



BMT Cordah Limited
ENVIRONMENTAL CONSULTANCY
AND INFORMATION SYSTEMS

Local Air Quality Management Updating and Screening Assessment 2006

A Report for Comhairle Nan Eilean Siar

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EXECUTIVE SUMMARY

This report provides the results of the 2006 Updating and Screening Assessment for local air quality within the Outer Hebrides. It has been produced on behalf of Comhairle Nan Eilean Siar which has an obligation to assess air quality under Part IV of the Environment Act 1995. The Local Air Quality Management Technical Guidance TG.(03) has been followed in order to conduct this assessment.

The assessment reviews and assess seven air pollutants, namely carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide, sulphur dioxide and particulates. It was concluded that it is unlikely that any air quality objectives for these pollutants will be exceeded in the Outer Hebrides.

1 INTRODUCTION

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 (NAQS) for England, Scotland, Wales and Northern Ireland¹. For local authorities within Scotland further regulations are set out in the Air Quality (Scotland) Regulations 2000 and Air Quality (Scotland) Amendment Regulations 2002. The pollutants contained within these regulations and their relevant objectives are presented in Table 1.

The Local Air Quality Management framework came into effect in 1997 and it is designed to help local authorities review and assess current and future air quality in their area. The process was reviewed in 2003 and it now comprises two phases. The first phase is an Updating and Screening Assessment which is a checklist approach designed to review any new monitoring data, new objectives, new pollution sources or any significant changes to existing pollution sources which may affect air quality. The second phase is a Detailed Assessment which is only required where the Updating and Screening Assessment has shown that there is a risk of an air quality objective being exceeded. In the event of exceedences being identified, it would then be necessary to declare an Air Quality Management Area. A Progress Report is also required in the intermediate years and also by authorities not proceeding to a Detailed Assessment.

BMT Cordah Limited has been commissioned by Comhairle Nan Eilean Siar to undertake the 2006 Updating and Screening Assessment. The report has been completed in collaboration with personnel from Comhairle Nan Eilean Siar, Scottish Environment Protection Agency (SEPA) and Stornoway Port Authority and it includes updated information on industrial, transportation and domestic emission sources as well as new monitoring data in order to identify any changes to local air quality. The report follows guidance set out in LAQM.TG(03) technical guidance², hereafter referred to as the "technical guidance".

¹ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Working together for clean air. DETR, Scottish Executive, the National Assembly for Wales and DOE (2000). HMSO: Norwich.

² Part IV of the Environment Act 1995, Local Air Quality Management Technical Guidance, LAQM.TG(03), Defra et al, 2003.

Table 1: Air quality pollutants and their relevant objectives

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	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	200 µg/m ³ not to be exceeded more than 18 times per year	1-hour mean	99.79 th percentile of 1-hour means	31/12/2005
	40 µg/m ³	annual mean	-	31/12/2005
Particulates	50 µg/m ³ not to be exceeded more than 35 times a year	24-hour mean	90.4 th 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	98 th percentile of 24-hour-means	31/12/2010
	18 µg/m ³	annual mean	-	31/12/2010
Sulphur dioxide	125 µg/m ³ not to be exceeded more than 3 times a year	24-hour mean	99 th 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	99.7 th 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	99.9 th percentile of 15-minute means	31/12/2005

2 DESCRIPTION OF THE LOCAL AREA

2.1 The Outer Hebrides

Comhairle Nan Eilean Siar area comprises the group of islands commonly known as the Outer Hebrides. The Outer Hebrides are situated off the north west coast of Scotland and encompass the islands of Lewis, Harris, North Uist, South Uist, Benbecula, Barra and Vatersay. A map of the council area is shown in Figure 1. The Outer Hebrides have a population of approximately 26,370 with the majority resident on Lewis. Stornoway is the largest town within the area with a population of around 5,600.

The climate in the Outer Hebrides is a temperate maritime climate. Average temperatures can vary from around 1.5°C in winter to around 16°C in summer. January and February are generally the coldest months with August being the warmest. Freezing temperatures are rare due to the influence of the surrounding ocean. Rainfall can be high with around 1200mm falling annually. Almost half of this rain falls between October and January. The prevailing wind is south westerly with strong winds occurring frequently.

2.2 Description of transport network

There are several main roads within the Outer Hebrides. The majority of roads radiate from Stornoway, namely the A857, A858, A866 and A859. The A859 continues through Harris and is the main road through this island. North Uist, Benbecula and South Uist are linked by the A865. Other roads include the A867 in North Uist, the A888 in Barra and several B and C class roads throughout the area.

