

REPORT TO: ENVIRONMENTAL SERVICES AND SUSTAINABILITY COMMITTEE
18TH APRIL 2005

REPORT ON: DETAILED ASSESSMENT OF AIR QUALITY IN DUNDEE

REPORT BY: HEAD OF ENVIRONMENTAL HEALTH & TRADING STANDARDS

REPORT NO. 190-2005

1.0 PURPOSE OF REPORT

1.1 This is a covering report to inform the Committee of the contents of the Detailed Assessment of Air Quality in Dundee, which fulfils the council's statutory obligations under the Environment Act 1995. Copies of the full report are available through Group Secretaries.

2.0 RECOMMENDATIONS

2.1 It is recommended that the Committee note the principal findings of the Air Quality Detailed Assessment and its submission to the statutory consultees, the Scottish Executive and Scottish Environment Protection Agency. (SEPA)

2.2 In particular, with regard to declaration of Air Quality Management Areas (AQMA) the Committee is advised that further assessment and consultation with appropriate stakeholders is required to determine the boundaries of the proposed Air Quality Management Areas(s) for nitrogen dioxide (NO₂) within the city.

2.3 Furthermore the Committee is advised that the completion of further monitoring and ongoing assessment in respect of fine particulates (PM₁₀) is required. The purpose of this work will be to determine whether the local authority has a statutory requirement to designate an Air Quality Management Area(s) in respect of PM₁₀.

3.0 FINANCIAL IMPLICATIONS

3.1 The expenditure required for the financial year 2005/2006 can be met from the Environmental Health and Trading Standards Department's budgets and additional capital funding that has been applied for from the Scottish Executive.

4.0 SUSTAINABILITY IMPLICATIONS

4.1 This report addresses the key sustainability themes:

- Pollution is limited to levels at which natural systems can cope
- Health is protected by creating a safe, clean, pleasant environment

5.0 EQUAL OPPORTUNITIES IMPLICATIONS

5.1 None

6.0 BACKGROUND

6.1 Part IV of the Environment Act, 1995, places a statutory duty on local authorities to periodically review and assess the air quality within their area.

6.2 Dundee City Council undertook the first round of review and assessment (the 'First Round') between 1998 and 2000. The First Round was a staged process, which assessed the sources of, and public exposure to, seven air pollutants of concern to health: Benzene, 1,3 butadiene, carbon monoxide, lead, nitrogen dioxide (NO₂), fine particulates (PM₁₀) and sulphur dioxide (SO₂).

6.3 The Second Round, also a staged process, commenced in 2003 following the issue of new Technical Guidance (LAQM.TG (03)), Policy Guidance (LAQM.PG (03)) and Progress Report Guidance (LAQM.PRG (03)) by Department for Environment Food and Rural Affairs (Defra) and the Devolved administrations. This guidance sets the framework for the requirements of review and assessment for future years, taking account of experiences from the First Round.

6.4 In accordance with the statutory guidance and timetables the council completed an Updating and Screening Assessment (USA), the first stage of this Second Round, (USA – Ref Report 310-2003) in May 2003. Where an USA (or an Annual Progress report) concludes that there is public exposure to pollutant levels that exceed the standard and there is a likelihood that an air quality objective will not be achieved, it is necessary for a local authority to undertake a Detailed Assessment. Casella Stanger was commissioned by Dundee City Council in June 2004 to undertake the Detailed Assessment of Air Quality in Dundee, based on information received from the local authority.

6.5 Main Findings of the Second Round of Review and Assessment –

6.5.1 Updating and Screening Assessment (USA)

6.5.1.1 The USA was the first phase of the Second Round. Similar to the stage one of the First Round, there was consideration of the seven pollutants of concern to health and an assessment was made as to whether Air Quality Objectives for these pollutants would be met. The Council completed this in May 2003, with the conclusion that further assessment was required for nitrogen dioxide (NO₂) and fine particulates (PM₁₀) at 17+ pollution hotspots identified largely due to road traffic emissions and possible street canyon effects. Of these, the USA and subsequent studies concluded that a Detailed Assessment was required for the following nine busy roads and junctions:

- Union Street/Nethergate
- Nethergate/West Marketgait
- Whitehall Street/High Street/Nethergate
- Dock Street
- Seagate
- Lochee Road
- Logie Street/Loons Road/Muirton Road Junction
- Victoria Road/Hilltown
- Strathmore Avenue

6.5.1.2 The need for a further assessment for the short-term (15 minute mean) Air Quality Objective for SO₂ and the PM₁₀ Objectives (annual mean and 24-hour mean) was also identified in the vicinity of the port/harbour area and Nynas AB UK (industrial point source) due to new residential development proposed on the waterfront.

