of the NAQS objectives.

Domestic sources

Areas of domestic coal burning

109. The Supplementary Report to the 2003 U&SA for Moray Council provided a screening assessment to identify areas of high density coal burning in domestic properties. Six villages (Burghead, Duffus, Findhorn, Garmouth, Hopeman and Tomintoul) were identified to have no mains gas and more than 100 properties in an area of less than $500m^2$. However, the estimated number of properties burning coal in each village was below 100 which is the level provided in the LAQM.TG(03) technical guidance required for a potential exceedence of the NAQS objective for SO_2.

110. It was therefore concluded that there is unlikely to be an exceedence of the NAQS objectives for SO_2 due to domestic coal burning.

111. Local coal merchants were contacted for updated information relating to domestic coal use in the area. T.H.Fergusson Ltd reported that there has been a 20% decline in coal use year on year since 2003. James G Dick (Fuels) reported that there had been a significant decline in the amount of coal supplied to properties in Hopeman, Burghead, Findhorn, Duffus and Garmouth. There has been a decrease in domestic fuel use in the Moray Council area therefore the conclusions of the previous assessment remain valid.

Transport sources

Shipping

112. As stated in previous review and assessment reports there are no harbours or ports within the Moray Council area with significant SO_2 emissions.

Railway locomotives

113. Two rail lines were identified in the previous LAQM reports: the mainline linking Aberdeen to Inverness passes east to west through the council area with stations at Keith, Elgin and Forres; and a short freight rail line links Burghead to Elgin with a junction at Alves. It was confirmed by ScotRail in the 2003 U&SA that the trains using the main line were predominantly diesel but that there were no locations where trains would regularly be stationary for periods of more than 15-minutes. It is understood that the freight line from Elgin to Burghead is no longer operating and therefore there are no emissions of SO_2 associated with this route.

114. A third rail line has been identified, which is a part time passenger route operating between Keith and Dufftown via Drummuir. The line is a heritage railway operated by Keith and Dufftown Railway which reopened in 2001 and operates both diesel and electric locomotives. A maximum of six journeys a day are scheduled between Friday and Sunday during the summer months. There are no properties within 15m of the stations and depots used along the route and it is unlikely that visitors to the Keith and Dufftown Railway will be exposed to locomotive emissions for periods of greater than 15-minutes.

8 PARTICULATES

115. Four objectives for PM_{10} for all local authorities are contained within the Air Quality Regulations 2000 and Amendment Regulations 2002. The objectives were set as:

- the annual mean concentration not to exceed 40µg/m^3 by 31st December 2004;
- the 24-hour mean concentration not to exceed 50µg/m^3 on more than 35 occasions by 31st December 2004.

116. Two additional objectives for 2010 apply to local authorities in Scotland.

- the annual mean concentration not to exceed 18µg/m^3 by 31st December 2010;
- the 24-hour mean concentration not to exceed 50µg/m^3 on more than 7 occasions by 31st December 2010.

Monitoring data

117. As part of the Detailed Assessment Moray Council operated a gravimetric analyser at Queens Street Roundabout in Elgin. The monitor was operated for a three month period between 4th March and 2nd June 2005. Modelled and monitored PM_{10} concentrations were shown to be below the NAQS objectives, therefore due to difficulties in maintaining the monitor the site, it has been decommissioned.

118. Monitored data since the last U&SA is presented in Table 16.

Table 16: PM_{10} Concentrations outside the AQMA during 2004 (µg/m^3).

Site	Queen Street Roundabout, Elgin
3-month mean concentration (µg/m^3)	19.6
Estimated annual mean concentration (µg/m^3)	15.0
Maximum 24-hour mean concentration (µg/m^3)	51.7
No. of exceedences of the 24-hour mean objective concentration of 50 (µg/m^3)	1
Data Capture Rate (%)	92%
Projected annual mean concentration for 2010 (µg/m^3)	14.3
Projected No. of exceedences of the 24-hour mean objective concentration of 50 for 2010 (µg/m^3)	< 1

119. The monitoring data indicates the estimated annual mean PM_{10} concentration at the kerbside location is below the NAQS objective and projected concentrations for 2010 are predicted not to exceed the annual mean or 24-hour mean NAQS objectives.