There are three airports within the Outer Hebrides, namely Barra, Benbecula and Stornoway. Stornoway Airport is the main airport of the islands providing flights to and from Glasgow, Inverness, Edinburgh and Aberdeen. Flights from Glasgow fly into Barra. Benbecula handles flights to Glasgow and Inverness. Local flights amongst the three airports also occur.

The Outer Hebrides are also accessible via ferry crossings, the main routes being Ullapool-Stornoway, Oban-Castlebay and Uig-Tarbert. Crossings also go to Loch Boisdale and Lochmaddy with Stornoway Harbour being the largest harbour in the area.

2.3 Description of industrial activity

The industrial installations that are currently regulated for atmospheric emissions within the Outer Hebrides are shown in Table 2. There has been one new regulated site since 2003, namely the petrol station at Bayhead Street, Stornoway. All other sites were operational and assessed at the time of the previous Updating and Screening Assessment (USA)³.

³ Air Quality in the Western Isles: Local Air Quality Updating and Screening Assessment 2003. Comhairle Nan Eilean Siar.

Table 2: Industrial sites within the Outer Hebrides.

Company	Process	Location	Permit / Licence	Atmospheric Pollutants
PPC Part A processes				
Bennadrove Landfill	Landfill Site	Bennadrove Road, Marybank	PPC/A/1004275	Odour, dust, PM ₁₀ , methane
Stornoway Power Station	Power generation	Battery Point, Stornoway	PPC/A/1008889	NO _x , SO ₂ , PM ₁₀ , CO ₂
PPC Part B processes				
Crogarry Beag Quarry	Crushing, screening, road stone coating and bulk cement processes	Loch Maddy, North Uist	PPC/N/0060078	Dust, PM ₁₀
I A & C Maciver	Operating a process using cement in bulk	4 & 5 Parkend Industrial Estate, Stornoway	PPC/N/0060091	Dust, PM ₁₀
64- 67 Bayhead Street	Unloading of petrol at a service station	Stornoway	PPC/B/1004369	Benzene, VOC's
LAPC processes				
BP Fuels marketing Ltd	Petroleum process	Shell Street, Stornoway	APC/N/220032	VOC's
BP Fuels marketing Ltd	Petroleum process	Loch Carnan, South Uist	APC/N/220033	VOC's
Marybank Quarry	Crushing and screening of rock and road coating	Stornoway	APC/N/50069/V03	Dust, PM ₁₀
Macaskill's Service Station	Petrol unloading at a service station	Cannery Road, Stornoway	PC/N/50162	VOC's, benzene
Engebret Ltd	Petrol unloading at a service station	Sandwick Road, Stornoway	APC/N50163	VOC's, benzene
Manor Filling Station	Petrol unloading at a service station	Perceval Road, Stornoway	APC/N/50181	VOC's, benzene
1 Marybank Industrial Estate	Fish Ensiling	Stornoway	APC/N/50320	VOC's, benzene

2.4 Summary of previous assessments

Comhairle Nan Eilean Siar completed an Updating and Screening Assessment (USA) in 2003. This assessment found that air quality objectives for all seven pollutants would be met; consequently, there are no designated Air Quality Management Areas within the Outer Hebrides.

Further to the 2003 USA, the Council produced a Progress Report in April 2005 which provided an update on local air quality. The progress report included new monitoring data from the NO₂ diffusion tube sites for 2004. The results of this monitoring concluded that the NO₂ air quality objectives would be met at all sites. The progress report did not include information on any other pollutants and therefore, no assessment of changes in any other pollutants was made. It was concluded that no new industrial developments or any new local developments had occurred which would be expected to alter the air quality in the region.

3 CARBON MONOXIDE

The current air quality objective for carbon monoxide (CO) is defined as a running 8-hour mean not to exceed 10mg/m³. This was to be achieved by 31st December 2003.

The main source of CO emissions in the UK is road traffic.

3.1 Background concentrations

Background CO concentrations are available from the LAQM website⁴. Estimated background CO concentrations within the Outer Hebrides for 2005 ranged between 0.068mg/m³ and 0.095mg/m³ with an average of 0.07mg/m³. These levels are below the objective of 10mg/m³.

3.2 Monitoring data

Comhairle Nan Eilean Siar does not undertake any monitoring of CO concentrations.

There are eight locations in Scotland which monitor CO as part of the national Automatic Urban and Rural Network (AURN). The results of the AURN monitoring network are available through the Air Quality Archive website⁵. The results for 2005 indicate that measured concentrations at each of these sites were below the air quality objective. Many of these sites are located in busy city centres which have higher traffic levels than in the Outer Hebrides. For that reason it is not expected that there will be any exceedences of the CO air quality objective in the Outer Hebrides.

