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NOORDWES

EXTRAORDINARY
PROVINCIAL GAZETTE

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PROVINSIALE KOERANT

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CONTENTS • INHOUD

GENERAL NOTICE

NOTICE 37 OF 2009

DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT

NOTICE OF THE INTENTION TO ESTABLISH THE NORTH WEST PROVINCIAL AIR QUALITY MANAGEMENT PLAN IN TERMS OF SECTION 15(1) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004 (ACT No. 39 OF 2004)

I, Jan Lodewyk Serfontein, MEC of Agriculture Conservation and Environment, in terms of section 15(1) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), hereby publish for public comments, the final draft of the North West Provincial Government Air Quality Management Plan. The executive summary of the final draft Air Quality Management Plan is set out in the Schedule hereto.

Copies of the final draft Air Quality Management Plan can be obtained from:

1. NW Department of Agriculture Conservation and Environment
   Agricentre Building
   Office no. E12
   Cnr. Stadium and Dr. James Moroka Drive
   MMABATHO
   Tel: 018 389 5693
   Fax: 018 389 5006
   Email: abubu@nwpg.gov.za
   Ms Amanda Bubu

2. Departmental website:
   www.nwpg.gov.za/agriculture

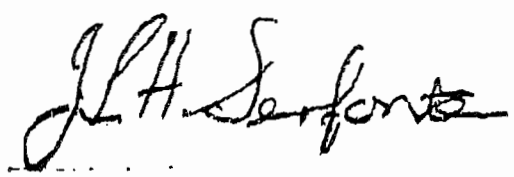
Interested persons are requested to submit written representations on, or objections to the North West Provincial Government Air Quality Management Plan to the MEC within thirty (30) days from the publication of this notice. All representations or comments must be submitted in writing to the Head of Department of Agriculture, Conservation and Environment

Post to:

Head of Department
North West Department of Agriculture Conservation and Environment
Private Bag x 2039
MMABATHO
2735
Attention: Percy Matlapeng or Mafu Nkosi

Fax; 018 389 5006, or email: pmatlapeng@nwpg.gov.za or mnkosi@nwpg.gov.za

Any queries regarding the plan may be directed to Mr. Mafu Nkosi at (018) 389 5929 or Mr. Percy Matlapeng at (018) 389 5934



Jan Serfontein, MPL
MEC for Agriculture, Conservation and Environment

the dace

Department:
Agriculture, Conservation and Environment
North West Provincial Government
Republic of South Africa

