

AIR QUALITY MANAGEMENT PLAN IMPLEMENTATION REGIME AND IMPLEMENTATION OF THE AIR QUALITY ACT, ACT NO. 39 OF 2004

1. STRATEGY TRUST

Safe, clean and green City

2. OBJECTIVES

2.1 The objective of this report is to report on the air quality management regime and implementation of the Air Quality Act, Act No 39 of 2004, and in particular the:

- Implementation of the City of Johannesburg Air Quality Management Plan (AQMP)
- Development of the City's strategies on priority pollutants : an integrated vehicle and domestic emissions reduction strategies (Annexure A and B); and
- Review process of the Atmospheric Pollution Prevention Act (APPA), Act No 45 of 1965; and
- Process of applying for Chief Air Pollution Control Officer (CAPCO) Delegations by City of Johannesburg, Environmental Management.
- Training and designation of Air Quality Officials as Environmental Management Inspectors (EMI) to enforce Air Quality Act (AQA) and Atmospheric Prevention Act (APPA) on a temporary basis until the latter legislation is. Once trained and designated as EMIs, Air Quality Officials will be able to question a person about any act or omission in respect of which there is a reasonable suspicion that it might constitute an offence, a breach of AQA (or APPA), Atmospheric Emission License (AEL) under AQA (or registration certificate under APPA) or "instruments" issued in terms of AQA such as pollution Prevention Plans.

3. BACKGROUND

The Bill of Rights in the Constitution states that South African has a right to an environment that is not harmful to their health and well-being. Scheduled 4(b) states that air pollution is an exclusive local government competence. Air quality management is regulated by two pieces of legislation, namely, the Atmospheric Pollution Prevention Act, Act 45 of 1965 (APPA) and the National Environmental Management Act: Air Quality Act, Act 39 of 2004 (NEMA: AQA).

APPA provides local government with exclusive competence to regulate emissions from all sources under the power delegated by the Minister of Environmental Affairs and Tourism.

In terms of the NEMA: AQA, local government is responsible for the:

- Development and implementation of an Air Quality Management Plans;
- Establishment and maintenance of a comprehensive air quality monitoring network;
- Development and maintenance of an emissions inventory ;
- Development and implementation of strategic measures to reduce emissions within key sectors;
- Development and implementation of a permitting and licensing strategy and system; and
- Compliance monitoring and enforcement of AQA; and

- Implementation of awareness campaign on air quality issues.

In implementing these activities, municipalities are required to appoint an Air Quality Officer (AQO) in terms of the NEMA: AQA, who will be the designated official and/ or a Chief Air Pollution Control Officer (CAPCO) in terms of the APPA.

This report outlines progress made in implementing both legislation measured against progress made against implementing the Air Quality Management Plan (AQMP) and the city's approach in implementing the NEMA: Air Quality Act, Act 39 of 2004.

4. PROGRESS ON THE IMPLEMENTATION OF THE AIR QUALITY MANAGEMENT PLAN (AQMP)

The City of Johannesburg developed an Air Quality Management Plan which was approved by Council in 2003. At the time the AQMP was completed, there was no legal requirement for local government to do so. The rationale for developing the plan was due the recognition of the growing severity of air pollution caused by domestic fuel burning, transportation and traffic, mine tailings and industries.

The aim of the AQMP is to:

- To achieve acceptable air quality reduction through the City;
- To promote a clean and health environment for all citizen in the City of Johannesburg;
- To minimize the negative impact of air pollution on health and environment; and
- To promote the reduction of greenhouse gases so as to support climate change protection programme.

The components of the AQMP include:

- The setting up of a comprehensive monitoring network
- The development of an emissions inventory and dispersion model
- The development of emission reduction strategies for priority pollutants together with mitigation measures
- The setting up of an institutional mechanisms to implement the plan

Since then a number of activities were implemented and the NEMA: AQA was promulgated which made it mandatory for local governments to develop Air Quality Management Plans to be integrated into the Integrated Development Plan.

Accordingly the AQMP will be reviewed to align it to the AQA in order to include:

- the permitting and licensing of listed activities,
- enforcement and monitoring regime,
- noise control and control of offensive odours
- and review the air quality monitoring network based on the current air quality information.