Monitoring data outside an AQMA

120. The estimated background PM_{10} concentrations for Moray Council area taken from the netcen database are presented in Table 17.

Table 17: Background PM_{10} concentrations for Moray Council area ($\mu g/m^3$)

	Maximum	Minimum	Mean
Annual mean concentration 2005	13.5	8.4	9.3
Annual mean concentration 2010	12.7	8.1	8.9

121. Maximum background concentrations of PM_{10} for 2005 are below the annual mean and 24-hour mean NAQS objective for 2010, accounting for less than 75% and 27% of the respective objective concentrations.

122. Maximum background concentrations of PM_{10} predicted for 2010 are below both the annual mean and the 24-hour mean NAQS objectives for 2010, accounting for 71% of the annual mean and 25% of the 24-hour mean objective concentrations respectively.

Monitoring data within an AQMA

123. There are no AQMAs for PM_{10} within Moray Council area.

Transport sources

124. Updated road traffic survey data was obtained from the Scottish Executive. Five sections of the A96 were identified as having traffic flows above 10,000 AADT. These were at 2 sites in Forres, 1 site in Mostodloch, and 2 sites in Elgin. Road traffic flows in the area have typically decreased in volume or increased by less than 3% since the last U&SA.

125. The traffic counts for the A96 in central Elgin have reduced slightly since the Detailed Assessment and therefore have not been re-assessed.

Busy roads and junctions

126. Three junctions, two in Elgin and one at Spey Bay, were identified and assessed during the last round of review and assessment. It was concluded that there was no relevant exposure at the Spey Bay junction. A Detailed Assessment was carried out for the Queen Street Roundabout and North College Street junctions. The Detailed Assessment concluded that concentrations of PM_{10} at nearby receptors were below the 2010 NAQS objectives and that an AQMA was not required.

127. The traffic flows in Mosstodloch were shown to be greater than 10,000 AADT during 2004 and 2005 however, the by-pass planned for Mosstodloch and Fochabers will alter flows through the centre of the two towns. The Environmental Impact Assessment carried out as part of the planning application for the by-pass indicated that NAQS objectives would not be exceeded at residential properties due to traffic emissions.

128. A DMRB assessment for one of the two traffic count sites in Forres has been carried out and is included in Appendix 2. The DMRB assessment indicates that it is unlikely that road traffic emissions will result in exceedences of the 2010 annual mean NAQS objective for PM_{10} within Forres.

Roads with high flows of buses and / or HGVs

129. No roads with high flows of buses and HGVs were identified in the last U&SA. Updated traffic flow data show that bus and HGV volumes account for less than the 25% of total AADT on all roads for which data is available therefore it is unlikely that the NAQS objectives for PM_{10} will be exceeded.

New roads to constructed or proposed since the previous round of R&A

130. The impact of road traffic emissions in Mosstodloch and Fochabers was assessed in detail as part of the Public Enquiry for the planned Mosstodloch / Fochabers by-pass. It was concluded that current air quality met the NAQS objectives and that no exceedences were predicted at sensitive receptors as a result of the by-pass therefore this location on the A96 has not been assessed further.

Roads with significantly changed traffic flows, or new relevant exposure

131. No new locations of relevant exposure have been identified for previously assessed roads and junctions.

132. The LAQM.TG(03) technical guidance states that a significant change in traffic flow is represented by a change of 25%. The greatest changes in traffic flow are -18% on the A95 west of Keith and +11% on the A96 between Elgin and Lhanbryde. Road traffic flows on the A95 are less than 10,000 AADT however the traffic flow for 2005 on the A96 between Lhanbryde and Elgin is over 10,000 AADT and has not previously been assessed using DMRB. An Assessment is provided in Appendix 2. The results of the assessment indicate that the predicted NO_2 concentrations at nearby receptors 5m from the road are below the annual mean NAQS objective of 18μg/m^3 and that there is no requirement for further assessment.