EXECUTIVE SUMMARY

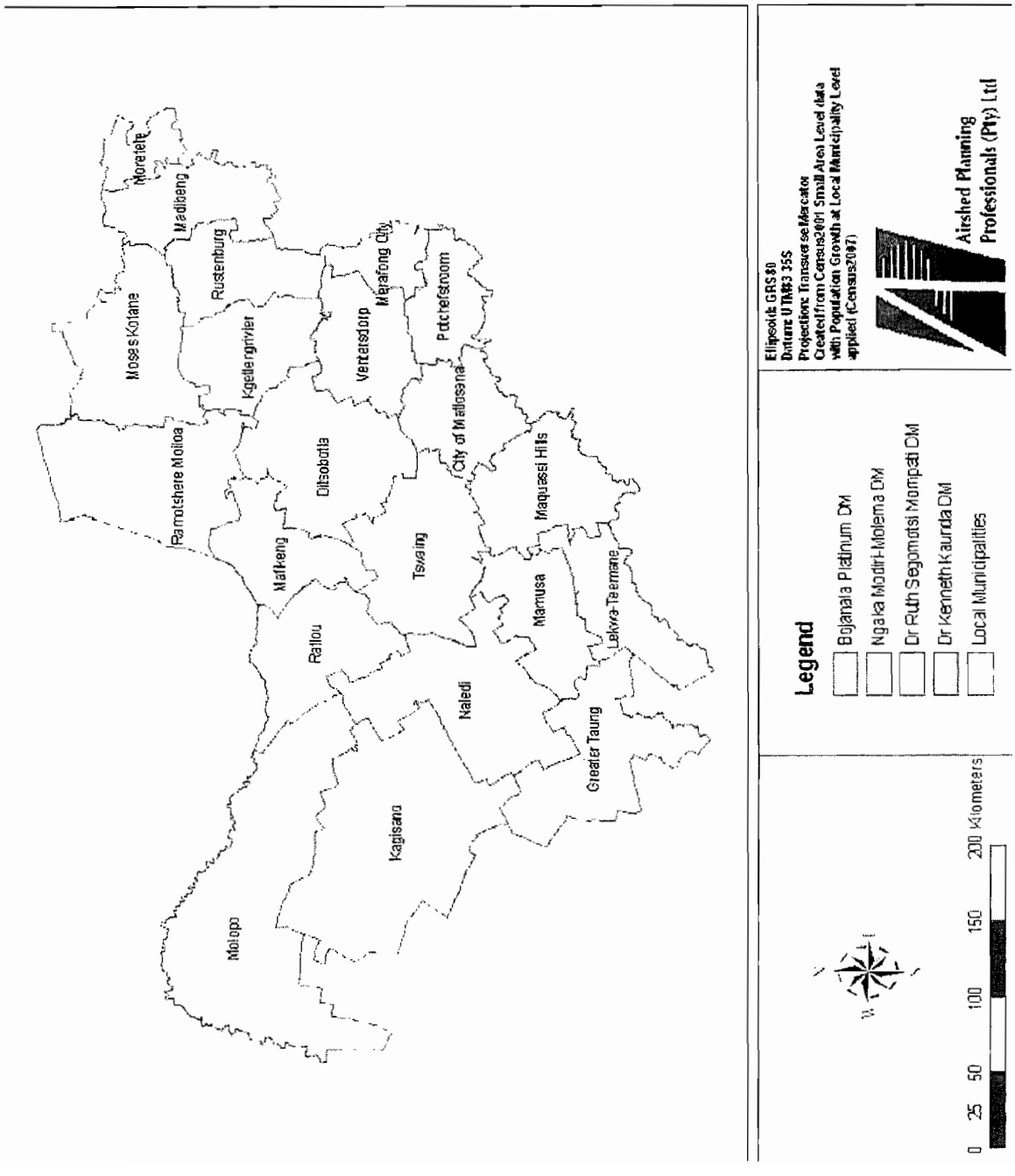
PROVINCIAL AIR QUALITY MANAGEMENT PLAN

Compiled by:

BEMBANI SUSTAINABILITY TRAINING (PTY) LTD

BEMBANI
Sustainability Training

JANUARY 2009


Moretele
Madibeng
Rustenburg
Moses Kotane
Kgetlengrivier
Mpafong City
Pilanesberg
Ramotshere Moiloa
Ditsobotla
City of Matlosana
Maquassi Hills
Mafikeng
Tswaing
Lekwa-Teemane
Ratlou
Mamusa
Naledi
Greater Taung
Kagisano
Molopo
Legend
Bojanala Platinum DM
Ngaka Modiri-Molema DM
Dr Ruth Segomotsi Mompati DM
Dr Kenneth Kaunda DM
Local Municipalities
Ellipsoid: GRS80
Datum: WGS84 35S
Projection: Transverse Mercator
Created from Census2001 Small Area Level data
with Population Growth at Local Municipality Level
applied (Census2007)
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1 INTRODUCTION AND BACKGROUND

1.1 Introduction

In South Africa, the Department of Environmental Affairs and Tourism (DEAT) is the primary custodian of environmental issues. This custodianship has been implemented through a number of initiatives, including legislation. To this effect, the National Environmental Management: Air Quality Act (Act No. 39 of 2004)(AQA) was promulgated to address air quality related challenges throughout the Republic. With regard to Air Quality Management Plans, Section 15 states the following:

> *(1) Each national department or province responsible for preparing an environmental implementation plan or environmental management plan in terms of Chapter 3 of the National Environmental Management Act must include in that plan an air quality management plan.*
>
> *(2) Each municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an air quality management plan.*

Within the North West Province, the Department: Agriculture, Conservation and Environment (NWDACE) is the custodian of the provincial environmental matters, and is compelled to develop the PAQMP to give effect to international and national obligations relating to air quality.

1.2 Objectives of the Provincial AQMP

The objectives of this AQMP are to:

- Improve air quality in the Province;
- Identify and reduce the negative impact on human health and the environment of poor air quality;
- Address the effects of emissions from the use of fossil fuels in residential applications;
- Address the effects of emissions from industrial sources;
- Address the effects of emissions from any point or non-point source of air pollution other than residential applications and industrial processes;
- Implement South Africa's international obligations relating to air quality;
- Give effect to best practice in air quality management; and
- Provide a framework for the district municipalities to develop their own air quality management plans;

1.3 Goals reflected in Vision and Mission Statements

This sub-section outlines the goals, Vision and Mission Statements for the implementation of this AQMP. According to EPA, Air Quality Goal Setting is the process of establishing standards based on scientific or technical assessment

with the aim of mitigating the harmful health and environmental effects of various air pollutants.

In accordance with the legal requirements and the objectives of the PAQMP, the following goals have been adopted for the PAQMP:

1. To develop and maintain institutional arrangements that support sound air quality management and governance in the Province;
2. To reduce the negative impacts on human health and environment of poor air quality;
3. To address the effects of domestic fuel burning;
4. To address the effects of emissions from industrial sources;
5. To quantify and reduce transport air emissions within the Province; and
6. To ensure effective communication and public participation in pursuant to legal requirements.

Vision:

TO CREATE AND SAFEGUARD HIGH AIR QUALITY STANDARDS AND PRACTICES IN THE PROVINCE

Mission Statement:

- To safeguard our environments from pollutants;
- To reduce air emissions throughout the province;
- To have environmentally conscious public;

1.4 AQMP Development Process

The process followed for the development of this AQMP can be summarised as consultative-participative. Stakeholder engagement was divided into the following three phases:

- Planning Phase;
- PAQMP Development Phase; and
- Exit Phase.

1.4.1 Planning phase

During the planning phase all stakeholders were identified using existing DACE and industry bodies' databases. They were later grouped into Provincial (DACE, major sectors (mining, agriculture, industry), national (DEAT, DME, DoA, DWAF, etc), local government (all district and local municipalities in the NW), NGOs and CBOs, and organised labour (COSATU, etc).

The database was consolidated and discussed with key personnel to ensure that every stakeholder grouping is included, and involved throughout the process.