4.1 COJ Air Quality Monitoring Network

The AQMP proposes 11 air quality monitoring stations for the City of Johannesburg aligned to the previous regional boundaries configuration. Currently, there are six monitoring stations strategically located to monitor air pollution from different sources

placed in Alexandra, Buccleuch, Delta Park Environmental Centre, Jabavu, Newtown and Orange Farm.

The stations measure different parameters depending on where they are placed and information is remotely transferred to a central server where it is analysed and reported on a quarterly basis. From information collected to date there is generally a high level of pollutants such as Sulphur Dioxide and Particulate Matter due to vehicle emissions and burning of fossil fuels especially during winter months.

An extra-monitoring station funded by the Department of Environmental Affairs and Tourism will be added to the City's monitoring network as part of the Vaal Airshed Management Area's monitoring network. This station will be officially handed over to the City of Johannesburg after three years from the installation date and integrated into the current monitoring network.

An air quality monitoring stations measures pollution within a five kilometre radius. It can be safely argued that the current monitoring network is not adequate to provide the full air quality picture. In order to include sources outside the network, an emissions inventory is developed which allows the city to collect data from other sources.

As part of expanding the monitoring network, based on data on permitted scheduled processes received from the national department, all sources of pollution will be mapped new air pollution hot spots will be prioritised for monitoring to enable enforcement.

The AQMP review process will therefore include the expansion of the monitoring network through of the current air quality status and hot spot areas. Consideration will also be given to request industry having monitoring stations across the city to be integrated into the city's network. Part of this process will be the alignment of the City's Air Quality Monitoring Network with the Johannesburg Road Agency (JRA) Automated Traffic Mobility System Mobility Network and the Bus Rapid Transit (BRT) currently being developed by Transportation department. Both these system will have an impact on vehicle emissions within the City since they will monitor traffic movement and a shift from private vehicle usage to public transport.

4.2 Development of an Emissions Inventory and Atmospheric Dispersion Modelling System

An emissions inventory is a collection of source and pollutant information which and is used to fill gaps in air quality data falling outside the monitoring network.

The City's emissions inventory is divided into 5 categories:

- Domestic fuel burning emissions;
- Vehicle emissions;
- Emissions from permitted industrial processes
- Boiler emissions; and
- Fugitive dust emissions from mine dumps

Emissions from domestic fuel burning and vehicles has been calculated and added to the city's emission inventory, while emissions from permitted industrial processes, boilers and mine dumps is in the process of being calculated and populated.

Once the emissions inventory is complete, an Atmospheric Dispersion Modelling System (ADMS) will provide an understanding of the major dispersion patterns of

harmful gases, and will be the key to the understanding the nature and magnitude of health and environmental impacts of air pollution within the City of Johannesburg.

The information on the dispersion in the atmosphere of pollutants released from industrial, domestic, roads and mine dumps sources will be available once the model has been populated at the end of this financial year.

The ADMS will be complemented by a passive sampling survey which will analyse to determine a snap shot of air quality in respect of sulphur dioxide and nitrogen dioxide. Once this is done, an air quality monitoring systems that maps different pollutants will provide a clear picture of the City's air quality status. The ADMS will also assist in guiding planning in respect Spatial Development and Transport.

3.2 Strategy on Priority Pollutants

The AQMP has identified air pollution priority sources, pollutants and impact areas together with the short and medium terms actions to address air quality issues in the City. The plan has also identified measures to reduce emissions within key sectors, namely:

- Domestic fuel burning;
- Transportation and traffic;
- Mine tailing; and
- Industries

Until 2004/5 financial year, the city has been focusing on mitigation measures on domestic fuel burning and vehicle emissions as priorities. Accordingly a vehicle emission reduction strategy and a domestic reduction strategy have been compiled and are attached in Annexure A and B respectively.

The vehicle emission reduction strategy is building onto existing work being undertaken by Environmental Health. In line with Health by-laws, Environmental Health Practitioners have delegated authority to measure tail pipe emissions; however they do not have the power to stop any vehicle. Another complication is the fact that tail pipe emissions must be taken at operating efficiency, which implies that a vehicle must have been running long enough to get a clear picture of the emission profile.

In respect of mine dust, the city is now in discussion with the Council for Geoscience to pilot a mine rehabilitation programme, which if proven viable, will be expanded to priority mine dumps.

