



BMT Cordah Limited
ENVIRONMENTAL CONSULTANCY
AND INFORMATION SYSTEMS

Supplementary Report to the Updating and Screening Assessment

A report for Moray Council

BMT Cordah Limited,
Pentlands Science Park,
Penicuik, Midlothian,
UK, EH26 0PZ.
Tel: +44(0)131 445 6120
Fax: +44(0)131 445 6110
Email: main@bmtcordah.com
Website: www.bmtcordah.com

Report No: BMT Cordah Ltd / MOR.008 / 2003
Status: Final
Version: Version 1
Date of Release: 30th January 2004
Terms: The contents of this report are confidential. No part thereof is to be cited without the express permission of BMT CORDAH Limited or Moray Council

Approved and authorised for issue:

Rebecca Richardson,
Consultant

Annie Danskin, Principal
Consultant

Bill Sheridan, Principal
Consultant



Member of the BMT group of companies ●●



CONTENTS

1	INTRODUCTION.....	2
1.1	Scottish Executive Response to the U&SA	2
1.2	SEPA Response to the U&SA	2
2	REVIEW AND ASSESSMENT OF SO₂.....	3
2.1	Introduction	3
2.2	Comparison between Diffusion Tube Monitoring and NAQS Objectives	3
2.3	Domestic Fuel Burning	4
3	REVIEW AND ASSESSMENT OF NO₂.....	6
3.1	Introduction	6
3.2	Traffic Assessment	6
3.2.1	Relevant Exposure	7
4	REVIEW AND ASSESSMENT OF PM₁₀.....	8
4.1	Introduction	8
4.2	Domestic Fuel Burning	8
4.3	Quarries	9
4.4	Traffic Assessment	11
4.4.1	Relevant Exposure	11
5	CONCLUSIONS.....	12
6	REFERENCES.....	14

Table Contents List

Table 1: The National Air Quality Strategy Objectives for Sulphur Dioxide	3
Table 2: Monitoring Data for SO ₂ for Moray Council	3
Table 3: 2001 Census Data for Properties in six Towns in Moray Council	5
Table 4: Number of Properties Supplied by the Two Main Local Coal Merchants	5
Table 5: National Air Quality Strategy Objectives for Nitrogen Dioxide	6
Table 6: Nearest Receptors to Junctions Assessed for using the DMRB Assessment	7
Table 7: National Air Quality Strategy Objectives for PM ₁₀	8
Table 8: Distances of Nearest Receptors to Dust Emitting Processes	10

Figure Contents List

Figure 1: Location of Postcode Areas with no mains gas supply and Council Housing using Solid Fuel within Moray Council
Figure 2: Photographs of Queen Street Roundabout Illustrating the Proximity of Residential Properties and Pedestrians to the Traffic Emissions.
Figure 3: Location of Nearest Receptors to the A96 Spey Bay Junction

1 INTRODUCTION

BMT Cordah Limited has been commissioned by Moray Council to undertake a supplementary air quality report to the air quality Updating and Screening Assessment (U&SA) completed in May 2003 (Reference 1), which formed part of the second round of the review and assessment process. This report provides additional information in response to the comments made by the Scottish Executive and the Scottish Environment Protection Agency (SEPA) on the conclusions of the U&SA.

The (U&SA) submitted by Moray Council to the Scottish Executive in May 2003 concluded that there is potential for an exceedence of National Air Quality Strategy (NAQS) objectives for particulates (PM₁₀) as a result of traffic emissions in Elgin and at the Spey Bay junction on the A96. The traffic emissions would therefore be required to be considered at Detailed Assessment.

For the remaining pollutants, namely carbon monoxide (CO), benzene, 1,3-butadiene, lead, nitrogen dioxide (NO₂) and sulphur dioxide (SO₂) the assessment concluded that it was unlikely that there would be an exceedence of any of the respective NAQS objectives.