3.3 Transport sources

The technical guidance indicates that an assessment of CO concentrations is necessary if traffic volumes are above a certain threshold. For single carriageways, the threshold is 80,000 vehicles per day and for dual carriageways the threshold is 120,000 vehicles per day. Traffic monitoring data for the Outer Hebrides indicates that the busiest road in the region was the A858, with a traffic volume of around 6000 vehicles per day. This level is below the threshold for assessment and therefore, a road traffic assessment is not required.

Based on the available data it is concluded that it is unlikely that the air quality objective for carbon monoxide will be exceeded in the Outer Hebrides.

⁴ Local Air Quality Management. LAQM Tools. <http://www.airquality.co.uk/archive/laqm/tools.php>

⁵ The Air Quality Archive. Data and Statistics. http://www.airquality.co.uk/archive/data_and_statistics.php

4 BENZENE

There are two air quality objectives for benzene. These are:

- a running annual mean of $16.25\mu\text{g}/\text{m}^3$ to be achieved by 31st December 2003 and,
- a running annual mean of $3.25\mu\text{g}/\text{m}^3$ to be achieved by 31st December 2010.

4.1 Background concentrations

The estimated background benzene concentrations for 2005 and 2010 for the Outer Hebrides were obtained from the LAQM website and are presented in Table 3. The reported background concentrations are below both the 2003 and 2010 air quality objectives within this area.

Table 3: Background benzene concentrations in the Outer Hebrides

	Maximum	Minimum	Mean
Annual mean concentration 2005 ($\mu\text{g}/\text{m}^3$)	0.1455	0.0077	0.0177
Annual mean concentration 2010 ($\mu\text{g}/\text{m}^3$)	0.164	0.0075	0.0186

4.2 Monitoring data

Comhairle Nan Eilean Siar does not undertake any monitoring of benzene concentrations. Benzene concentrations in Scotland are measured at only one AURN site, namely Glasgow Kerbside. The measured annual mean benzene concentration at this site in 2005 was $1.4\mu\text{g}/\text{m}^3$, which was below the 2010 objective level. It is likely that benzene concentrations in the Outer Hebrides are lower than concentrations in Glasgow.

4.3 Transport sources

The technical guidance indicates that an assessment of benzene emissions from transport sources is required where the 2010 background concentration is expected to exceed $2\mu\text{g}/\text{m}^3$ and where the Annual Average Daily Traffic Flow (AADT) is expected to exceed 80,000 vehicles per day. The figures in Table 3 indicate that expected 2010 background concentrations are below the threshold value of $2\mu\text{g}/\text{m}^3$. Traffic flows are also below threshold levels, therefore no assessment of transport sources is necessary.

4.4 Industrial sources

The 2003 USA concluded that industrial sources were not a major source of benzene emissions within the Outer Hebrides. Following consultation with SEPA, it was determined that there are no new industrial processes or any significant changes to industrial

processes within the Outer Hebrides which release benzene emissions since the 2003 USA.

Petrol Stations

The technical guidance indicates that petrol stations with a throughput of more than 2000m³ of petrol a day and with a 'busy road' nearby should be assessed. A busy road is defined as a road with a traffic flow greater than 30,000 vehicles per day. One new petrol station has opened in the Outer Hebrides since 2003. There are no roads with more than 30,000 vehicles per day within the Outer Hebrides and therefore, it is not necessary to carry out an assessment of emissions from this petrol station.

Major fuel depots

There are two fuel storage depots in the Outer Hebrides, one in Stornoway and a second in Benbecula. These are classed as small depots. The technical guidance indicates that only major fuel storage depots should be assessed and so there is no need to assess the depots in the Outer Hebrides.

Based on the available data it is concluded that it is unlikely that the air quality objectives for benzene will be exceeded in the Outer Hebrides.

5 1,3-BUTADIENE

The air quality objective for 1,3-butadiene is a running annual mean concentration not to exceed $2.25\mu\text{g}/\text{m}^3$. This is to be achieved by 31st December 2003.

The main source of 1,3-butadiene emissions in the UK is road traffic.

5.1 Background concentrations

The estimated background 1,3-butadiene concentrations for the Outer Hebrides for 2005 were obtained from the LAQM website. The background concentrations are between $0.003\mu\text{g}/\text{m}^3$ and $0.024\mu\text{g}/\text{m}^3$ with an average of $0.005\mu\text{g}/\text{m}^3$. These figures are below the air quality objectives.

5.2 Monitoring data

Comhairle Nan Eilean Siar does not currently monitor 1,3-butadiene concentrations. 1,3-butadiene concentrations in Scotland are measured at only one AURN, namely Glasgow Kerbside. The results of this monitoring are presented in Table 4. There have been no exceedences of the annual mean air quality objective for 1,3-butadiene at the Glasgow kerbside monitoring station since 2003. It can be concluded that there would also be no exceedences within the Outer Hebrides for this period.