3.3 Permitting and Licensing strategy

Key to implementing the permitting and licensing for scheduled processes, sources and priority pollutants the following is key

- Review existing APPA permitted activities
- Appointment of an Air Quality Officer / Chief Air Pollution Control Officer
- Training and designation of Environmental Management Inspectors (EMI)

3.3.1 Review of Atmospheric Pollution Prevention Act (APPA) for Permitted Activities

The Department of Environmental Affairs and Tourism (DEAT) is currently in the process of reviewing APPA. This exercise reveals that within the City of Johannesburg, 483 APPA permits have been issued to the City instead of 52 previously provided by Air Pollution Control Officer (APCO) responsible for Scheduled Process licensing and regulation in Johannesburg.

In terms of Section 36 (1) NEMA: AQA, municipalities are charged with implementing the atmospheric licensing system and must for this purpose perform the functions of licensing authority.

The City of Johannesburg is currently waiting for the finalisation of the DEAT APPA review process and to be officially designated as licensing authority by DEAT. In the meantime, Environmental Management has appointed two permitting and licensing officials that will be responsible for this function once handed to local government by DEAT.

A database of all the City's industries, boilers and scheduled processes is in the process of being updated using information that was obtained during the development of the City's AQMP.

3.3.2 Appointment of Air Quality Officer (AQO) and Chief Air Pollution Control Officer (CAPCO)

3.3.2.1 Air Quality Officer (AQO)

In terms of Section 14 (3) NEMA: AQA, each municipality is required to designate an air quality officer from its administration to be responsible for co-ordinating matters pertaining to air quality management in the municipality. The City of Johannesburg has appointed the Executive Director of Environmental Management as the City's Air Quality Officer.

3.3.2.2 Chief Air Pollution Control Officer (CAPCO)

In terms of Section 6 (1) of the Atmospheric Pollution Prevention Act (Act No. 45 of 1965) (hereinafter "the APPA"), the Minister may appoint " an officer to be designated as the chief air pollution control officer (CAPCO) who shall under the Minister's directions exercise the powers and perform the functions assigned to the Chief Officer under this Act".

This Officer will among others:

- Conduct all air quality impact investigations, consultations, and negotiations required to ensure informed decisions in respect of the issue or non-issue of APPA Registration Certificates;
- Issue legally robust, monitorable and enforceable APPA Registration Certificates that take into account the provisions of AQA relating the contents of AQA Atmospheric Emission Licenses

With the promulgation of the NEMA: AQA, this Official will also be required to implement the APPA-AQA transition process, including the implementation of the APPA review project.

To ensure smooth transition between the Air pollution Prevention Act (Act No. 45 of 1965) and the National Environmental Management: Air Quality Act (Act No. 39 of 2004) municipalities are required to apply through DEAT for the delegation of Chief Air pollution Control Officer (CAPCO) powers. This will allow municipalities to be capacitated in the process of production of registration certificates to industries. Accordingly this report recommends that the City through Environmental Management apply for delegations of CAPCO functions.

3.4 Training and designation of Environmental Management Inspectors (EMI's)

In terms of NEMA Amendment Act, Act 107 of 1st May 2005 the establishment of the Environmental Management Inspectorate commonly known as the Green Scorpions. For the first time, this new network of Environmental Management Inspectors (EMIs) designated by the Minister and provincial MECs brings together environmental enforcement officials from national, provincial and municipal government, and will break through the traditional separation between the protection of different aspects of environment and will include air quality officers.

After being designated by the relevant national or provincial MEC, the Environmental Management Inspectors (EMI) will be responsible for enforcing NEMA, AQA or, potentially APPA on a temporary basis until it is repealed. An EMI will have all the power assigned in terms chapter 2, 5, 7 & 8 of the Criminals Procedure Act (No. 51 of 1977) to a police official who is not a commissioned officer. These chapters deal with search warrants, entering of premises, seizure, forfeiture and disposal of property connected with offences as well as powers relating to arrest, issuing of written notices to appear in court and the issuing of admission of guilt fines.

To effectively implement the city's AQMP and NEMA: AQA it is proposed that a pool of staff from Environmental Management and Environmental Health be given first priority for trained and designated as EMI in this financial year. This programme will be rolled out to By-Law Enforcement Officers in JMPD once capacity has been developed in that unit.