1.1 Scottish Executive Response to the U&SA

The Scottish Executive accepted the conclusions of the Moray Council (U&SA) for 2003, however its response highlighted three issues (Reference 2) on which clarification was requested:

- 1) Confirmation that the location of junctions assessed using the Design Manual for Roads and Bridges (DMRB) Assessment were indeed worst case locations for NO₂;
- 2) Confirmation that there is relevant exposure at locations assessed in the DMRB Assessment for PM₁₀, and that the distances between receptors and traffic emissions have been accounted for; and
- 3) Confirmation that assessment of domestic fuel sources for PM₁₀ and SO₂ has followed the screening assessment for domestic sources set out in the technical guidance LAQM.TG(03). (Reference 3).

1.2 SEPA Response to the U&SA

In general, SEPA endorsed the conclusions of the Moray Council Air Quality Updating and Screening Assessment for 2003, and recommended that a Detailed Assessment be carried out in respect of PM₁₀ levels resulting from traffic emissions at the three locations specified, by the end of April 2004. This report provides the additional requested information which relates to four points highlighted in correspondence from SEPA (Reference 4), as follows:

- 1) Comparison between short-term SO₂ passive diffusion tube results and NAQS objective limits for SO₂;
- 2) Clarification that the domestic fuel survey in relation to SO₂ and PM₁₀ was conducted in accordance with the requirements set out in the technical guidance LAQM.TG (03);
- 3) Confirmation that the locations assessed using the DMRB Assessment experience relevant public exposure; and

- 4) Provision of further information on the screening assessment for PM10 from dust emitting processes, the relevant exposure at these processes and consideration of the 2010 objective.

The additional information requested was to be submitted to SEPA and the Scottish Executive by mid November 2003. SEPA and the Scottish Executive agreed that due to outstanding information still awaiting return, the report would be submitted upon full completion.

This report aims to provide the additional information and clarification requested by the Scottish Executive and SEPA and presents any arising amendments to the conclusions of the U&SA.

2 REVIEW AND ASSESSMENT OF SO₂

2.1 Introduction

There are three NAQS objectives for SO₂, which are listed in Table 1.

Table 1: The National Air Quality Strategy Objectives for Sulphur Dioxide

Concentration	Measured As	Date to be Achieved by
350 µg/m ³ not to be exceeded more than 24 times per year	1-hour mean	31 st December 2004
125 µg/m ³ not to be exceeded more than 3 times a year	24-hour mean	31 st December 2004
266 µg/m ³ not to be exceeded more than 35 times a year	15-minute mean	31 st December 2005

2.2 Comparison between Diffusion Tube Monitoring and NAQS Objectives

Moray Council does not undertake any automatic continuous monitoring of SO₂ comparable with the 15-minute, 1-hour and 24-hour mean objectives. The Council has monitored SO₂ since January 1999 using passive diffusion tubes. The diffusion tube technique is not validated and, as the monitoring averaging period is 4 weeks, the results are not comparable with NAQS objectives for SO₂. The monitoring results can therefore be used as an indicator of air quality but, not directly compared with NAQS objectives. The diffusion tube monitoring results are presented in Table 2.

Table 2: Monitoring Data for SO₂ for Moray Council

	Annual Mean SO ₂ Concentration (µg/m ³)			Data Capture Rate (%)		
	2000	2001	2002	2000	2001	2002
Priory Place, Elgin	1.75	14.16	0.98	100	100	100
Spey Drive, Rothes	4.10	12.82	2.35	100	92	100

The results therefore indicate that the highest SO₂ concentrations are measured in the town of Elgin. The results, although not directly comparable, are substantially lower than the respective NAQS objectives for SO₂ of 125, 266 and 350 µg/m³.

2.3 Domestic Fuel Burning

The LAQM.TG(03) technical guidance specifies that any area of 500m x 500 m with more than 100 houses burning solid fuel as their primary source of heating should be considered for a detailed assessment.

Information from Moray Council Property Services Section detailed all council owned housing that have either solid fuel burning as a primary source of heating or open fires (Reference 5). Solid fuel burning refers to properties using coal, coke or wood. Council housing within Moray Council totals 7000 which accounts for 20% of the total housing stock in Moray Council. The Moray Council maintenance contract for 2002 / 2003 identified 292 council properties using solid fuel heating and a further 500 with a solid fuel fire in addition to electric heating.