1.4.2 PAQMP Development Phase

PAQMP development phase entailed issuing of the background information document (BID) that provided project background, aims and objectives, process plan, details of stakeholder workshops, and contact details.

This was followed by meetings with municipal officials at each district municipality to identify air pollution sources or to verify those that were already identified. After the data verification process, a draft AQMP was developed and distributed to all stakeholders for review and input. This was followed by stakeholder workshops at district levels. The objectives of the first workshops were to:

- Introduce the Provincial Air Quality Management Plan project;
- Provide background information on the Provincial Air Quality Management Plan process to the Stakeholders;
- Present the Status Quo Report developed for the project;
- Identify air quality issues which should be addressed within the Plan;
- Allow Stakeholders to directly engage with the project team & DACE representatives; and
- Obtain input regarding the Way Forward for the Air Quality Management Plan development process.

A consolidated workshop proceedings report was issued and sent to all stakeholders on the project database.

The second workshop was aimed at discussing the draft AQMP and getting each stakeholder grouping to agree to the proposed goals, objectives, targets and implementation schedule and responsible parties. During the workshop, stakeholders were given the draft AQMP and requested to review goals and objectives to ensure that they are achievable, and will enable the improvement in air quality in the province, as well as make provisions for further growth and development without adversely impacting on the air quality. Guidelines on the minimum emission standards and ambient air quality standards were provided to all stakeholders and were used to inform the process and figures that they proposed.

The third workshop will be held to present the second draft of the AQMP. Again, stakeholders will be given an opportunity to interact with the report and all other stakeholders in the process leading to the finalisation of the AQMP. All inputs gathered during the third workshop were incorporated into the final AQMP.

1.4.3 Exit Phase

The exit phase will entail the consolidation of all comments and feedback on the AQMP and finalising the AQMP for implementation. The final version of the AQMP will be sent to all stakeholders on the database.

2 AIR QUALITY MANAGEMENT PLAN GOALS

The National Environmental Management: Air Quality Act of 2004 (AQA) devolved air quality management functions to the local government. As part of this functional devolution, provinces and municipalities are required to develop Air Quality Management Plans (AQMPs). The North West Department of Agriculture, Conservation and Environment (DACE) responded to this legal requirement by developing this Provincial AQMP.

The objectives of this AQMP are to achieve the following overarching goals:

- **Goal 1:** To develop and maintain institutional arrangements that support sound air quality management and governance in the Province.
- **Goal 2:** To reduce the negative impact on human health and environment of poor air quality
- **Goal 3: T**o reduce impacts of fossil fuels in residential applications
- **Goal 4**: To address the effects of emissions from industrial sources
- **Goal 5:** To quantify and reduce transport air emissions within the Province

7. **Goal 6:** To ensure effective communication and public participation in pursuant to legal requirements.

The translation of these goals into objectives and targets is summarised below. These have been translated into time based action plans with clear indication of responsible parties.

Translating Goals into Objectives and Targets

Goal 1: To develop and maintain institutional arrangements that support sound air quality management and governance in the Province.

OBJECTIVES	TARGETS	ACTIONS
To establish and maintain all necessary committees and forums for air quality management and governance.	To have a Provincial Air Quality Management Committee by December 2009	• Develop terms of reference or founding statements for a Provincial Air Quality Management Committee by June 2009. • Invite all applicable provincial and/or national government

OBJECTIVES	TARGETS	ACTIONS
		departments to become committee members by August 2009.
	To have a Provincial Air Quality Stakeholder Group	• Formulate terms of reference for the Provincial Air Quality Stakeholder Group by June 2009. • Constitute the Provincial Air Quality Stakeholder Group by June 2009.
	Strengthen the functioning of the Provincial Air Quality Officers Forum.	• Ensure that all meetings are scheduled annually to improve attendance and representations by all relevant municipalities. • Create a web-link to the DACE web page. • Develop and publish bi-annual newsletter of the Provincial Air Quality Officers Forum.
To develop technical expertise amongst all relevant municipal and provincial officials.	Develop Air Quality Management Training Needs Matrix	• Conduct Training Needs Assessment across the Province • Communicate the outcomes to the Air Quality Management Committee and Air Quality Stakeholder Group
	Ensure that relevant personnel receive Air Quality Management Training or Awareness Training	• Identify available air quality management courses and enrol personnel to attend training; • Schedule relevant air quality management for all relevant personnel to attend by June 2009; • Ensure that all municipal air quality officers attend Atmospheric Emissions Licensing course by July 2009;

Goal 2: To reduce the negative impact on human health and environment of poor air quality

OBJECTIVES	TARGETS	ACTIONS
To identity all sources of air pollutions in the province and develop reduction measures.	To develop emissions inventory for different pollutants and sources	• Identify pollutants of concerns and conduct dispersion modelling within different areas where such pollutants are known to occur.
To comply with ambient air quality standards	To ensure that the ambient air quality within the NW is within the parameters set in the proposed National Ambient Air Quality Standards for South Africa and/or SANS 1929 standard.	• Monitor industrial air emissions for listed activities (*currently scheduled processes*) to ensure that they are within the Minimum Emissions Standards set in terms of Section 21 of AQA by relevant time frames. • Liaise with industries to ensure that they understand new licensing requirements and they commit to operate within the legal limits, and to report their emissions levels to relevant district municipalities, or DACE;
	To enhance Ambient Air Quality Monitoring Network within the NW	• Develop a master plan for the creation or enhancement of Ambient Air Quality Monitoring Network in the province; • Conduct Ambient Air Quality Monitoring against the proposed SA Ambient Air Quality Standards for common pollutants[1].