Roads close to the objective during the second round of Review and Assessment

133. Roads identified as being close to the NAQS objective with relevant exposure during the 2003 U&SA were assessed in the Detailed Assessment carried out in 2004. It was assessed that there was no potential for exceedence of the NAQS objectives for PM_{10} due to road traffic emissions at the sites identified.

Aircraft

134. As stated in previous Review and Assessment reports there are no major airports within the Moray Council area.

135. A study of particulate, NO_2 and VOC concentrations in the vicinity of RAF Lossiemouth and RAF Kinloss located in Moray Council area was completed in 2004. 24-hour dust samples were collected at the beginning of April 2004 at 12 sites around the two air bases. The greatest concentrations of dust were found at roadside locations in Lossiemouth. However, maximum dust levels were shown to be representative of rural or sub-urban areas and small towns and below levels expected to result in public nuisance.

Industrial sources

136. It was confirmed there have been no new processes with PM_{10} emissions installed within Moray Council area since the previous updating and screening assessment.

Industrial sources with substantially increased emissions, or new relevant exposure

137. It was confirmed there have been no processes with significantly changed PM_{10} emissions within Moray Council area.

Quarries / landfill sites / opencast coal / handling of dusty cargo at ports etc.

138. Previous Review and Assessment reports identified 13 permanent sites and three mobile crushing units within Moray Council area with potential fugitive PM_{10} emissions. Assessments carried out in the Supplementary Report to the 2003 U&SA and the 2005 Progress Report indicate that there were a total of 7 properties located within 200m of dust emitting processes where there was a requirement for further assessment. However, no complaints had been received by Moray Council or SEPA and therefore it was concluded that quarries, landfills and dusty processes within Moray Council were unlikely to result in exceedences of the NAQS objectives for PM_{10}.

139. There have been no new dusty processes installed in Moray Council area since the 2005 LAQM Progress Report therefore it is concluded that emissions from quarries and landfills are unlikely to result in exceedences of the NAQS objectives for PM_{10}.

Domestic sources

Areas of domestic coal burning

140. The Supplementary Report to the 2003 U&SA for Moray Council provided a screening assessment to identify areas of high density coal burning in domestic properties. Six villages (Burghead, Duffus, Findhorn, Garmouth, Hopeman and Tomintoul) were identified to have no mains gas and more than 100 properties in an area les than $500m^2$. The background PM_{10} concentration for the region was below $25\mu g/m^3$ in 2004 and below $16\mu g/m^3$ in 2010 therefore using the nomograms provided in the LAQM.TG(03) technical guidance a housing density of more than 100 properties was required for a potential exceedence of the NAQS objectives for PM_{10}. The estimated number of properties burning coal in each village was below 100.

141. It was therefore concluded that there was unlikely to be an exceedence of either the 2004 or the 2010 NAQS objectives for PM_{10} due to domestic coal burning.

142. Local coal merchants were contacted for updated information relating to domestic coal use in the area. T.H.Fergusson Ltd reported that there has been a 20% decline in coal use year on year since 2003. James G Dick (Fuels) reported that there had been a significant decline in the amount of coal supplied to properties in Hopeman, Burghead, Findhorn, Duffus and Garmouth.

143. There has been a decrease in domestic fuel use in the Moray Council area and the revised background concentrations are below $25\mu g/m^3$ in 2004 and below $16\mu g/m^3$ in 2010 therefore the conclusions of the previous assessment remain valid.

9 CONCLUSIONS

Changes to atmospheric emission sources

144. There were no new or significantly changed industrial emissions identified since the last U&SA. Several sites operating combustion processes and waste oil burners have ceased to be regulated by SEPA and three other industrial processes have ceased operation.

145. Road traffic flows along major routes within the area have either decreased or increased insignificantly (< 12%) since the Detailed Assessment. Two additional junctions and one road were identified as having an AADT greater than 10,000 and were thus assessed using the DMRB screening model. The assessment concluded that there was unlikely to be an exceedence of NO_2 or PM_{10} NAQS objectives at nearby receptors due to road traffic emissions.

146. There was a significant decrease identified in the use of solid fuel at domestic properties. This indicates a reduction in SO_2 and PM_{10} emissions from domestic sources.