4 AN ENABLING INSTITUTIONAL FRAMEWORK

4.1 Challenges

Poor institutional cooperation, enforcement and compliance are among challenges being faced in implementing some aspects of the AQA. However, a mechanism is under development and a brief overview is outlined below with full explanation detailed in the domestic and vehicle emissions reduction strategies attached in this report (annexure A and B).

4.2 Proposed Approach

A strong mechanism to bring together all stakeholders to participate in the formulation and implementation of the AQMP will include monthly, quarterly and biannual workshops through consultative forums such as multi-stakeholder groups, with representatives from external parties, COJ Air Quality Co-ordinating Committee. Air Quality Officials also participate in various structures such as Vaal Airshed Management Area, Transportation Co-ordinating Committee and Gauteng Air Quality Officers Forum.

Departmental cooperation through the City's Air Quality Co-ordinating Committee will be strengthened to successfully implement activities that will reduce vehicle

emissions within the City. The current delegation of diesel vehicle testing is with Environmental Health. Departments involved are Transportation, Johannesburg Road Agency (JRA), MetroBus, Corporate Services, Environmental Health and Environmental Management.

The delegations of CAPCO powers to the City of Johannesburg, training and delegation of Air Quality Officials as Environmental Management Inspectors (EMIs) will assist in solving the current institutional challenges and improve the enforcement and compliance problems.

5 POLICY IMPLICATION

The Air Quality Act, 39 of 2004, Atmospheric Pollution Prevention Act (APPA), 45 of 1965, the Road Traffic Act (No. 93 of 1996) and COJ Air Quality Management Plan guides this report and the development of vehicle and domestic emissions reduction strategies.

6. FINANCIAL IMPLICATION

There are no financial implications from this report. Financial implication will arise during the formulation and implementation of the vehicle and domestic emissions reduction strategies.

Some aspects of these strategies will require additional resources in respect of equipment and maintenance budgets

7. COMMUNICATION IMPLICATION

Public awareness of severity of air pollution and its deleterious effect on public health will change people to reduce emissions resulting from all sources of air pollution. Options of building up public awareness in both formal and informal education channels will be explored.

8. CONSTITUTIONAL AND LEGAL IMPLICATIONS

The National Environmental Management: Air Quality Act (No 39 of 2004) and the Atmospheric Pollution Prevention Act (No 45 of 1965) guided the development of the vehicle and domestic emissions reduction strategies.

9. OTHER DEPARTMENT/BODIES CONSULTED

- COJ Environmental Health;
- Legal Services;
- Transportation
- Johannesburg Road Agency (JRA);
- JMPD;
- City Power
- Department of Mineral and Energy (DME);
- Department of Environmental Affairs and Tourism (DEAT);
- Gauteng Department of Agriculture, Conservation and Environment (GDACE); and

10. RECOMMENDATIONS

It is recommended that:

- Progress in the implementation of NEMA: Air Quality Act, Act No. 39 of 2004 be noted
- The city through the Environmental Management Department apply for delegations Chief Air Pollution Prevention Officer
- Approval be granted for the Vehicle Emission Reduction strategy and the Domestic Emission Reduction Strategy.

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ANNEXURE A VEHICLE EMISSIONS REDUCTION PLAN OF ACTION

PROPOSED PLAN OF ACTION FOR DEVELOPMENT AND IMPLEMENTATION OF VEHICLE EMISSIONS REDUCTION STRATEGY FOR THE CITY OF JOHANNESBURG

1. OBJECTIVES

The objective of this report **is to**:

- Propose a development of an integrated vehicle emissions reduction strategy for the City of Johannesburg so that it fulfils the City's AQMP;

2. BACKGROUND

Vehicle tailpipe emissions in the City of Johannesburg are noted as one of the most significant emerging air pollution issues due to an increasing traffic volumes and congestion rates during peak hours. The transport sector is the main contributor of air pollutants such as particulates of matter less than 10 µm in diameter (PM₁₀), Carbon Monoxide (CO), Sulphur Dioxide (SO₂) and Oxides of Nitrogen (NO_x)

As a result the City of Johannesburg has put into place a monitoring network consisting of six monitoring stations located in Alexandra, Buccleuch, Delta Park Environmental Centre, Jabavu, Newtown and Orange Farm.