Goal 3: To reduce impacts of fossil fuels in residential applications

OBJECTIVES	TARGETS	ACTIONS
To address the effects of emissions from the use of fossil fuels in	To establish baseline information on the use of fossil fuels in residential applications (*indoor air*	• Identify residential areas that use fossils fuels for cooking and heating by October 2009;

[1] The identified common pollutants are SO_2, NO_2, CO, PM_{10}, O_3, Lead and Benzene

OBJECTIVES	TARGETS	ACTIONS
residential applications	*quality monitoring)*	• Prioritise the residential areas using fossils fuels that require installation of air quality monitoring equipment by December 2009; • Install suitable air quality monitoring equipment at all prioritised residential areas by March 2010; • Monitor air quality for a period of 12 months, covering all seasons (April 2010 to March 2011);
	To provide alternative energy sources to residential areas those are dependent on fossil fuels.	• Liaise with all key electrification stakeholders (DME, Eskom) to establish the extent of electrification backlogs by December 2009; • Determine if provincial interventions are necessary to speed up electrification by February 2010. • Investigate the use of biomass, solar and wind as alternative sources of energy for the affected residential areas by March 2010.
	Increase efficiency of fossil fuel use in residential applications.	• Establish the feasibility of rolling out the implementation of Basa Njengo Magogo programme in the Province by December 2009.

Goal 4: To address the effects of emissions from industrial sources

OBJECTIVES	TARGETS	ACTIONS
To ensure compliance to AQA Listed Activities Minimum Emissions Standards	To enforce all provisions of Listed Activities Minimum Emissions Standards throughout the NW.	• Capacitate municipalities on the requirements and enforcement of Listed Activities Minimum Emissions Standards by August 2009. • Enforce Minimum Emissions

OBJECTIVES	TARGETS	ACTIONS
		Standards. • Create an inventory of all non-scheduled or non-listed industrial operations in the NW and monitor their compliance to Minimum Emissions Standards by December 2010
To ensure compliance to Atmospheric Emission Licenses	To ensure that all holders of AEL permits comply with stipulated requirements	• Capacitate the district municipalities to understand the transition from APPA to AQA by September 2009 • Train all relevant district officials in the implementation of the AEL; • Establish monitoring mechanisms at every district;

Goal 5: To quantify and reduce transport air emissions within the Province

OBJECTIVES	TARGETS	ACTIONS
To establish the extent of transport emissions in the NW.	Quantify air emissions emanating from the transport sector.	• Conduct vehicle count by December 2009 • Establish volumes of vehicle fuels sold in the NW by fuel type March 2010 • Install road-side air quality monitoring equipment for selected routes and locations by June 2010 • Start measuring air emissions associated with the transport sector by August 2010
To reduce transport air emissions	To have a strategy to deal with transport air emissions in the NW	Develop a strategy to reduce transport emissions in the NW by March 2011.

3 PROBLEM ANALYSIS

The problem analysis was done on the basis of gaps identified during the baseline assessment. The Logical Framework Approach (LFA) was used in the analysis of these problems. The LFA resulted in the determination of problem causes, effects and objectives. The following were key problem complexes that were identified, as reflected in Chapter 3 of this AQMP:

- Air quality management capacity;
- Sources of air emissions emanating from non-listed industrial activities (non-scheduled processes);
- Air Quality Management System (AQMS);
- Listed Activities or Scheduled Processes and mining processes;
- Domestic fuel burning;
- Transport emissions; and
- Agricultural activities and biomass burning.

3.1 Air Quality Management Capacity

Air Quality Management Capacity encompasses but is not limited to human resource, financial resources, and institutional arrangements, AQM tools (legislative and regulatory tools, information, air quality data and AQMS).

3.1.1 Problem Analysis

There is an evident limited or total lack of AQM capacity that has overarching effect on other aspects of air quality management, particularly on the ability of the different levels of authorities to carry out their constitutional and other legal mandate in terms of the Municipal Systems Act and AQA.

3.1.2 Problem Causes

At municipal level (both district and local) air quality management competes with a number priorities as far a service delivery is concerned, thus usually AQM, like most environmental issues are often relegated to the bottom of municipal priorities. The second cause of the lack of capacity relates to the general scarcity of AQM skills in the province. The officials that are employed usually have limited specialized training in the field of AQM. The lack of resources causes delays in implementation of the air quality monitoring programme.

3.1.3 Problem Effects

Municipalities have not allocated adequate resources (financial and human) for AQM and they have failed to set up adequate structures to deal with AQM. The scarcity of skills result in most officials responsible for AQM not fulfilling their responsibilities as far as AQM is concerned. In NW the lack of capacity has resulted in both district and local officials not being able to undertake activities such as compiling emission inventories, monitoring, developing by-laws,

regulating and enforcing both APPA and AQA. Delays in the implementation of AQ monitoring programme led to the lack of data and other critical information necessary for AQM. Key elements of the Air Quality Management System (AQMS) such as monitoring and emission inventory are therefore not available and hence no AQMS exist for the area.