147. There was no significant change identified in emissions from other forms of transport within the area since the last U&SA.

Changes to pollutant monitoring

148. The concentrations recorded by NO_2 diffusion tubes since the last U&SA are below NAQS objectives. There has been no change to the monitoring network since the last U&SA; and requirements for new monitoring sites are continually assessed.

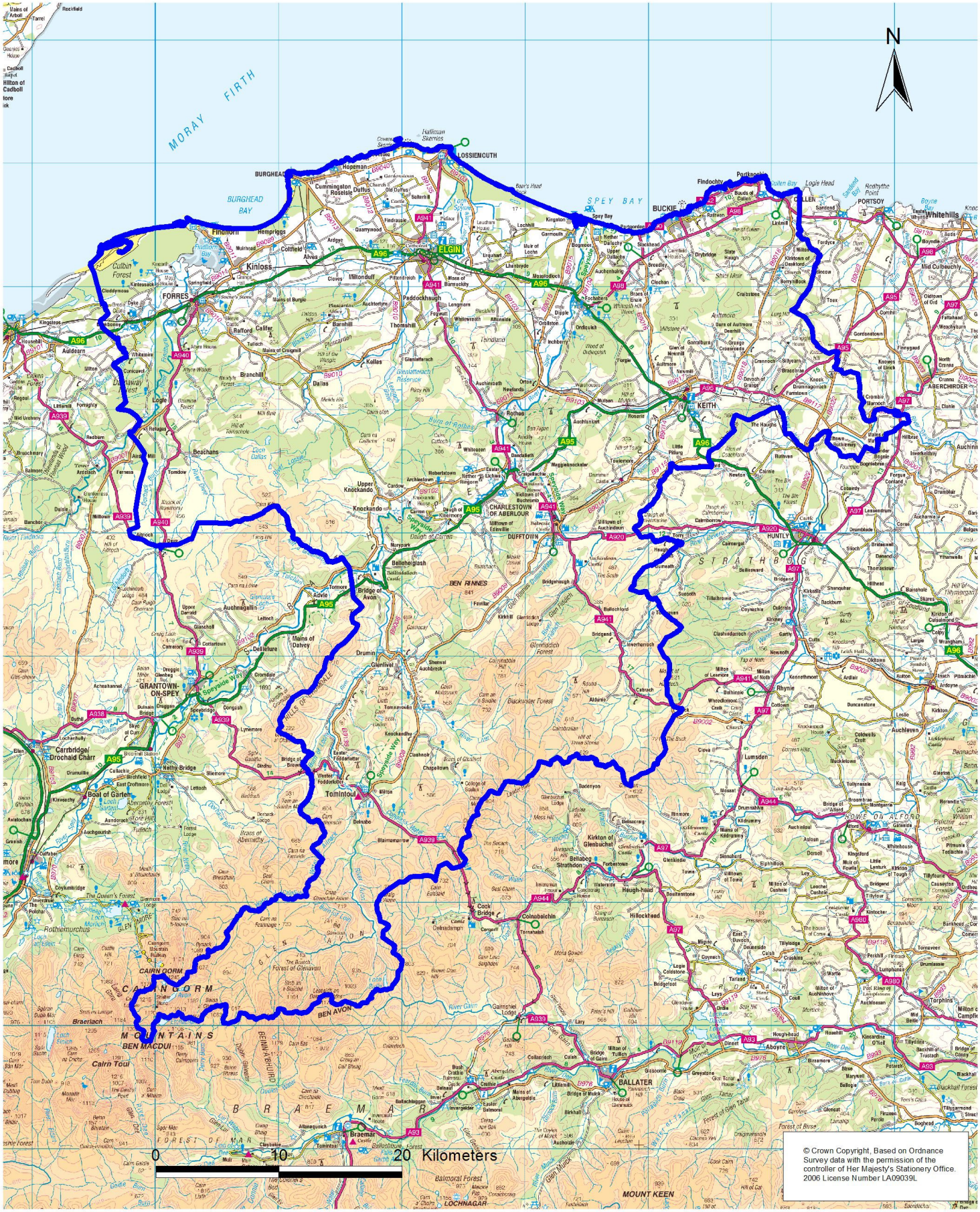
149. PM_{10} monitoring using the Partisol analyser in Elgin ceased in June 2005 due to concentrations recorded being below the 2010 NAQS objective concnetration.