Table 4: Monitored 1,3-butadiene concentrations for Glasgow Kerbside

Annual mean concentration ($\mu\text{g}/\text{m}^3$)			No. exceedences of the annual mean objective (2003 – 2005)
2003	2004	2005	$2.25\mu\text{g}/\text{m}^3$
0.42	0.28	0.22	0

* Data capture rate <75%

5.3 Industrial sources

The 2003 USA concluded that industrial sources were not a major source of atmospheric emissions. Following consultation with SEPA, it was found that there are no new industrial processes or any significant changes to industrial processes within the Outer Hebrides since 2003.

Based on the available data it is concluded that it is unlikely that the air quality objective for 1,3-butadiene will be exceeded in the Outer Hebrides.

6 LEAD

There are two objectives for lead. These are:

- an annual mean of $0.5\mu\text{g}/\text{m}^3$ to be achieved by 31st December 2004 and,
- an annual mean of $0.25\mu\text{g}/\text{m}^3$ to be achieved by 31st December 2008.

6.1 Monitoring data

Comhairle Nan Eilean Siar does not currently monitor lead concentrations. Lead concentrations are monitored at three locations throughout the country. These are in Glasgow, Motherwell and Eskdalemuir. The results of lead monitoring at these sites for 2003 – 2005 are presented in Table 5. Annual mean lead concentrations within Scotland are below the threshold level and there were no exceedences at any site between 2003 and 2005. It is therefore unlikely that lead concentrations will exceed air quality objectives within the Outer Hebrides.

Table 5: Monitored lead concentrations in Scotland

Site	Annual mean concentration ($\mu\text{g}/\text{m}^3$)			No. exceedences of the annual mean objective (2003 – 2005)	
	2003	2004	2005	$0.5\mu\text{g}/\text{m}^3$	$0.25\mu\text{g}/\text{m}^3$
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

6.2 Industrial sources

There are no new industrial sources which would result in emissions of lead and there are no existing industrial sources which emit lead within the Outer Hebrides.

Based on available data it is concluded that it is unlikely that the air quality objectives for lead will be exceeded in the Outer Hebrides.

7 NITROGEN DIOXIDE

The air quality objectives for nitrogen dioxide (NO₂) are as follows:

- a 1-hour mean of 200µg/m³ not to be exceeded more than 18 times a year, to be achieved by 31st December 2005 and,
- an annual mean of 40µg/m³ to be achieved by 31st December 2005.

7.1 Background concentrations

Background NO₂ concentrations for 2005 and 2010 for the Outer Hebrides have been obtained from the LAQM website and the results are presented in Table 6. The background concentrations are below the objectives.

Table 6: Background NO₂ concentrations for Comhairle Nan Eilean Siar

	Maximum	Minimum	Mean
Annual mean concentration 2005 (µg/m ³)	4.18	0.79	1.31
Annual mean concentration 2010 (µg/m ³)	3.43	0.67	1.1

7.2 Monitoring data

Comhairle Nan Eilean Siar currently monitors NO₂ at four locations in Stornoway using passive diffusion tubes. A map showing the locations of the monitoring tubes is shown in Figure 2. This monitoring has been carried out since 1993 and it began as part of the UK Nitrogen Dioxide Survey. There are no automatic monitoring sites for NO₂ within the Outer Hebrides. Table 7 summarises the locations and classification of the four monitoring sites.

Table 7: NO₂ diffusion tube monitoring sites within the Outer Hebrides

Monitoring Site	Location	Classification
B3	MacMillan Brae, Stornoway	Background
B4	Barony Square, Stornoway	Background
K1	Cromwell Street, Stornoway	Kerbside
K2	Bank Street, Stornoway	Kerbside

Analysis of the diffusion tubes is currently carried out by Glasgow Scientific Services which is a UKAS accredited laboratory. The preparation technique used for the diffusion tubes is 20% Triethanolamine in water. The technical guidance recommends that diffusion tubes are co-located with an automatic monitoring site in order to compare the results and validate the performance of the diffusion tubes and the laboratory analysis technique. A bias correction factor is calculated based on the difference between the results from the automatic analyser and the diffusion tubes. There is no automatic analyser in Stornoway

and so the bias factors which have been used are based on the results of monitoring studies carried out by Glasgow Scientific Services in other areas and so will account for any laboratory bias in the results.

The NO₂ concentrations recorded in Stornoway during 2003-2005 are presented in Table 8. The highest concentrations were recorded at the two kerbside sites. All results are below the air quality objective of 40µg/m³ and there were no exceedences of any objectives.