3.1.4 Objectives

For air quality issues at municipal levels to be prioritized, financed, staffed and well equipped there is a need to train the current officials responsible for AQM on those issues that are mandated to them by AQA. This should include but not limited to training in dispersion modelling, development of by-laws, atmospheric emission licensing, air quality monitoring, etc.

3.2 Sources of emissions from Non-Listed activities

Non-listed (non-scheduled processes) using fuel burning appliances including eateries, spray-painting, standby generators and dry cleaners make the bulk of non-listed activities in the four NW district municipalities.

3.2.1 Problem Analysis

In their very nature non-listed industrial processes have lower stacks, poor dispersion potential and a more direct impact on the breathing air of the people. In the NW province there is currently no emission inventory of the non-listed activities (listed processes) and thus the sources, the pollutants and their volumes are not known.

3.2.2 Problem Causes

The main cause of the problem in this sector is inadequate capacity both institutionally and in terms of skilled officials carry out emission inventories. Furthermore most of the previously conducted emission inventories can not be confirmed by the current air quality officers. The other causes of the lack of knowledge are the fact that hospitals where a bulk of the incinerators is located are managed by the department of health and thus the inability to confirm the existence and functionality of these incinerators. The lack of legislative and regulatory tools for non-listed activities also limits any formidable action to be taken.

3.2.3 Effects

The main effect is that the extent of the impact on the health of the people and the quality of the air in not known and therefore cannot be properly managed.

3.2.4 Objectives

The key objective is to establish the sources, pollution and the volumes of pollutants in the different districts of the NW province. This can be achieved through the compilation of an emission inventory to determine the sources, the pollutants and the volumes thereof. The development of air quality management capacity, particularly the emission inventory management skill will enable officials to conduct the inventories.

In the case of those industries that are found to have processes that lead to very high volumes of pollution, those activities should, in accordance with the

AQA, be declared controlled emitters. Each District municipality need to engage the Model By-Laws provided to DEAT so that they could regulate their different issues.

3.3 Air Quality Management System

While the main components of the AQMS include emission inventory, ambient air quality monitoring, and an atmospheric dispersion modelling; the North West Province has very little information (air quality data) to enable the development of a comprehensive AQMS.

3.3.1 Problem Analysis

There is an evident limited or total lack of AQM capacity that has overarching effect on other aspects of air quality management, particularly on the ability of the different level of authorities to carry out their constitutional and other legal mandate in terms of the Municipal Systems Act and AQA.

3.3.2 Problem Causes

At municipal level (both district and local) air quality management competes with a number priorities as far a service delivery is concerned, thus usually AQM like most environmental issues are often relegated to the bottom of municipal priorities. The second cause of the lack of capacity relates to the general scarcity of AQM skills in the country. The officials that are employed usually have limited specialized training in the field of AQM. The lack of resources causes delays in implementation of the air quality monitoring programme.

3.3.3 Problem Effects

Municipalities have not allocated adequate resources (financial and human) for AQM and they have failed to set up adequate structures to deal with AQM. The scarcity of skills result in most officials responsible for AQM not fulfilling their responsibilities as far as AQM is concerned. In NW the lack of capacity has resulted in both district and local officials not being able to undertake activities such as compiling emission inventories, monitoring, developing by-laws, regulating and enforcing both APPA and AQA. Delays in the implementation of AQ monitoring programme led to the lack of data and other critical information necessary for AQM. Key elements of the Air Quality Management System (AQMS) such as monitoring and emission inventory are therefore not available and hence no AQMS exist for the area.

3.3.4 Objectives

For air quality issues at municipal levels to be prioritized, financed, staffed and well equipped there is a need to train the current officials responsible for AQM on those issues that are mandated to them by AQA. This should include but not limited to training in dispersion modelling, development of by-laws, atmospheric emission licensing, air quality monitoring, etc.

3.4 Listed Activities (Scheduled Processes) and Mining Processes

Bojanala district municipality is the main industrial hub of the province followed by Dr Kenneth Kaunda DM and Ngaka Modiri Molema DM. Platinum, gold,

diamonds and chrome and vanadium smelters are the main minerals processes found in the North West province and are mainly concentrated in the Rustenburg and Klerksdorp areas, accounting for over 90% of mining activities in the province.

Platinum mines include Anglo Platinum, Impala Platinum and Lonmin Platinum, all in the Rustenburg area. Chrome smelters include Samancor Chrome, Xstrata, Xstrata Merafe Ferrochrome, Xstrata Wonderkop in Rustenburg area and Hernic Ferrochrome and Vametco in Madibeng.

The gold mining operations include Buffelsfontein Gold Mining Co., Hartebeestfontein Gold Mining Company, Silfontein Gold Mining Company, Vaal Reefs Exploration Mining Company, Mponeng, Tautona and AngloGold Ashanti within Matlosana. The only Vanadium mining activities are those of Rhovan Vanadium in Madibeng.