Conclusions and actions

150. It is concluded from the review and assessment of local emissions sources and air quality monitoring data that there is no potential for exceedence of the NAQS objectives for CO, benzene, 1,3-butadiene, lead, NO_2, SO_2 or PM_{10} within Moray Council area.

151. The next requirement for LAQM review and assessment is the 2007 Progress Report, which will be submitted to the Scottish Executive by the 30th April 2007.

APPENDIX 1- Figures



Project Title	LAQM Updating and Screening Assessment
Figure Title	Moray Council area
Figure Number	1
Date	10th May 2006

The Moray Council

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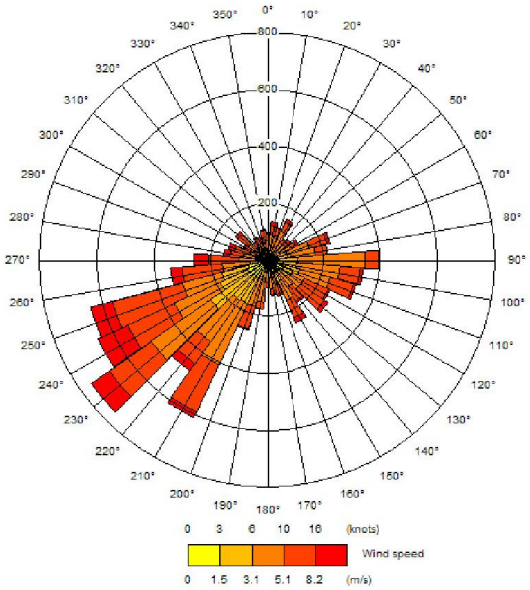
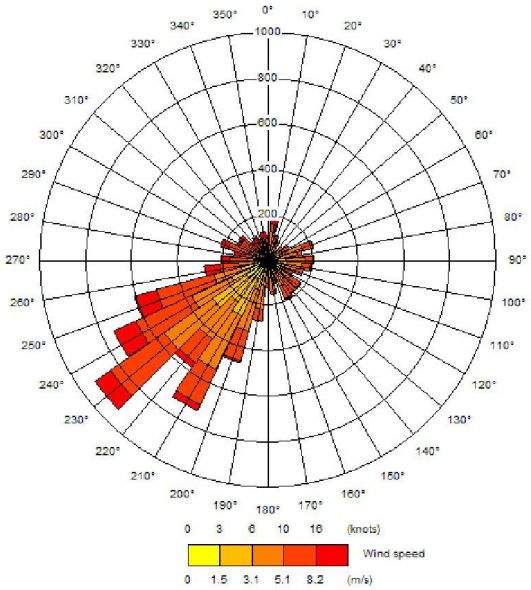
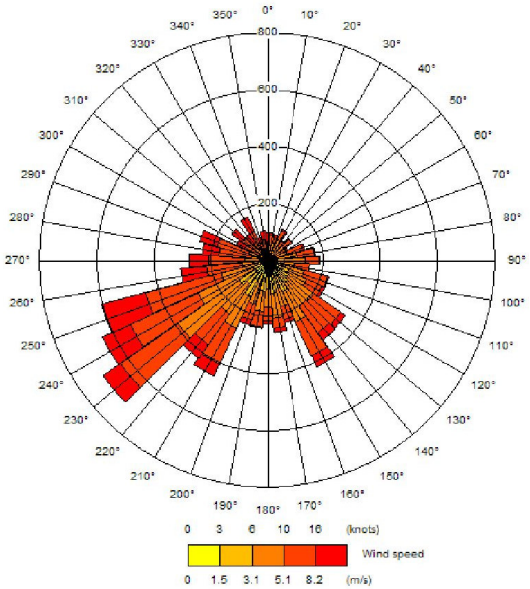
2002 Kinloss