Table 8: Monitoring data for NO₂ within Comhairle Nan Eilean Siar

Monitoring site	Annual mean concentration (µg/m ³)		
	2003 corrected for bias (0.78)	2004 corrected for bias (0.83)	2005 corrected for bias (0.74)
K1 Cromwell Street, Stornoway	23.8	18.3	-
K2 Bank Street, Stornoway	17.7	13.9	11.8
B3 MacMillan Brae, Stornoway	4.3	2.2	2.7
B4 Barony Square, Stornoway	6.9	4.2	-

7.3 Transport sources

Narrow congested streets with residential properties close to the kerb

The 2003 USA identified Matheson Road and Cromwell Street (both in Stornoway) as narrow congested streets due to the fact that there are buildings on either side with residential properties within 5m of the kerb. The carriageway is less than 10m wide and the average speed is less than 50 kph.

The technical guidance indicates that an assessment of air quality is required where traffic flows are greater than 10,000 vehicles per day. The most recent traffic census found that the highest traffic flow was on the A858 with an average flow of 6000 vehicles per day. It is therefore considered unlikely that either Matheson Road or Cromwell Street has a traffic flow of greater than 10,000 vehicles per day.

Junctions

The technical guidance indicates that junctions require to be assessed if they are identified as being 'busy'. Busy junctions are deemed to have more than 10,000 vehicles per day passing through. There are no junctions within the Outer Hebrides meeting this criterion.

Roads with high flows of buses and/or HGVs

The technical guidance indicates that assessment of roads with a high flow of buses and/or HGV's is required where the proportion of these vehicles is greater than 25%, if there is relevant exposure within 10m of the road and the flow of heavy duty vehicles is greater than 2500 vehicles per day. Within the Outer Hebrides, the proportion of HGV's was found to be around 10% for the busiest roads and vehicle numbers are below the required 2500 vehicles per day. No assessment of roads with high flows of buses and/or HGV's is necessary.

Bus stations

The largest bus station in the Outer Hebrides is located in Stornoway. The technical guidance indicates that emissions from bus movements should be assessed where there is a flow of greater than 1000 buses per day. Bus movements in Stornoway are less than 1000 per day and so further assessment is not required.

Aircraft

It is necessary to assess the impact of aircraft if there is relevant exposure within 1km of the airport boundary and there are more than 5 million passengers per annum (mppa). The main airport within the Outer Hebrides is Stornoway Airport. Although there are some receptors within 1km of the airport boundary, passenger numbers are below the threshold level of 5 mppa and therefore, further assessment is unnecessary.

7.4 Industrial sources

Following consultation with SEPA, it was found that there are no new industrial sources or significant changes to existing industrial sources which would result in any deterioration to local air quality.

Based on available data it is concluded that it is unlikely that the air quality objectives for nitrogen dioxide will be exceeded within the Outer Hebrides.

8 SULPHUR DIOXIDE

There are three air quality objectives for sulphur dioxide (SO₂). These are as follows:

- a 24-hour mean concentration not to exceed 125µg/m³ on more than 3 occasions by 31st December 2004;
- a 1-hour mean concentration not to exceed 350µg/m³ on more than 24 occasions by 31st December 2004 and
- a 15-minute mean concentration not to exceed 266µg/m³ on more than 35 occasions by 31st December 2005.

8.1 Background concentrations

Background SO₂ concentrations for 2005 were obtained from the LAQM website and were estimated to be between 0.49µg/m³ and 5.87µg/m³. The average background concentration was 0.63µg/m³.

8.2 Monitoring data

Comhairle Nan Eilean Siar does not currently monitor SO₂ concentrations. SO₂ concentrations are currently monitored at four AURN sites throughout Scotland. These sites are classified as urban centre (2), urban background and urban industrial. Of these four sites, there were 4 exceedences of the 15 minute mean objective at Grangemouth; however, this could be related to the large industrial complex close to this site. It is unlikely that there will be any exceedences of SO₂ objectives since there are no comparable facilities in the Outer Hebrides.

8.3 Industrial sources

Following consultation with SEPA, it was found that there were no new industrial sources or any significant changes to existing industrial sources which would result in any deterioration in air quality within the Outer Hebrides.

Small boilers >5MW (thermal)

Following consultation with Comhairle Nan Eilean Siar, it was found that there is no evidence of any boilers with a capacity greater than 5MW in the Outer Hebrides.

8.4 Domestic sources

The 2003 USA identified a risk of exceeding the technical guidance criterion of 100 properties burning coal in a 500m by 500m area. A postal survey, however found that only

2 properties within the sample area were burning coal and so it was concluded that there was not a risk of exceeding any SO₂ objectives as a result of domestic coal burning. It is assumed that this situation is still the same and therefore, this will not be assessed further.