Two of the monitoring stations, Buccleuch and Newton are designed to monitor the impact of vehicle emissions. Table 1 below shows the types of analyser currently based in the two monitoring stations.

Table 1: Monitoring Station and Analyser Type for Vehicle Emissions

Type of Analyser	Buccleuch Monitoring Station	Newtown Monitoring Station
Carbon Monoxide (CO)	•	•
Particulate Matter (PM ₁₀)	•	•
Particulate Matter (PM ₂₅)	•	
Sulphur Dioxide (SO ₂)	•	
Oxides of Nitrogen (NO _x)	•	•
Volatile Organic Compounds	•	
Meteorological Parameters	•	
Ozone (O ₃)	•	•

Air quality in the City of Johannesburg currently exceeds the City's ambient air quality guidelines for several pollutants. The table below indicates the local guidelines for the selected pollutants compared to the highest daily average measurements at Buccleuch during July-September 2006.

Table 2: Local Guidelines and Daily Averages at Buccleuch (July-Sept 2006)

Type of Pollutant	COJ Guideline	July-September 2006 (Results)
Particulate Matter (PM ₁₀)	50 µg/m ³	130 µg/m ³
Sulphur Dioxide (SO ₂)	130 ppb	320 ppb
Oxides of Nitrogen (NO _x)	104 ppb	180 ppb

3. ESTABLISH AN ENABLING INSTITUTIONAL CONTEXT

In order to significantly collect, review and summarise information for each component of a Comprehensive Vehicle Emissions Reduction Strategy, the action plan will be design based on the following institutional principles:

3.1 Institutional Aspects

3.1.1 Multi-Sector Approach

Activities aimed at vehicle emissions reduction will be implemented through the involvement of multi-stakeholder group.

This multi-stakeholder group will consist of representative from relevant government, industry and business associations, non-governmental organisations and academics, whose roles would be as follows:

- Relevant Government official's main function is to regulate, monitor and enforce by-laws and policies;
- The private sector's role is to comply with regulations and standards;
- Civil society's role is to stimulate government action and to enable polluters to comply with standards;
- Academia's role is to advice on the new scientific trends on issues of Air Quality.

A strong mechanism to bring together all stakeholders to participate in the formulation and implementation of the integrated vehicle emission reduction strategy will include Terms of Reference (TOR) and biannual workshops to produce and update the Action Plan.

3.1.2 Internal Institutional Context

Departmental cooperation through the City's Air Quality Co-ordinating Committee will be strengthened to successfully implement activities that will reduce vehicle emissions within the City. The current delegation of diesel vehicle testing is with Environmental Health. Departments involved are Transportation, Johannesburg Road Agency (JRA), MetroBus, Corporate Services, Environmental Health and Environmental Management.

3.1.3 Develop an Air Quality Awareness Programme

A comprehensive awareness programme on issues of air quality is under development. This programme will involve other stakeholders such as the National Association of Automobile Manufacturers of South Africa (NAAMSA), South African Petroleum Industry Association (SAPIA), National and Provincial Transport Departments. Public awareness of the severity of air pollution and its deleterious effect on public health will encourage people to reduce vehicle emissions.