3.4.1 Problem Analysis

Atmospheric emissions are the main problems associated with industrial processes. Fugitive emissions on the other hand are the main problems in the mining sector. Considering vastness of industries it is clear that the problems are likely to deal with a broad spectrum of pollutants. The NW Cleaner air report focuses on the emission reduction from pollutants originating from industries operating scheduled processes, but in the report there are a number of industries where information has not been acquired.

Air pollution from mining activities stem from fugitive dust emission from mine pits, haul roads and transfer points, as well as emissions from processing and beneficiation plants.

3.4.2 Causes

These pollutants are mainly caused by the use of fossil fuels for industrial processes. Mining air pollution is caused by mining and transportation activities.

3.4.3 Effects

The effects of the criteria air contaminants (CAC) include air issues such as smog and acid rain resulting from the presence of, and interactions between a group of CAC pollutants. They also have adverse health effects. The last group of pollutants are known as greenhouse gases and are largely responsible for climate change and global warming. Depending on the sizes of the particles, mining emissions can cause both nuisance and health effects.

3.4.4 Objectives

The primary objective for the listed activities (scheduled processes) would be to increase efficiency of processes which will result in enhanced opportunity to reduce emissions, and to comply with legal requirements (minimum emission standards and ambient air quality standards).

The application of best available techniques including process design, process control optimization, high efficiency dust collectors, primary NO_x control measures, and post-combustion control technologies have the potential to

reduce future emissions and offset the general trend to increasing emissions as production increases.

Continuous improvement across all sources of pollution is a critical component of effective environmental management.

The objectives for the mining companies within the North West would be to enhance compliance through improved gaseous and dust controls. These could be achieved through installation of scrubbers where feasible, as well as increased control of waste disposal sites. The smelters can also incorporate putting up monitoring stacks in view of establishing their emission baselines, from which they will propose targets.

3.5 Domestic Fuel Burning

The use of wood, coal and paraffin for cooking and heating is prominent in some rural and under-developed urban areas within the North West Province. These result in air emissions that could have significant environmental and health impacts. These could not be quantified during the baseline assessment.

3.5.1 Problem Analysis

Poverty and under-development are mostly blamed for the continued use of coal and wood within the Province. These are worsened by low literacy levels within the affected communities. Informal settlements are known to have high occupancy densities, which make it difficult for air to dissipate into the atmosphere.

3.5.2 Causes

The main causes of the use of wood and coal are poverty and under-development. The former is attributed to high unemployment rate within the Province, while the latter is caused by a number of factors, including establishment of informal settlements closer to areas that are perceived to be sources of employment, as well as the slow phase of development. These two main causes are exacerbated by slow pace of the electrification programme.

3.5.3 Effects

There are numerous health effects associated with the inhalation of smokes from wood and coal burning. Some of the pollutants are carcinogenous, giving effect to fear of cancer and other diseases associated with these gaseous emissions. Carbon monoxide has already claimed many lives in South African poverty-stricken areas.

3.5.4 Objectives

The underlying objectives are to increase the efficiency of wood, coal and paraffin burning. In areas where coal is used, there is a need to roll-out the Basa njengo Magogo programme, but with the ultimate goal being electrification of the households and switching to more energy efficient sources and renewable energy. It is also critical to establish baselines on domestic fuel burning. This will enable informed interventions.

3.6 Transport Emissions

The main transport activity within the North West Province is confined to the main routes. These include the Platinum Highway (N4) running from Pretoria in Gauteng (east of the North West Province) past Brits and Rustenburg towards Botswana on the western boundary of the province. The N12 and N14 are also busy roads, with the N12 going through Potchefstoom, Klerksdorp, Wolmaranstad and Christiana, and the N14 through Ventersdorp, Delareyville, and Vryburg towards Kuruman. The N14 is the main road to Namibia. There are also two airports in the North West (one in Mafikeng and another in Mogwase next to Sun City).

3.6.1 Problem Analysis

Vehicles produce both exhaust and evaporative emissions. Tailpipe emission includes dangerous gases such as carbon monoxide, oxides of nitrogen, hydrocarbons and particulates. Evaporative emissions include vapours of fuel which are released into the atmosphere, without being burnt. Other pathogens associated exhaust emissions include benzene, formaldehyde, and polycyclic hydrocarbons.

Transport emissions are believed to significantly contribute to the quality of air in the North West Province. These are facilitated by the presence of national and provincial road networks that link different localities within the province, as well as linking South Africa to Namibia and Botswana.

3.6.2 Causes

Transport emissions are caused by the need to transport goods and people across the province, as well as the inefficiency, unavailability, and unreliability of the public transport system in South Africa and North West. The unavailability of transport emission strategy is making it difficult to manage emissions from transport sector. Furthermore there is currently no standard for vehicular emissions. Currently there is no regulation on content. With the exception of lead being phased out, nothing is being done to regulate sulphur content in the petrol and diesel. The inappropriate state of roads in the rural parts of the province also leads to dust.

3.6.3 Effects

Transport emissions impact on the ambient air quality of the province and could cause both environmental and health impacts.

3.6.4 Objectives

The primary objective would be to establish transport emissions baseline for the different districts in the province. There is also a need to define fuel that has lower harmful contents such as sulphur in diesel and lead in petrol. Some of the objectives are already being implemented.

Strengthening the provincial rail network could assist in reducing the use of heavy vehicles to transport goods, thereby help reduce vehicle emissions.