8.5 Transport sources

Shipping

The technical guidance indicates that emissions from shipping movements should be considered where there are more than 5000 shipping movements per annum. The Outer Hebrides has several harbours, the largest of which is Stornoway Harbour. The 2003 USA identified that there were around 3000 shipping movements in and out of Stornoway Harbour which included all sizes of vessel. The guidance requires only large vessels to be included. Information from Stornoway Port Authority indicated that in 2005 there were less than 1500 movements of large vessels. This is below the 5000 threshold, therefore, a detailed assessment of emissions from shipping vessels is not required.

Based on the available data it is concluded that it is unlikely that the air quality objectives for sulphur dioxide will be exceeded in the Outer Hebrides.

9 PARTICULATES

There are two objectives for PM₁₀, an annual mean objective and a 24-hour mean objective with separate objectives which have to be achieved by 2004 and in 2010. The annual mean objective for 2010 in Scotland is more stringent than the objective in the rest of the UK. The objectives that apply in Scotland are:

- an annual mean objective of 40µg/m³ to be achieved by 31st December 2004; and
- an annual mean objective of 18µg/m³ to be achieved by 31st December 2010;
- a 24-hour mean concentration not to exceed 50µg/m³ on more than 35 occasions by 31st December 2004; and
- a 24-hour mean concentration not to exceed 50µg/m³ on more than 7 occasions by 31st December 2010.

9.1 Background concentrations

Background concentrations for PM₁₀ for 2004 and 2010 within the Outer Hebrides were obtained from the LAQM website and are presented in Table 9. The background concentrations are below the air quality objectives for both 2004 and 2010.

Table 9: Background concentrations for PM₁₀ for Comhairle Nan Eilean Siar

	Maximum	Minimum	Mean
Annual mean concentration 2004 (µg/m ³)	12.3	10.7	10.9
Annual mean concentration 2010 (µg/m ³)	11.7	10.4	10.6

9.2 Monitoring data

Comhairle Nan Eilean Siar does not currently monitor PM₁₀ concentrations. There are currently seven AURN monitoring sites within Scotland which monitor PM₁₀. These sites are classified as roadside (2), urban background (2), urban centre, kerbside, and urban industrial. Data from these sites suggest that some areas have had exceedences of PM₁₀ air quality objectives since 2003. Most of these sites are situated within busy city centres which have higher traffic flows than in the Outer Hebrides. It is therefore, unlikely that PM₁₀ objectives would be exceeded in the Outer Hebrides.

9.3 Transport sources

Busy roads and junctions in Scotland

There are two methods of identifying a 'busy' road for the purpose of assessing PM₁₀ concentrations. The first criterion is: roads or junctions with more than 5000 vehicles per day and an expected 2010 background concentration of above 15 µg/m³, and the second criterion is: roads or junctions with more than 10,000 vehicles per day and an expected 2010 background concentration of less than 15 µg/m³. Busy junctions are classed as those with more than 10,000 vehicles per day.

The Outer Hebrides has one road with traffic volumes greater than 5000 vehicles per day; however, since the expected 2010 background concentration is less than 15µg/m³, it is not necessary to assess the impact of busy roads. There are also no junctions with more than 10,000 vehicles per day.

Aircraft

The main airport within the Outer Hebrides is Stornoway Airport. The technical guidance indicates that assessment of PM₁₀ concentrations is required where there are receptors within 500m of the airport boundary. There are no receptors within 500m of Stornoway Airport. The second criterion is for the total equivalent passenger numbers at the airport to exceed 10 mppa in 2004 or 5 mppa in 2010. Passenger numbers in 2004 were 0.11 mppa which is below the threshold. It is anticipated that passenger numbers in 2010 would be around 0.14 mppa and so a detailed assessment is not required.

9.4 Industrial sources

New industrial sources/industrial sources with substantially increased emissions, or new relevant exposure

Based on consultation with SEPA there are no new industrial sources or any changes to existing sources which would result in increased concentrations of PM₁₀ within the Outer Hebrides.

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

Within the Outer Hebrides, there is one landfill site, two quarries and one process using cement in bulk which could be classified as dusty processes. These processes were present and operational at the time of the 2003 USA which concluded that there was no risk of exceeding the objectives. There have been no major changes to any of these processes since 2003.

9.5 Domestic sources

The effect of domestic coal burning should be assessed where there are more than 50 houses within a 500m by 500m area burning solid fuel. As stated earlier, a survey of domestic properties found that only 2 houses were burning coal and therefore, a detailed assessment is not required.

Based on the available data it is concluded that it is unlikely that the air quality objectives for particulates will be exceeded in the Outer Hebrides.