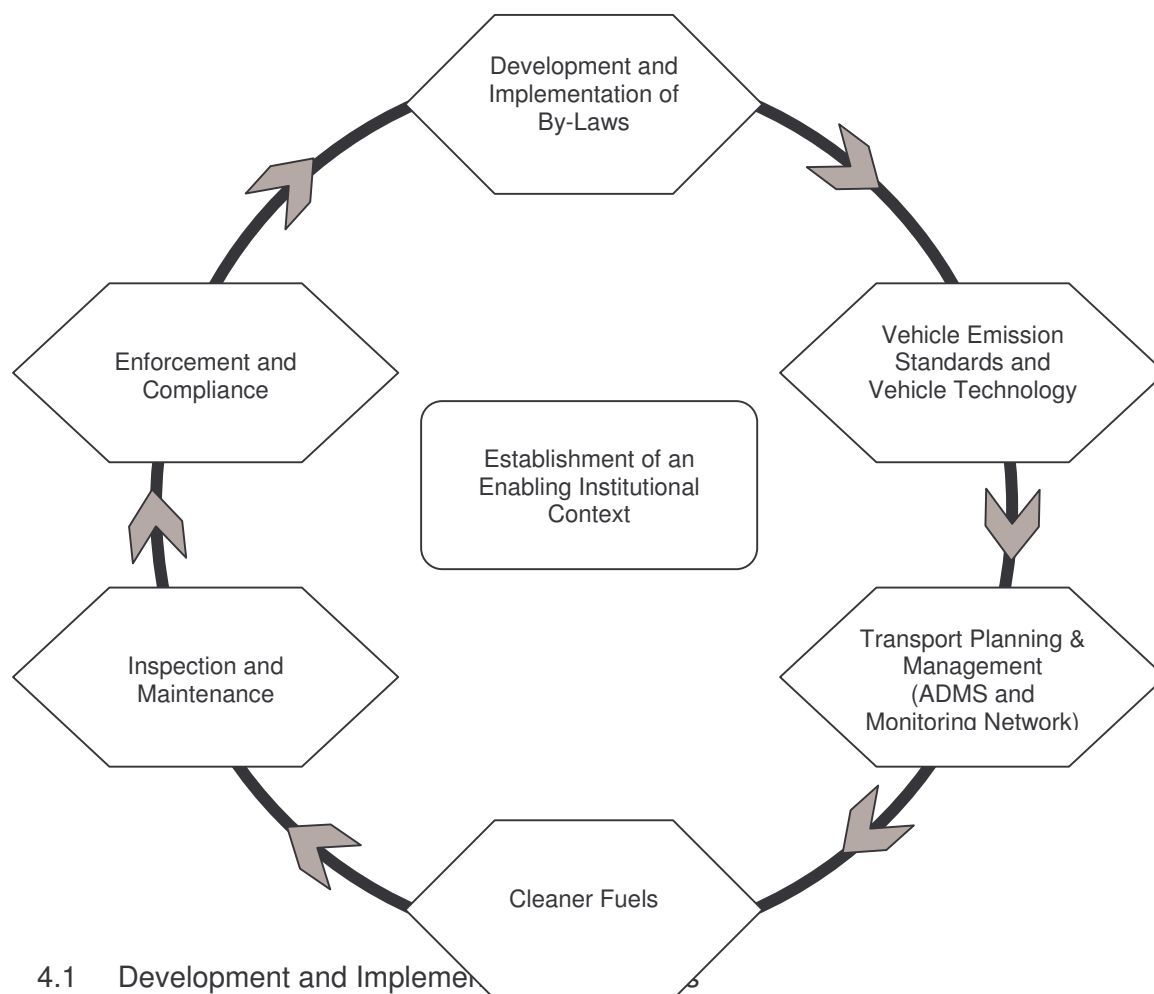
4. ACTION PLAN

COMPONENTS OF THE PROPOSED VEHICLE EMISSIONS REDUCTION STRATEGY FOR THE CITY OF JOHANNESBURG

The proposed Action Plan comprises all the elements depicted in

Figure 1. Each of these components is addressed to a large extent later in the document. In addition to the six components below, training and designation of Air Quality Officials as Environmental Management Inspectors (EMIs) creation and establishing an enabling institutional context are key to achieving the goal of vehicle emission reduction.

Figure 1: Elements of a Comprehensive Vehicle Emissions Control Strategy



4.1 Development and Implementation

The City recognises the need for by-laws to facilitate the testing of not only diesel vehicle, as is the case at present, but also for turbo diesel and petrol vehicles. These

by-laws will also enable enforcement of the emission standards that will be established.

4.2 *Vehicle Emissions Standards and Vehicle Technology*

New vehicle emission standards will be established in a series of upgrades to incrementally tighten the vehicle emissions control (i.e. using international best practice). Each step of new vehicle emission standards corresponds to implementation of some cleaner technology and cleaner vehicle fuel is a pre-requisite to adopting such technology. A plan to install catalytic converters to Joburg's vehicle fleet will also be considered and implemented.