The towns of Burghead, Lossiemouth and Forres had high numbers of solid fuel burning properties and were therefore considered further for analysis. The numbers of properties with solid fuel burning in each town were divided by the area covered by the respective town. This basic analysis indicated that none of the potential villages or towns contained more than 100 council properties burning solid fuel per 500m x 500 m. However this analysis accounts for council owned properties, which make up approximately 20% of the housing stock in Moray. The council-held information did not provide data on the fuel usage of privately owned properties and therefore additional information was requested from Transco Plc (Reference 6). The information requested was used to identify areas within Moray that are not currently supplied by mains gas and therefore indicate areas where properties would be using alternative fuel sources for heating.

A map showing postcode areas with no domestic mains gas supply and location of council housing with solid fuel central heating or open fires is provided in Figure 1 in Appendix 1. The town with the greatest number of council houses with solid fuel or open fires is Elgin. The area is supplied by mains gas therefore it is likely that the council properties with solid fuel or open fires are not representative of all the housing stock in Elgin. Any solid fuel use is likely to be used as a secondary source of heating. Based on the distribution of council properties burning solid fuel it is likely that all solid fuel burning properties will be widely distributed through the town and therefore there is no distinct cluster of properties burning solid fuel.

There are four towns and two villages identified using the data supplied from Transco Plc as having no mains gas and council properties where solid fuel and open fires are in use. These are: Tomintoul, Burghead, Hopeman, Duffus, Tomnavoulin and Parkmore. Parkmore and Tomnavoulin are villages of less than one hundred properties and therefore it is unlikely that there is potential for exceedence of the NAQS objectives.

Moray Council Property Services Section provided additional locations without mains gas supply and confirmation was provided by the local Transco representative. The additional locations were Findhorn, Dyke, Drummuir, Garmouth, Milltown of Rothiemay and an estate, Provost Christie Drive, in Rothes.

Drummuir, Dyke and Milltown of Rothiemay, and Provost Christie Drive contain less than 100 properties and are therefore not considered further.

Further information was taken from the 2001 census data available for Moray Council (Reference 7), which is shown in Table 3:

Table 3: 2001 Census Data for Properties in six Towns in Moray Council

Town	No. of Households	No. of Properties with Central Heating Systems	No. of Council owned Properties
Burghead	657	619	84 (12.8%)
Duffus	152	150	6 (4%)
Findhorn	434	380	17 (4%)
Garmouth	200	189	25 (12.5%)
Hopeman	631	609	45 (7%)
Tomintoul	150	137	16 (10.7%)

The 2001 census data provides basic information on properties within Moray. Council properties in Tomintoul use primarily solid fuel with oil and electricity as secondary fuel sources. These are not representative of all properties a significant proportion of which are known to use a mixture of oil and electricity as the main heating sources. It has therefore been concluded that domestic fuel emissions in Tomintoul are unlikely to lead to an exceedence of NAQS objectives for SO₂. Council properties in Burghead, Hopeman, Findhorn, and Garmouth have solid fuel as the primary fuel source and electricity as a secondary fuel source for heating. Council properties in Duffus use electricity as the primary heating source. However the number of properties owned by the council in Findhorn, Duffus and Hopeman are less than 10% of the total properties within each town or village and therefore are not necessarily representative of all the housing in these towns.

It is known locally that a significant proportion of the domestic central heating systems in Garmouth, Findhorn, Burghead and Hopeman are oil fired or use Liquid Petroleum Gas (LPG). Additional information regarding properties supplied with solid fuel was requested from local coal merchants and is given in Table 4.

Table 4: Number of Properties Supplied by the Two Main Local Coal Merchants

Merchant	Hopeman	Burghead	Findhorn	Duffus	Garmouth
James G Dick	35	45	10	10	10
T.H.Ferguson	35	30	15	10	50
Total	70	75	25	20	60

Coal merchants indicated that a significant proportion of these properties use solid fuel as a secondary fuel source with oil fired central heating being the main source (Reference 8). From this information it is therefore unlikely that more than 100 properties in each town or 500m by 500m area will be using solid fuel. It is therefore concluded that it is not necessary to proceed to a detailed assessment for SO₂ for domestic fuel emissions.