10 CONCLUSIONS

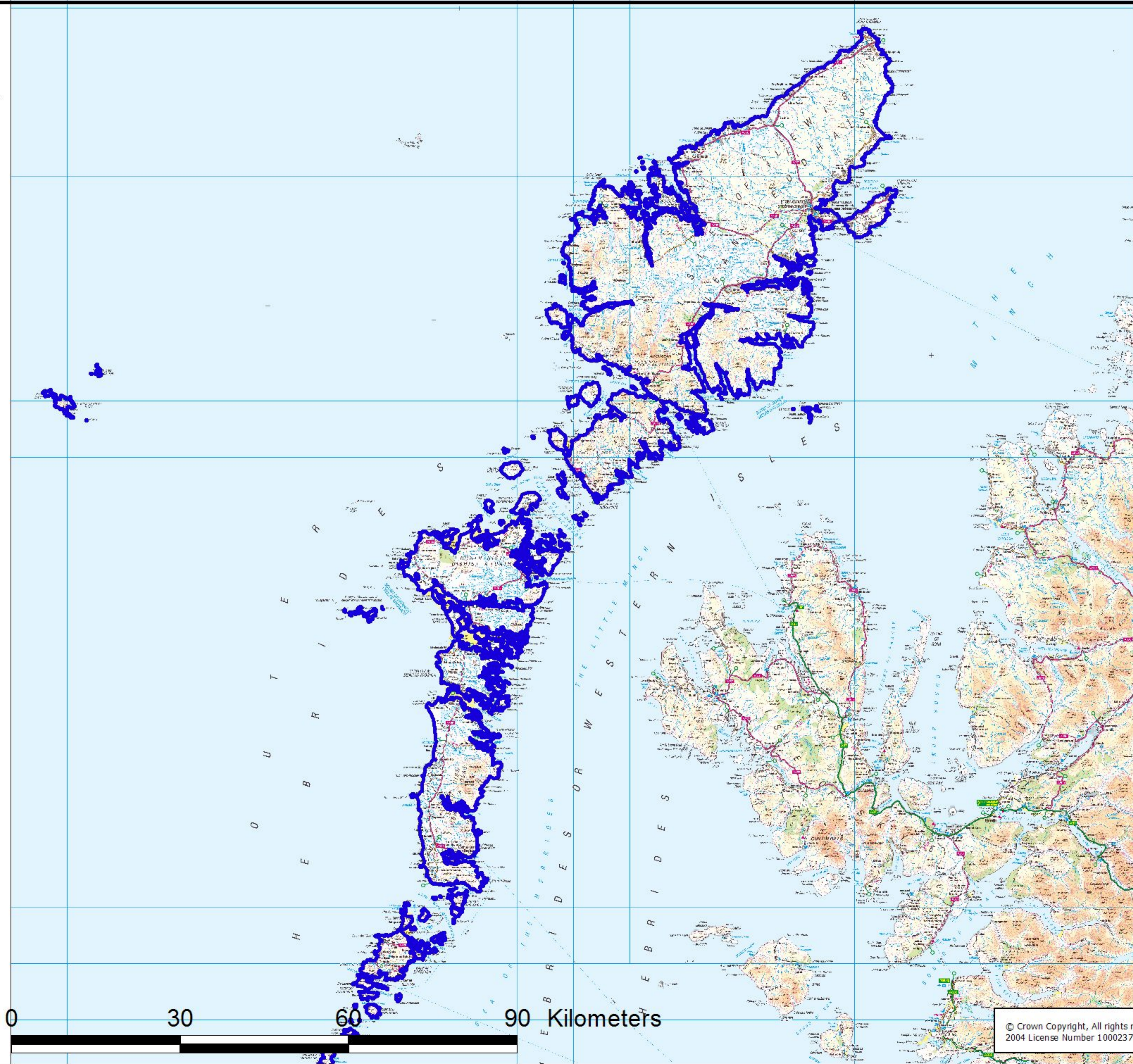
The Updating and Screening Assessment found that there have been no significant changes to air quality within the Outer Hebrides since 2003. There have been no major changes to emissions from industrial sites, road transport, shipping, domestic or any other activity which would result in a decrease in air quality.

Comhairle Nan Eilean Siar currently monitors nitrogen dioxide ground level concentrations using passive diffusion tubes. The results of this monitoring suggest that levels are below the air quality objectives. Other pollutants were assessed by utilising background concentration data from the LAQM website and monitoring data from nearby or equivalent sites throughout Scotland. Overall, all concentrations are expected to be lower within the Outer Hebrides than at other sites, due to the comparatively lower numbers of industrial operations, vehicles and population. It can be concluded that it is unlikely that any air quality objectives will be exceeded in the Outer Hebrides.