- 6.5.2 Detailed Assessment
- 6.5.2.1 This document, for which this is a covering report, is the Local Authority Air Quality Detailed Assessment for the Council. The approach to the Detailed Assessment provided the Council with an opportunity to supplement the information that was gathered in the earlier review and assessment work and more accurately assess the impact of the pollution sources on local receptors at identified hotspots, through dispersion modelling and analysis of further monitoring results. The aim of the dispersion modelling is to more accurately reflect the results from the local monitoring sites across the whole assessment area and allow comparison of pollutant concentrations against the Air Quality Objectives. The findings of the Detailed Assessment identifies with reasonable certainty whether or not there is likely to be exceedances of the objectives and if so, defines the geographic extent and magnitude of the exceedances.
- 6.5.2.2 Casella Stanger Ltd undertook detailed computer dispersion modelling of NO₂ and PM₁₀ using the Cambridge Environmental Research Consultants (CERC) Ltd ADMS-Roads advanced Gaussian air dispersion model. The ADMS 3.2 dispersion model was used to assess the industrial emissions from Nynas AB UK on existing and proposed residential properties at the waterfront. The predictions from the dispersion models for road traffic were compared against local monitoring data from 2003 in order to locally verify the model. It should also be noted that the Detailed Assessment was undertaken in accordance with the methodologies provided in the Technical Guidance (LAQM.TG(03)).
- 6.5.2.3 The detailed assessment of the industrial source predicted that the 15-minute mean Objective for SO₂ would not be exceeded in areas where public exposure is likely. No further assessment of the Nynas site is required for the purposes of the review and assessment and an AQMA for SO₂ is not required. Casella Stanger however recommended that the Council continue to assess the monitored concentrations of SO₂ and PM₁₀ on a regular basis.
- 6.5.2.4 The dispersion modelling for road traffic was undertaken for four areas to include all the identified potential exceedance areas:
- Dundee Central Assessment Area which includes Union Street/Nethergate, Nethergate/West Marketgait, Whitehall Street/High Street/Nethergate, Dock Street, Seagate and Victoria Road/Hilltown.
 - Lochee Road Assessment Area
 - Logie Street Assessment Area
 - Strathmore Avenue Assessment Area
- 6.5.2.5 The verified modelled annual NO₂ results for road traffic emissions in 2005 in the Dundee Central Assessment Area along Seagate, Nethergate/Marketgait, Dock Street, Commercial Street, Victoria Road/Hilltown and Lochee Road/Rankine Street and Lochee Road/Dudhope Street junctions indicate annual mean nitrogen dioxide concentrations at relevant receptor locations will exceed the annual mean Objective of 40 µg/m³. The reports findings indicate that one or more AQMAs should be declared for NO₂. The AQMAs must include the areas of exceedence identified above.
- 6.5.2.6 Within the Logie Street and Loons Road Assessment Area, there are predicted exceedances of the annual mean NO₂ Objective of 40 µg/m³ largely to the northeast of the junction which is not reflected in the current monitoring at the site. As model verification was based on 2003 monitoring data and the relevant monitoring sites within this assessment area were started in September 2003, there is a degree of uncertainty in the predictions within this area. Casella Stanger therefore recommended that the monitoring be continued and the 2004 monitoring results be assessed against the model predictions and the annual mean Objective. The

requirements for an AQMA in this area will be reassessed in the Council's Air Quality Progress Report, which is due to be completed by the end of April 2005.

6.5.2.7 The verified modelled annual mean NO₂ results in 2005 in the Strathmore Avenue Assessment Area predicted that the Objective would be met and no AQMA is required in this area.

6.5.2.8 The verified modelled PM₁₀ annual mean concentrations in 2004 at critical receptors indicate that the annual mean and 24-hour mean 2004 Objectives are likely to be met at all critical receptor locations. However it is currently unclear if the annual mean Objective for 2010 will be met due to limitations with the accuracy of the dispersion model in relation to PM₁₀, uncertainty of background concentrations and transboundary effects. Casella Stanger recommended that monitored data be reviewed on a regular basis along with additional guidance from SEPA and the Scottish Executive with regards to longer-term concentrations. Declaration of an AQMA for PM₁₀ was not required at this stage in relation to the 2010 Objective.

7.0 CONSULTATION

7.1 Chief Executive
Depute Chief Executive (Support Services)
Depute Chief Executive (Finance)
Director of Planning and Transportation

8.0 BACKGROUND PAPERS

Detailed Assessment, March 2005
Updating and Screening Assessment, May 2003
Part IV of the Environment Act 1995,
Local Air Quality Management Technical Guidance LAQM.TG(03))

Albert Oswald
Head of Environmental Health & Trading Standards

6th April 2005

Glossary of Terms

AQMA	Air Quality Management Area
SEPA	Scottish Environment Protection Agency
NO ₂	Nitrogen Dioxide
SO ₂	Sulphur Dioxide
PM ₁₀	Respirable particles (i.e., less than 10 micrometres in diameter)
LAQM.TG(03)	Local Air Quality Management, Policy Guidance, 2003
LAQM.PRG(03)	Local Air Quality Management, Progress Report Guidance, 2003
USA	Updating and Screening Assessment
CERC	Cambridge Environmental Research Consultants Ltd
ADMS – Roads	Air Dispersion Modelling System (for Road Traffic)
ADMS 3.2	Air Dispersion Modelling System (for Industrial emissions)
µg/m ³	Micrograms per cubic metre