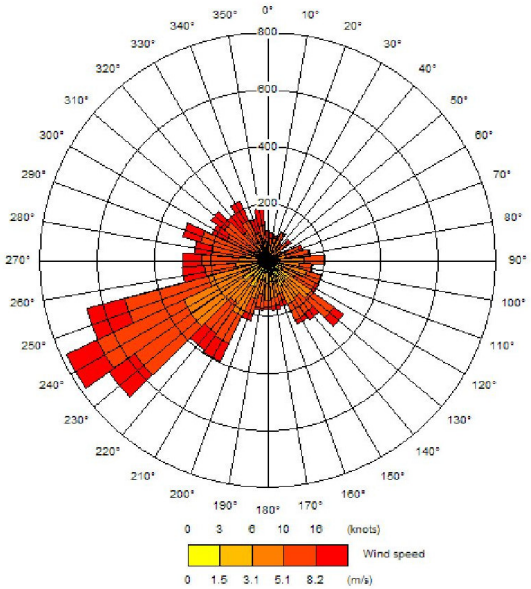
2003 Kinloss



2003 Lossiemouth



2004 Lossiemouth



The Moray Council

Date	10th May 2006

Project title
LAQM Updating and Screening Assessment

Figure no. 2

Figure title
Windroses for Kinloss and Lossiemouth meteorological stations

BMT Cordah Limited
Doherty Building
Pentlands Science Park
Penicuik, Edinburgh, EH26 0PZ
Website: http://www.bmtcordah.com
BMT Cordah Limited is a member of the BMT group of companies

BMT CORDAH Ltd

The Moray Council

Legend

- Moray Council boundary
- NO2 diffusion tube sites

Elgin 1: West Park Crt
Elgin 2: Maisondieu Rd
Elgin 3: 99-101 Maisondieu Rd
Elgin 4: 26-28 Priory Pl
Elgin 5: Main St, New Elgin
Fochabers 1: 50A High St
Fochabers 2: Sunndach
Forres 1: Tollbooth
Keith 1: 106 Moss St
Keith 2: 87 Moss St
Lossie 1: 1 Merryton Crt
Lossie 2: 27 James St