4.3 *Transport Planning and Management*

Improvement of fuel specifications, vehicle inspection and maintenance programs may significantly reduce vehicle emissions for in use-vehicles in the City of Johannesburg, and will have a strong impact in the short term. On the other hand, the number of vehicles in the city is growing rapidly, and this in turn will offset much of the emissions control progress. The net result will be a low to modest reduction in mobile source pollution, and therefore the key to substantially reducing emissions over a long term will be to institute an effective transport planning and management system in order to control the number of vehicles on the road.

The City of Johannesburg has invested in an Atmospheric Dispersion Model System (ADMS) that will enable the prediction of air pollution patterns and distribution on the roads. This Atmospheric Dispersion Modelling System will enable analysis of emission patterns on the routes in and around the city. Transport planning and management will be influenced by the patterns observed.

The Transportation Department is responsible for making changes related to transport and traffic in the City, such as Bus Transit Route (BTR), traffic counts and transport modelling system. Discussions are already in progress to align these initiatives with the Air Quality Management Plan. The plan is to monitor vehicle emissions on the dedicated BTR before and after the implantation of the BTR system as part of monitoring its impact on air pollution. Certain traffic intersections within the city will have street box mobile monitoring stations as part of the city's Mobility Network System through JRA.

4.4 *Cleaner Fuel Development*

Reducing the fuel sulphur content leads to a proportional decline in Sulphur Dioxide emissions and particles less than 10µm in diameter emissions also decrease. Use of unleaded gasoline, alternative fuels (such as bio fuels), and fuel additives should therefore be encouraged. Fuels switching plays a significant role in influencing the quality of emissions released. The use of blended fuels or pure bio fuels (e.g. eco-diesel) may lead to the direct decrease in greenhouse gas emissions. This is simply because these renewable fuels contain low content of carbon. Carbon dioxide and carbon monoxide are commonly known emissions in the transportation sector. These gases happen to be a concern both for local pollution and global climate change.

4.5 Vehicle Inspection and Maintenance

The City of Johannesburg is currently running an inspection and maintenance programme according to Atmospheric Pollution Prevention Act (APPA), in which diesel vehicles are tested using an idle test that measures smoke. Environmental Health is currently responsible for conducting these tests and performs random diesel vehicle emissions testing with 6420 vehicles being targeted annually.

The major shortcoming of this idle test method is that it only quantifies the amount of smoke and not the priority pollutants. The City of Johannesburg is planning to test for the priority pollutants and extend its inspections to Turbo Diesel and Petrol propelled vehicles. The Environment Management Department is currently in the market for instrumentation that will enable the analysis of both turbo diesel and petrol vehicle emissions. The proposed Vehicle Emissions Monitoring and Diesel Vehicle-sampling Plan (attached as Annexure C) stipulate in detail how the current vehicle diesel testing by EHP and other future vehicle emissions should be conducted.

The proposed testing points and frequency are still to be discussed with Environmental Health and JMPD for finalisation

4.6 Enforcement Monitoring and Compliance

4.6.1 Polluter Pay Principle

The City of Johannesburg should not be expected to shoulder all the costs associated with the implementation of a vehicle emission reduction strategy, and so cost recovery is important. This should be via the effective use of the Polluter Pays Principle, which will be considered in the formulation and for implementation of the Action Plan.

Clear regulations and by-laws will be established to support this principle, and enforcement of relevant legislations will be strengthened through the training and designation of Air Quality Officials as Environmental Management Inspectors (EMIs).

4.6.2 Environmental Management Inspectors (EMI)

A legislation amendment to the National Environmental Management Act, 107 of 1998 (NEMA) came into effect on 01 May 2005, establishing the Environmental Management Inspectorate. For the first time, this new network of Environmental Management Inspectors (EMIs) designated by the Minister and provincial MECs brings together environmental enforcement officials from national, provincial and municipal government, and will break through the traditional separation between the protection of different aspects of environment and will include air quality officers.

After being designated by the relevant national or provincial MEC, the Environmental Management Inspectors (EMI) will be responsible for enforcing NEMA, AQA or, potentially APPA on a temporary basis until it is repealed. An EMI will have all the power assigned in terms chapter 2, 5, 7 & 8 of the Criminals Procedure Act (No. 51 of 1977) to a police official who is not a commissioned officer. These chapters deal with search warrants, entering of premises, seizure, forfeiture and disposal of property connected with offences as well as powers relating to arrest, issuing of written notices to appear in court and the issuing of admission of guilt fines.