3.7 Agricultural activities and Biomass Burning

Maize and sunflowers are important crops with cattle being one of the province's major farming activities. Deliberate firebreaks are applied as part of agricultural practices. Biomass burning is one of the contributors to potentially poor air quality in the province. Veld fires represent a big portion of emissions associated with biomass burning.

3.7.1 Problem Analysis

Crop farming includes land tilling operations, fertiliser and pesticide applications, and harvesting. Applying fertiliser and pesticides use are typically done by vehicles (tractors) driving on unpaved roads and exposed soil. Land tilling includes dust entrainment on exposed surfaces, wind-blown dust and scraping and grading type activities resulting in fugitive dust releases. Both particulate matter (PM) and gaseous air emissions (mainly NO, NO_2, NH_3, SO_2 and VOCs) are generated from the application of nutrients as fertilizers or manures (EPA, 1999).

Cattle farms are also significant sources of fugitive dust especially when feedlots are used and the cattle trample in confined areas. Odours and VOCs associated with animal manure is also a concern when cattle are kept in feedlots.

Veld fires happen purposefully and accidentally, but also could happen as a legal requirement to create fire breaks in farms as well as illegal hunters clearing ways to ease hunting activities. The latter could be as a result of smokers not extinguishing cigarettes butts or people making fire for certain purposes, which leads into run away fires.

3.7.2 Causes

Some of the causes are response to the National Veld and Forest Fires Act to create fire breaks. These are necessary to reduce the negative impact of accidental veld fires. Accidental veld fires could be as a result of negligence or lack of awareness. Veld fires also occur as a result of natural processes such as lightning.

3.7.3 Effects

Veld fires increase air pollution, thereby reducing the quality of air people breathe. This leads to health problems. It could also lead to contributing to poor ambient air quality in the province.

3.7.4 Objectives

The key objective is to raise public awareness of the effects of veld fires and how they could be reduced. There are primarily 3 harvesting operations resulting in particulate emissions: (1) crop handling by the harvest machine, (2) loading of the harvested crop into trucks, and (3) transport by trucks in the field. Particulate matter, composed of soil dust and plant tissue fragments (chaff), may be entrained by wind (EPA, 1995).

4 INTERVENTION STRATEGIES

After the problem analysis process, several intervention strategies were identified and defined. These strategies are necessary to alleviate the challenges associated with the air quality management problems that have been identified. The intervention strategies range from short term (those that can be implemented within 2 years), medium term (those that can be implemented between 2 and 5 years) to long term (those that require more than 5 years for successful implementation).

These have been translated into implementation schedule and are presented in the section below.

5 IMPLEMENTATION OF INTERVENTION STRATEGIES

Once the intervention strategies were accepted as being desirable and adequate in addressing the identified air quality problems, they were translated into implementation schedules. The schedules mirror the intervention strategies, but go further to include definite actions that need to be undertaken, identify responsible parties and implementation time frames.

This section provides action plans, responsible parties and time frames for implementing different interventions necessary to improve air quality in the province.

Table 5-1: Actions, Responsibilities and Times Frames for Domestic Fuel Burning

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
SHORT TERM (0 – 2 YEARS)		
Identify residential areas that use fossil fuels for cooking and heating	Municipalities, DOH, DACE and DME	October 2009
Prioritise the residential areas using fossils fuels that require installation of air quality monitoring equipment;	DACE, District Municipalities	December 2009
Install suitable air quality monitoring equipment at all prioritised residential areas;	Municipalities	March 2010
Liaise with all key electrification stakeholders (DME, Eskom) to establish the extent of electrification backlogs;	DACE, DME, Eskom	December 2009
Determine if provincial interventions are necessary to speed up electrification	DACE	February 2010

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
Investigate the use of biomass, solar and wind as alternative sources of energy for affected residential areas	DACE, DME	March 2010
Establish the feasibility of rolling out the implementation of Basa Njengo Magogo programme in the Province	DACE, DME, Municipalities	December 2009
Develop domestic fuel burning strategy	DACE, DME, Municipalities	June 2010
MEDIUM TERM (2-5 YEARS)		
Monitor air quality for a period of 12 months, covering all seasons;	Municipalities	March 2011
LONG TERM (OVER 5 YEARS		
Construct energy efficient homes	Dept of Housing, DME, DACE, Municipalities	2015

Table 5-2: Actions, Responsibilities and Times Frames for Capacity Development

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
SHORT TERM (0 – 2 YEARS)		
Develop terms of reference for the Provincial Air Quality Management Committee	DACE	June 2009
Invite all relevant provincial and/or national government departments to become committee members	DACE	July 2009
Formulate terms of reference for the Provincial Air Quality Stakeholder Group	DACE	June 2009
Constitute the Provincial Air Quality Stakeholder Group	DACE	July 2009
Conduct training needs assessment across the province	DACE	June 2009

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
Identify available air quality management courses and enrol personnel for training	DACE, Municipalities, DEAT	April 2009
Budget for the office responsible for air quality management	Municipalities	Annually
Develop capacity for municipal air quality officers to understand and enforce the requirements of the Listed Activities Minimum emissions standards	DEAT, DACE, Municipalities, Institutions of Higher Learning	August 2009
Schedule all municipal air quality officers to attend Atmospheric Emissions Licensing course	Municipalities	July 2009
Appoint necessary air quality officers or personnel in municipalities	Municipalities	September 2009
MEDIUM TERM (2-5 YEARS)		
Conduct a section 78 assessment	Municipalities	June 2011
Acquire air quality management tools (passive samplers, software, etc)	DACE, Municipalities	August 2011