3 REVIEW AND ASSESSMENT OF NO₂

3.1 Introduction

There are two NAQS objectives for NO₂, which are listed in Table 5.

Table 5: National Air Quality Strategy Objectives for Nitrogen Dioxide

Concentration	Measured As	Date to be Achieved by
200 µg/m ³ not to be exceeded more than 18 times per year	1-hour mean	31 st December 2005
40 µg/m ³	annual mean	31 st December 2005

3.2 Traffic Assessment

There are eight key points to consider when selecting areas for an assessment of NO₂ emissions resulting from traffic. These are discussed below:

- **Narrow congested streets with residential properties close to the kerb**

No narrow congested streets with an Annual Average Daily Total (AADT) traffic flow greater than 10,000 were identified within Moray Council area

- **'busy' junctions**

Three busy junctions, North College Street, Queen Street Roundabout and Spey Bay junction, with combined AADT traffic flows greater than 10,000 were identified and assessed using the DMRB Assessment.

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

Two of the junctions, North College Street and Queen Street Roundabout, considered in the DMRB Assessment are also located on roads through the centre of Elgin where there are residential properties, pedestrians and workers that are likely to be exposed to pollutants for 1 hour or more at a time.

- **New roads constructed or proposed since the first round of the review and assessment**

As stated in the Moray Council Air Quality Updating and Screening Assessment there have been no new roads constructed since the first round of the review and assessment. The construction of the Fochabers / Mosstodloch bypass, which was anticipated to commence in 2003 was subject to a Public Inquiry which finished in October 2003. Any increased traffic impacts as a result of this development can therefore not be determined until after the official report of the Public Inquiry. The proposed bypass has not yet received planning approval and therefore it is not required to be assessed in the U&SA.

- **Roads with concentrations close to the objective during the first round of review and assessment**

The supplementary report to the Moray Council Stage 1 Air Quality Review and Assessment considered two junctions in the DMRB Assessment. The assessed junctions were Spey Bay on the A96 and South College Street on the A96 in Elgin. No roads were identified to be close to the objective during the first round of review and assessment (Reference 9). It is therefore not considered further for NO₂ in the U&SA.

- **Roads with significantly changed traffic flows**

No roads within Moray Council area were shown to have significantly changed traffic flows since the last round of Review and Assessment therefore no roads were considered for this criterion.

- **Roads with high flow of buses and/or HGVs**

No roads within Moray Council area were identified to have a proportion of traffic flow greater than 25% for HGVs and buses therefore further assessment was not required for this criterion.

- **Bus stations.**

There is one bus station in Moray Council area is Elgin bus station on Alexandra Road. The average annual daily flow of buses at Elgin bus station is less than 1000, therefore bus stations were not considered further.

3.2.1 Relevant Exposure

Distances of nearest receptors at the three junctions assessed in the DMRB Assessment reported in the U&SA for NO₂ are identified in Table 6. These distances were measured from the OS 1:50,000 Landranger 28 map.

Table 6: Nearest Receptors to Junctions Assessed for using the DMRB Assessment

Junction	Nearest Receptor
A96 - North College Street, Elgin	10 m
A96 Spey Bay Junction, Fochabers	100 m
A96 Queen Street Roundabout, Elgin	10 m

Further evidence was supplied by Moray Council in the form of a site inspection and photography. Moray Council confirmed that buildings were located within 10 m of the assessed roads in Elgin and in some instances 5m. The DMRB Assessment carried out in the U&SA used a nearest receptor distance of 5m, this was an appropriate distance for relevant public exposure at the A96-North College Street junction and Queen Street roundabout in Elgin. The two photographs in Figure 2 in Appendix I show the proximity of residential properties and pedestrians to the Queen Street roundabout and A96 through Elgin. The four nearest receptors to the Spey Bay junction on the A96, shown in Figure 3 in Appendix I, are between 170m and 1340m. It is therefore concluded that there is not relevant exposure at the Spey Bay junction.