Figures

Figure 1: Comhairle Nan Eilean Siar boundary

Figure 2: NO₂ passive diffusion tube monitoring site locations



0 30 60 90 Kilometers

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Legend

 Council boundary

Date	October 2006
Scale	1:1,200 000

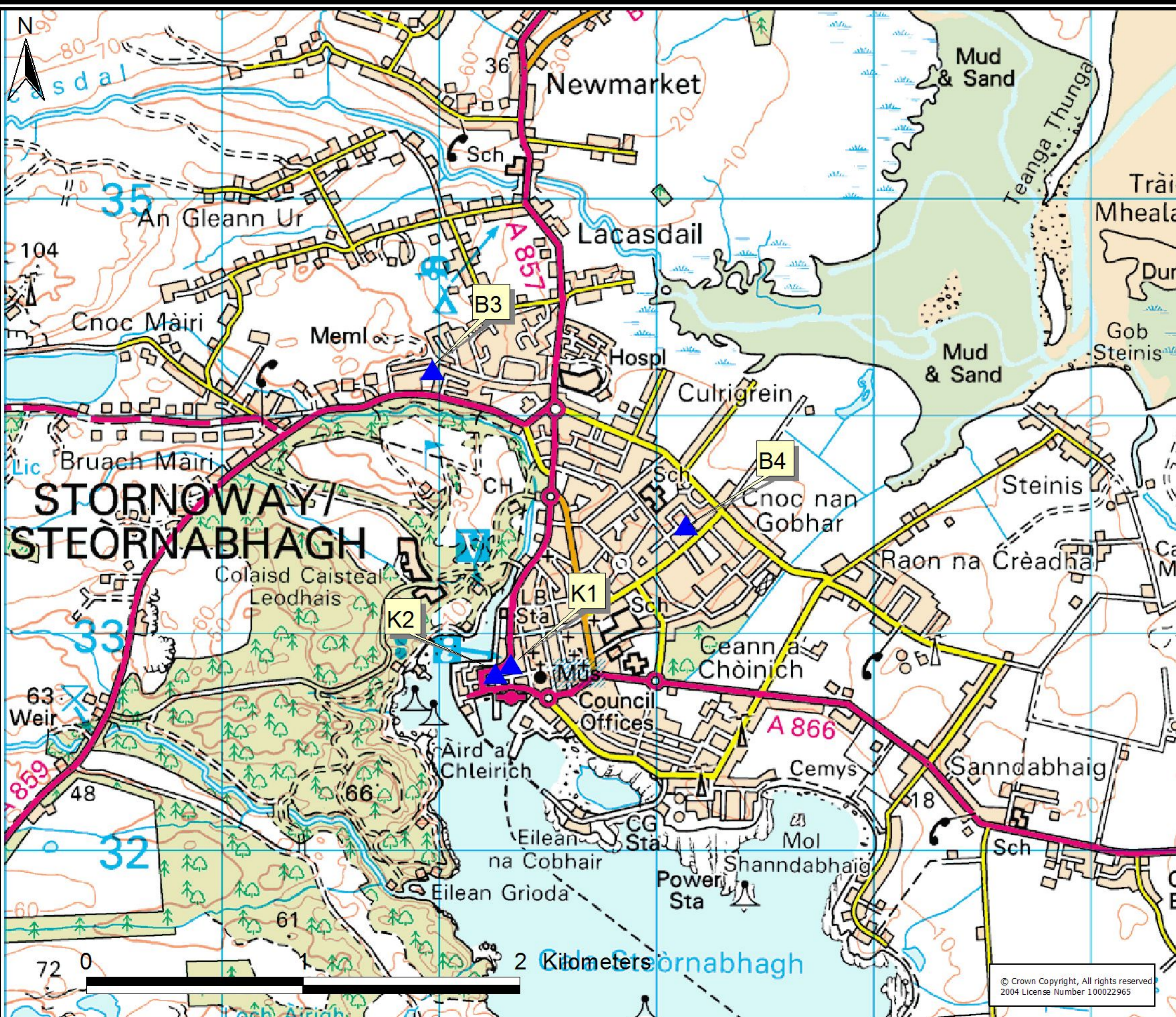
Project Title
LAQM Updating and Screening
Assessment 2006

Figure no. 1

Figure title
Comhairle Nan Eilean Siar boundary

BMT Cordah Limited
Doherty Building
Pentlands Science Park
Penicuik, Edinburgh, EH26 0PZ
Website: <http://www.bmtcordah.com>
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Legend

▲ Diffusion_tubes.shp

- K1 - Cromwell Street
- K2 - Bank Street
- B3 - MacMillan Brae
- B4 - Barony Square

Date October 2006

Scale 1:25000

Project Title
LAQM Updating and Screening
Assessment 2006

Figure no. 2

Figure title
NO2 diffusion tube locations

BMT Cordah Limited
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Pentlands Science Park
Penicuik, Edinburgh, EH26 0PZ
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