Table 5-3: Actions, Responsibilities and Time Frames for Information Management

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
SHORT TERM (0 – 2 YEARS)		
Create a web-link to the DACE web page covering air quality management planning	DACE	June 2010
Develop and publish bi-annual newsletter of the Provincial Air Quality Officers forum	DACE	August 2009, and every six months thereafter
Develop a comprehensive emissions inventory for the province	DACE, Districts, SAWS, DoA, Fire Brigades, DoT, Industries	June 2010
Develop air quality monitoring networks	DACE, Municipalities	Dec 2010

covering the province		
Conduct passive air quality monitoring for identified areas and establish pollution volumes per type of pollutant	DACE, Municipalities, Non-Listed Activities operators	June 2010
MEDIUM TERM (2-5 YEARS)		
Create reporting links to SAAQIS	DACE, DEAT	2011
Develop dispersion models for the province	DACE	2011

Table 5-4: Actions, Responsibilities and Time Frames for Non-Listed Activities (Non-Scheduled Processes)

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
SHORT TERM (0 – 2 YEARS)		
Identify small industrial sources and their air pollutants in the province and quantify the pollutants	DACE, Municipalities, Non-Listed Activities operators	Dec 2009
Identify priority pollutants	DACE, Municipalities, Non-Listed Activities operators	Dec 2009
Identify and declare controlled emitters	DEAT, DACE	March 2011
Develop air quality regulations for municipalities	DACE	March 2011
MEDIUM TERM (2-5 YEARS)		
Monitor air quality for a period of 12 months, covering all seasons;	Municipalities	March 2011
Enforce air emissions reductions measures from small industrial sources	Municipalities	Feb 2013

Table 5-5: Actions, Responsibilities and Time Frames for Listed Activities (Scheduled) and Mining Processes

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
SHORT TERM (0 – 2 YEARS)		
Discuss emissions reduction measures with individual companies that operate scheduled processes in the province	DACE, DEAT, Industries	Sept 2010
Set emissions reduction targets for all operations	Industries, Municipalities	Sept 2010
Implement short term emission reduction measures	Industries, Municipalities	Sept 2010
Mid-term review of reduction measures	Industries, Municipalities	Sept 2011
Compliance review to minimum emission targets for old plants	DACE, DEAT, Municipalities &Industries	Sept2012
MEDIUM TERM TO LONG TERM (<2 YEARS)		
Presents emission standards for new industries for which compliance should be obtained by 2020	DEAT, DACE, Municipalities	Dec 2012
Set and present reduction measures and action plans to reach target by 2020	Industries, Municipalities, DACE, DEAT	Sept 2013
Mid-term review of targets	Industries, Municipalities, DACE, DEAT	Sept 2016
Compliance to minimum emission standards for new plants	Industries	Sept.2020

Table 5-6: Actions, Responsibilities and Time Frames for Transport Emissions

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE

SHORT TERM (0 – 2 YEARS)		
Conduct vehicle counts throughout the main routes in the province	DACE, DoT, NRA, Municipalities	Oct 2009
Establish and quantify fuel consumption by type and area within the province	DME, DoT, Municipalities	March 2010
Quantify the extent of transport emissions	DACE, Municipalities	Dec 2010
Develop transport emissions strategy	DACE, DoT	March 2011
Create public awareness on the benefits of using public transport	DoT, DoE	March 2010
MEDIUM TERM (2-5 YEARS)		
Develop vehicular emissions standards	DEAT, DACE	June 2013
LONG TERM (0VER 5 YEARS)		
Improve the rail network to reduce roads use for transportation of goods	DoT, DPE	2015

Table 5-7: Actions, Responsibilities and Time Frames for Agricultural Activities and Biomass Burning

ACTIONS	RESPONSIBLE PARTIES	TARGET DATE
SHORT TERM (0 – 2 YEARS)		
Establish the extent of agricultural and biomass burning in the province	DACE, Agri-SA, DoA, FPA, Fire Brigates, District Municipalities	Dec 2009
Raise public awareness of purposeful veld fires such as for fire breaks, etc	DACE, Agri-SA, DoA, FPAs, Municipalities	June 2010
MEDIUM TERM (2-5 YEARS)		
Adopt environmentally sound pest control techniques	Agri-SA, DACE, DST	2013

6 EVALUATION AND FOLLOW-UP

Evaluation and follow-up are integral parts of the AQMP. This Chapter outlines the AQMP review processes as outlined in supporting legislation and guidelines as well as evaluation of the effectiveness of the interventions and reporting on AQMP.

7 CONCLUSION

This AQMP is the starting point in ensuring cleaner air in the North West Province. It provides a number of intervention strategies that need to be implemented by relevant parties over the stated time frames. The requirement for capacity building at different levels cannot be over-emphasised.

The AQMP development process was consultative-participative, and that all the interventions have been vouched for by relevant implementing authorities. This is a living document and needs to be reviewed on a regular basis to ensure that it addresses changing circumstances.