The nearest NO₂ monitoring sites to the A96 Spey Bay junction at Fochabers are the Fochabers 1 & 2 sites located in Fochabers town centre. The nearest NO₂ monitoring sites to Queen Street roundabout and the A96 - North College Street junction are Elgin 2, 3 and 4. The monitoring results for 2000-2002 at all five locations have annual NO₂ means significantly below the NAQS objective levels.

The results of the DMRB Assessment for North College St, Spey Bay Junction and Queen Street Roundabout, reported in the Updating and Screening Assessment for Moray Council (Reference 1), indicated that the road traffic emissions were unlikely to cause exceedence of the annual mean NAQS objective for NO₂. This is supported by the NO₂ diffusion tube monitoring results.

4 REVIEW AND ASSESSMENT OF PM₁₀

4.1 Introduction

There are four NAQS objectives for PM₁₀ in Scotland, which are listed in Table 4.

Table 7: National Air Quality Strategy Objectives for PM₁₀

Concentration	Measured As	Date to be Achieved by
40 µg/m ³	annual mean	31 st December 2004
50 µg/m ³ not to be exceeded more than 35 times a year	24-hour mean	31 st December 2004
20 µg/m ³	annual mean	31 st December 2010
50 µg/m ³ not to be exceeded more than 7 times a year	24-hour mean	31 st December 2004

4.2 Domestic Fuel Burning

The LAQM.TG(03) technical guidance specifies that any area of 500m x 500 m with more than 50 houses burning solid fuel as their primary source of heating should be assessed further with regards to air quality.

Information from Moray Council Property Services Section detailed all council owned housing that have solid fuel central heating or open fires (Reference 5). Council housing within Moray Council totals 7000 which accounts for 20% of the total housing stock in Moray Council. The Moray Council maintenance contract for 2002 / 2003 identified 292 council properties using solid fuel heating and a further 500 with a solid fuel fire in addition to electric heating.

This data was analysed and no villages or towns were identified to contain more than 50 houses per 500m x 500m burning solid fuel. However this analysis accounts for council owned properties and not privately owned properties. Additional information was requested from Transco to identify areas that are not supplied by mains gas and therefore would be using alternative fuel sources for heating.

A map showing postcode areas with no domestic mains gas supply and location of council housing with solid fuel central heating or open fires is provided in Figure 1 in Appendix 1. The town with the greatest number of council houses with solid fuel or open fires is Elgin. The properties are widely distributed through the town and therefore there is no distinct cluster of properties burning solid fuel. The area is also supplied by mains gas therefore it is likely that solid fuel or open fires are a secondary source of heating. There are four towns and two villages identified as having no mains gas and properties where solid fuel and open fires are in use. These are Tomintoul, Burghead, Hopeman, Duffus, Tomnavoulin and Parkmore. Parkmore and Tomnavoulin are villages of less than fifty properties and therefore it is unlikely that there is potential for exceedence of the NAQS objectives. Moray Council Property Services Section also added that Findhorn, Dyke, Drummur, Garmouth, Milltown of Rothiemay and an estate, Provost Christie Drive, in Rothes also were not connected to mains gas. Drummur is less than 50 properties and is therefore is not considered further.

The technical guidance LAQM.TG(03) provides nomograms for 2004 and 2010 to determine if there is potential for exceedence of PM₁₀ depending on the background levels of PM₁₀ and the size of the village or town. The background levels of PM₁₀ for Moray Council are predicted to be below 15 µg/m³ (Reference 1). Therefore for a small town, the density of effective coal-burning households per 500m x 500 m area for a small village will be required to be below 450 for 2004 and below 110 for 2010. The areas identified are all classed as small villages of approximately 1 km² or less in size.

All the villages except Burghead and Hopeman have less than 450 properties and therefore are predicted not to exceed the 24-hour mean PM₁₀ NAQS objective for 2004.

Dyke, Milltown of Rothiemay and Provost Christie Drive (Rothies) have less than 110 properties and therefore are not predicted to exceed the annual mean PM₁₀ NAQS objective for 2010.