Date	10th May 2006
Scale	1:175,000

Project title
LAQM Updating and Screening Assessment

Figure no. 3

Figure title
Location of NO2 monitoring sites

BMT Cordah Limited
Doherty Building
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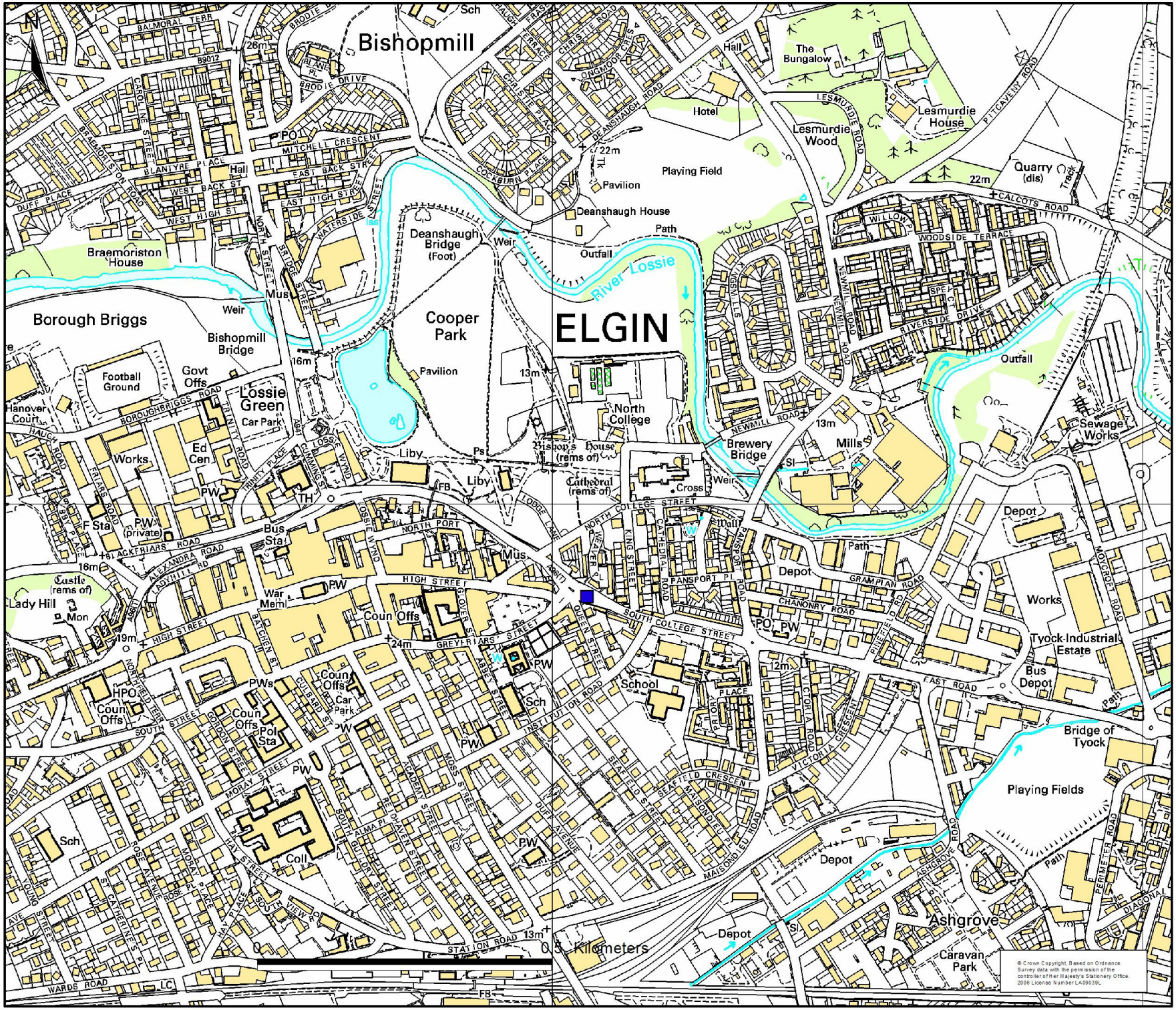
BMT CORDAH Ltd



The Moray Council

Legend

- Moray Council boundary
- Partisol monitoring site

Date	10th May 2006
Scale	1:10,000

Project title
LAQM Updating and Screening Assessment

Figure no. 4

Figure title
Location of PM10 monitoring sites

BMT Cordah Limited
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BMT CORDAH Ltd

APPENDIX 2- DMRB Assessments

DMRB: Assessment of Local Air Quality

INPUT SHEET

Step 1	Receptor name	A96 Elgin 30mph	Receptor number	1	*Step 6*
Step 2	Year	2005			*Step 7*
Step 3	Number of links	1			

Step 4

Background concentrations for 2005					
CO (mg/m^3)	Benzene ($\mu g/m^3$)	1,3-butadiene ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)
0.1	0.1	0.02	4.4	3.5	10.2

Step 5

Link number	Distance from link centre to receptor (m)	Traffic flow & speed		Traffic composition							
		AADT (combined, veh/day)	Annual average speed (km/h)	Road type (A,B,C,D)	Vehicles <3.5t GVW (LDV)			Vehicles>3.5t GVW (HDV)			
					% passen-ger cars	% light goods vehicles	Total % LDV	% buses and coaches	% rigid HGV	% articulated HGV	Total % HDV
1	5	16854	45	A			93				7
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

DMRB: Assessment of Local Air Quality

OUTPUT SHEET

Current receptor

Receptor Name	A96 Elgin 30mph	Receptor number	1
Assessment year	2005		

Results

Pollutant	Annual mean				For comparison with Air Quality Standards		
	Background concentration	Road traffic component	Total	Units	Metric	Value	Units
CO	0.10	0.11	0.21	mg/m^3	Annual mean*	0.21	mg/m^3
Benzene	0.10	0.13	0.23	$\mu g/m^3$	Annual mean	0.23	$\mu g/m^3$
1,3-butadiene	0.02	0.15	0.17	$\mu g/m^3$	Annual mean	0.17	$\mu g/m^3$
NO_x	4.4	34.2	38.6	$\mu g/m^3$	Not applicable		
NO_2	3.5	9.6	13.1	$\mu g/m^3$	Annual mean*	13.1	$\mu g/m^3$
PM_{10}	10.2	3.97	14.17	$\mu g/m^3$	Annual mean	14.2	$\mu g/m^3$
					Days >50$\mu g/m^3$	0	Days

* See Footnote 4 in DMRB Volume 11 Chapter 3

Contribution of each link to annual mean

Link number	CO (mg/m^3)	Benzene ($\mu g/m^3$)	1,3-butadiene ($\mu g/m^3$)	NOx ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)
1	0.11	0.13	0.15	34.20	3.97
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

All receptors

Receptor number	Name	Year	Pollutant concentrations at receptor						
			CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}	
			Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days >50$\mu g/m^3$
1	A96 Elgin 30mph	2005	0.21	0.23	0.17	38.60	13.07	14.17	0.00
2	A96 Elgin 30mph	2010	0.18	0.19	0.12	26.14	9.67	11.96	0.00

* See Footnote 4 in DMRB Volume 11 Chapter 3

DMRB: Assessment of Local Air Quality

INPUT SHEET

Step 1	Receptor name	A96 Forres 30mph	Receptor number	1	*Step 6*
Step 2	Year	2005			*Step 7*
Step 3	Number of links	1			

Step 4

Background concentrations for 2005					
CO (mg/m^3)	Benzene ($\mu g/m^3$)	1,3-butadiene ($\mu g/m^3$)	NO_x ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)
0.1	0.1	0.02	3.9	3.2	10.6

Step 5

Link number	Distance from link centre to receptor (m)	Traffic flow & speed		Traffic composition							
		AADT (combined, veh/day)	Annual average speed (km/h)	Road type (A,B,C,D)	Vehicles <3.5t GVW (LDV)			Vehicles>3.5t GVW (HDV)			
					% passen-ger cars	% light goods vehicles	Total % LDV	% buses and coaches	% rigid HGV	% articulated HGV	Total % HDV
1	5	11597	45	A			90				10
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

DMRB: Assessment of Local Air Quality — OUTPUT SHEET

Current receptor

Receptor Name	A96 Forres 30mph	Receptor number	1
Assessment year	2005		

Results

Pollutant	Annual mean				For comparison with Air Quality Standards		
	Background concentration	Road traffic component	Total	Units	Metric	Value	Units
CO	0.10	0.08	0.18	mg/m^3	Annual mean*	0.18	mg/m^3
Benzene	0.10	0.08	0.18	$\mu g/m^3$	Annual mean	0.18	$\mu g/m^3$
1,3-butadiene	0.02	0.12	0.14	$\mu g/m^3$	Annual mean	0.14	$\mu g/m^3$
NO_x	3.9	31.8	35.7	$\mu g/m^3$	Not applicable		
NO_2	3.2	9.1	12.3	$\mu g/m^3$	Annual mean*	12.3	$\mu g/m^3$
PM_{10}	10.6	3.54	14.14	$\mu g/m^3$	Annual mean	14.1	$\mu g/m^3$
					Days >50$\mu g/m^3$	0	Days

* See Footnote 4 in DMRB Volume 11 Chapter 3

Contribution of each link to annual mean

Link number	CO (mg/m^3)	Benzene ($\mu g/m^3$)	1,3-butadiene ($\mu g/m^3$)	NOx ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)
1	0.08	0.08	0.12	31.78	3.54
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

All receptors

Receptor number	Name	Year	Pollutant concentrations at receptor						
			CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}	
			Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days >50$\mu g/m^3$
1	A96 Forres 30mph	2005	0.18	0.18	0.14	35.68	12.27	14.14	0.00
2	A96 Forres 30mph	2010	0.16	0.16	0.11	24.30	9.58	12.07	0.00

* See Footnote 4 in DMRB Volume 11 Chapter 3