The 2001 census data shown in Table 3 provides basic information on properties within Moray. Council properties in Tomintoul use primarily solid fuel with oil and electricity as secondary fuel sources, but are not necessarily representative of all properties a significant proportion of which are known to use a mixture of oil and electricity as the main heating sources. It is therefore considered unlikely that the domestic emissions in Tomintoul will lead to an exceedance of NAQS objectives for PM₁₀ in 2010.

Council properties in Burghead, Hopeman, Findhorn and Garmouth have solid fuel as the primary fuel source and electricity as a secondary fuel source for heating. Council properties in Duffus use electricity as the primary heating source. However the numbers of properties owned by the council in all towns is less than 13% of the total properties within each town or village and therefore are not necessarily representative of all housing. This is particularly true for Duffus, Findhorn and Garmouth where the percentage of housing owned by the council is less than 10%. It is known locally that a significant proportion of the domestic central heating systems in Garmouth, Burghead and Hopeman are oil fired or use Liquid Petroleum Gas (LPG). Therefore additional information regarding properties supplied with solid fuel was requested from local coal merchants and is given in Table 4 in Section 2.3.

Coal merchants indicated that a significant proportion of these properties use solid fuel as a secondary fuel source with oil fired central heating being the main source (Reference 8). From this information it is unlikely that any of the towns contain more than 110 properties burning solid fuel. It is therefore concluded that solid fuel burning in these areas is unlikely to lead to exceedance of the NAQS objective for 2004 or 2010 and it is therefore not necessary to proceed to a detailed assessment for PM₁₀ for domestic fuel.

4.3 Quarries

The U&SA reported on emissions from quarries and dust emitting processes. Emissions are difficult to approximate, as they are fugitive and cannot be quantified without detailed information. An inventory of quarries and dust emitted processes predicted to be in operation in 2004 and 2010 was undertaken.

The total background PM₁₀ concentration given by the NETCEN website (Reference 10) is less than 18µg/m³ for 2004 and less than 15µg/m³ for 2010. Technical guidance LAQM.TG(03) (Reference 1) indicates that where the background PM₁₀ concentration for 2004 is less than 26µg/m³ or where the background PM₁₀ concentration for 2010 is less than 16µg/m³ and relevant exposure is evident within 200m of the source of dust emissions a detailed assessment may be required if there is evidence of dust complaints or concerns.

Using OS 1:10,000 digital maps distances from the centre point of each landfill and quarry operation to the nearest receptor was measured. The number of properties within 200m of the central location of operation was also recorded. The resulting distances are shown in Table 8.

Table 8: Distances of Nearest Receptors to Dust Emitting Processes

Quarries and Landfill Sites	Nearest Receptor (m)	No. of Receptors within 200m
Nether Dallachy Landfill Spey Bay	190	2
Kirkhill Landfill Calcots Rd Elgin	310	0
Newtyle Landfill Site Rafford Forres	130	2
Newton Toll Elgin, Landfill	70	1
Caledonian Quarry Products, Cloddach Quarry Dallas Road Elgin, Cement	570	0
Caledonian Quarry Products, Lochinver Quarry Miltonduff By Elgin, Cement	390	0
RMC Readymix Scotland, Rothes Glen Quarry Rothes, Cement	290	0
Ennstone Thistle Ltd, Cloddach Quarry Dallas Road Elgin, Roadstone Coating	570	0
Caledonian Quarry Products, Cairdshill Quarry Blackhillock Keith, Crushing Plant (Quarry)	110	2
Leiths (Scotland) Ltd, Bluehill Quarry Keith, Crushing Plant (Quarry)	520	0
Leiths (Scotland) Ltd, Parkmore Quarry Dufftown Keith, Crushing Plant (Quarry) & Roadstone coating	210	0
Leiths (Scotland) Ltd, Newforres Quarry Rafford, Crushing Plant (Quarry) & Roadstone coating	280	0
Limehillock Quarry Plant Ltd, Grange Keith, Crushing Plant (Mobile)	N/A	N/A
Limehillock Quarry Plant Ltd, Grange Keith, Crushing Plant (Mobile)	N/A	N/A
Limehillock Quarry Plant Ltd, Nether Dallachy Spey Bay Fochabers, Crushing Plant (Mobile)	N/A	N/A

There are four landfills and quarries with residential properties within 200 m of process operations. A total of 7 properties within Moray Council area are classed as sensitive receptors to fugitive PM₁₀ emissions from quarries with a relative exposure.

Moray Council is not aware of any complaints or concerns relating to dust originating from any of the quarries or landfill sites in the Moray Council area. The regional SEPA office in Elgin also confirmed that no complaints have been received with respect to fugitive particulate emissions from landfill or quarry sites within the Moray Council area. It is therefore concluded that a Detailed Assessment for PM₁₀ with quarries is not required.

4.4 Traffic Assessment

There are five key points to consider for an assessment of PM₁₀ emissions resulting from traffic. These are discussed below:

? **Busy Roads and Junctions in Scotland for the 2010 Objective**

The predicted background concentration of PM₁₀ for 2010 for Moray Council area is below 15 µg/m³, therefore roads and junctions with an AADT traffic flow greater than 10,000 were assessed using the DMRB Assessment in accordance with LAQM.TG(03). Three busy junctions, North College Street on the A96 in Elgin, Queen Street Roundabout in Elgin and Spey Bay junction on the A96, with combined Annual Average Daily Total (AADT) traffic flows greater than 10,000 were identified and assessed using the DMRB Assessment.

? **Roads with high flow of buses and/or HGVs**

No roads within Moray Council area were identified to have a proportion of traffic flow greater than 25% for HGVs and buses therefore further assessment was not required for this criterion.

? **New roads constructed or proposed since first round of the review and assessment**

As stated in the U&SA there have been no new roads constructed since the first round of the review and assessment. The construction of the Fochabers / Mosstodloch bypass, which was anticipated to commence in 2003 was subject to a Public Inquiry which finished in October 2003. Any increased traffic impacts as a result of this development can therefore not be determined until after the official report of the Public Inquiry. The proposed bypass has not yet received planning approval and therefore it is not required to be assessed in the U&SA.

? **Roads close to the objective during the first round of review and assessment**

The supplementary report to the Moray Council Stage 1 Air Quality Review and Assessment considered two junctions in the DMRB Assessment. The assessed junctions were Spey Bay on the A96 and South College Street on the A96 in Elgin. No roads were identified to be close to the objective during the first round of review and assessment (Reference 9).

? **Roads with significantly changed traffic flows**

No roads within Moray Council area were shown to have significantly changed traffic flows since the last round of Review and Assessment therefore no roads were considered for this criterion.

4.4.1 Relevant Exposure

Distances of nearest receptors at the three junctions assessed in the DMRB Assessment reported in the U&SA for PM₁₀ are identified in Table 6. These distances were measured from the OS 1:50,000 Landranger 28 map.

Further evidence was supplied by Moray Council in the form of a site inspection and photography. Moray Council confirmed that buildings were located within 10 m of the assessed roads in Elgin and in some instances 5m. The DMRB Assessment carried out in the U&SA used a nearest receptor distance of 5m, this was an appropriate distance for relevant public exposure at the A96-North College Street junction and Queen Street roundabout in Elgin. Figure 2 in Appendix I shows the proximity of residential properties and pedestrians to the Queen Street roundabout and A96 through Elgin. The four nearest receptors to the Spey Bay junction on the A96, shown in Figure 3 in

Appendix I, are between 170m and 1340m. It is therefore concluded that there is not relevant exposure at the Spey Bay junction.

Therefore it was concluded that a Detailed Assessment was required for PM₁₀ due to traffic emissions at Queen Street Roundabout on the A96 and at the North College Street Junction on the A96. The Detailed Assessment is required to be submitted to the Scottish Executive by the end of April 2004.

5 CONCLUSIONS

This report concludes that:

- ? The junctions assessed in the DMRB Assessment included in the U&SA are the worst case locations for NO₂ (reported in Sections 3.2 and 4.4);
- ? There is 'relevant public exposure' at the Queen Street Roundabout and North College Street Junction locations assessed in the DMRB Assessment. A distance of 5m to the nearest receptor used in the DMRB Assessment is appropriate for these two junctions. However, there is not 'relevant public exposure' at the Spey Bay Junction at Fochabers (reported in Sections 3.2.1 and 4.4.1);
- ? The domestic fuel assessment for SO₂ and PM₁₀ was conducted in accordance with the requirements set out in the technical guidance LAQM.TG(03) (reported in Sections 2.3 and 4.2);
- ? The use of SO₂ passive diffusion tubes is not a validated method for comparison with NAQS objective limits for SO₂. The comparison of results reported in Section 2.2 showed that the annual mean SO₂ concentrations are significantly lower than the short-term NAQS Objectives for SO₂; and
- ? The additional information relating to dust emitting processes, reported in Section 4.3, details the method employed to conduct the screening assessment for PM₁₀ from dust emitting processes. The assessment was carried out in accordance with technical guidance LAQM.TG(03) and provided evidence of minimal 'relevant public exposure' for the 2010 PM₁₀ objective. However, no complaints have been received by either Moray Council or SEPA in relation to fugitive dust emissions.

The additional information provided in this report has reaffirmed the conclusions for PM₁₀, NO₂ and SO₂ of the U&SA.

The results of the DMRB Assessment for North College St, Spey Bay Junction and Queen Street Roundabout, reported in the Updating and Screening Assessment for Moray Council (Reference 1), indicated that no road traffic emissions were identified as likely to cause exceedence of the annual mean NAQS objective for NO₂. It is therefore concluded that a detailed assessment is not required for NO₂.

The results of the DMRB Assessment for North College St, Spey Bay Junction and Queen Street Roundabout, reported in the Updating and Screening Assessment for Moray Council (Reference 1), indicated that road traffic emissions were likely to cause exceedence of the annual mean NAQS

objective for PM₁₀ for North College Street and Queen Street Roundabout both on the A96 in Elgin at which there is relevant public exposure. It is therefore concluded that a detailed assessment is required for PM₁₀ with regards to road traffic emissions at these two locations.

Further assessment of the particulate emissions from quarries and landfills determined that seven properties within the Moray Council area that were within 200m of a quarry or landfill. Moray Council confirmed that no complaints had been received with regards to particulate emissions from quarries and landfill sites within the council area. It is therefore concluded that a detailed assessment is not required for particulates in respect to quarries.

Further assessment of fuel supplies and the 2001 census data for Moray Council determined that there were no 500m by 500m areas within Moray Council which contained greater than 100 properties where solid fuel burning took place. It is therefore concluded that it is unlikely there will be an exceedence of SO₂ NAQS objectives for 2004 or 2005 due to solid fuel burning within the area. It is also concluded that domestic fuel burning is unlikely to lead to an exceedence of NAQS PM₁₀ objective levels for 2004 or 2010.

6 REFERENCES

- Reference 1 Moray Council Air Quality Updating and Screening Assessment 2003. BMT Cordah Limited report no: MOR.005, May 2003.
- Reference 2 Communication from Scottish Executive, Air, Climate and Engineering Unit, 12th August 2003, Reference, UQA/3/56
- Reference 3 Part IV of the Environment Act 1995, Local Air Quality Management Technical Guidance, LAQM.TG(03), DEFRA, January 2003.
- Reference 4 Communication from SEPA, Directorate of Operations, 12th August 2003, Reference SS/IIW A.99.
- Reference 5 Moray Council maintenance contract 2002/03 for solid fuel central heating and open fires and communication from Moray Property Services Section.
- Reference 6 List of postcode areas supplied by mains gas, Transco Plc, 2003, and communication from the local Transco representative, November 2003.
- Reference 7 2001 Census data for Moray Council, 2001 UK Census, General Register Office for Scotland.
- Reference 8 Communication from local coal merchants in the Moray Council area, January 2004.
- Reference 9 Supplementary Air Quality Report, First Stage Review and Assessment, BMT Cordah Limited report no: MOR.002, 2000.
- Reference 10 The Air Quality Archive, Background Concentration Maps, AEA Technology, NETCEN website:www.airquality.co.uk/archive/laqm/tools