5. IMPLEMENTATION ARRANGEMENTS

The proposed Action Plan will have targets for short term, medium and long-term interventions. Prior to implementation of the plan, the following specific activities will be initiated:

5.1 Short-Term Interventions (6 Months – 1 year)

- a) The training and designation of Air Quality Officials as Environmental Management Inspectors (EMIs)

b) *Vehicle Emissions Monitoring and Diesel vehicle-sampling plan*
Establish a comprehensive vehicle emissions monitoring and diesel vehicle testing-sampling plan (See attached annexure A.)

- c) *Drafting and implementation of local by-laws aimed at supporting the introduction of other parameters and/or vehicle types in line with impending National vehicle Emission Standards and associated monitoring protocols.*

- d) *Creation of a forum that will have representatives from local, provincial and national government, the private sector, nongovernmental organisation, government agencies and academic institutions. The Forum's objective is to formulate and implement the integrated vehicle emission reduction strategy and coordinate the existing efforts of several institutions. The Forum's secretariat will be located at the Environmental Management department and is expected to hold meetings biannually.*

- e) Quantification of vehicle emissions for all types of vehicles. This will be facilitated through the proposed study of the on-board vehicle emission measurements. Together with the Atmospheric Dispersion modelling, establish air pollution patterns and distribution.

- f) Together with the Transportation Department and Joburg Roads Agency (JRA) identify traffic intersections of high congestion and place street box mobile stations to measure vehicle emissions in these intersections and between intersection points inline with BTR developments.

- g) Development of an awareness program
In addition to this the City of Johannesburg is planning an Air Quality Day on the 5th of June 2007 (World Environment Week) to educate the general public on Air Quality related issues. Also develop broad-based public transport awareness to promote use of public transport through initiatives such as the Public Transport month.

Create partnerships with relevant parties such as big business and provincial government departments within the City of Johannesburg in order to receive support on other initiatives such as **flexi-time** working hours in order to reduce peak hour traffic.

- h) On-board vehicle emission measurements study

The City is currently putting forth a proposal for the an on-board vehicle emission measurements to develop the City of Johannesburg emission factors and validate the emission factor models currently being developed for a DPhil at the University of Johannesburg. The objective of this study is collect on-road tailpipe emissions for Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x) and Carbon Monoxide (CO). The emission data collected will be used to characterise the actual on-road vehicle emissions. The result will indicate the effects of roadway design, traffic signal timing, traffic conditions and driving style/habits. This information will be used for transport planning and to inform the public on how to minimize pollution and contribute to a cleaner environment.

5.2 Medium-Term Interventions (1 Year – 2 Years)

- a) *The AQM function of the city will provide support to Transportation in the integration of cleaner technology requirements into the “metro bus” and Joburg vehicle fleet through liaison within the Johannesburg Transport and Air Quality Co-ordinating Committees.*
- b) *Vehicle Emissions Standards*
The AQM to develop benchmark standards for vehicle emissions based on International best practice Standards.
- c) *Cleaner Fuel*
Develop the City’s State of Energy Report that will quantify the fuel type and consumption within the city. In addition to this, Environment Management will develop Climate Change and Energy Plan/Strategy.

ANNEXURE B

PROPOSED PLAN OF ACTION OF THE DEVELOPMENT AND IMPLEMENTATION OF DOMESTIC EMISSIONS REDUCTION STRATEGY FOR THE CITY OF JOHANNESBURG

6 SCOPE AND OBJECTIVES

The objective of this report is to:

- Report on the progress of the development of the domestic emissions reduction strategy for the City of Johannesburg; and

7 BACKGROUND

According to Atmospheric Pollution and Prevention Act (Act 45 of 1965) and NEMA: Air Quality Act, Act no. 39 of 2004; local authorities are responsible for the regulation of emissions from domestic fuel combustion under the power conferred by the Minister of the DEAT. Emissions from domestic fuel combustion are controlled under (Smoke Control Regulation) and through the regulation of fuel-burning appliance installed in the legal authorities' area of jurisdiction.

To date the declaration of smokeless zones has been restricted to certain residential areas. Household fuel burning has continued in many of the formally black residential areas, including electrified area. Significant domestic fuel survey is associated with informal settlement.

Domestic fuel burning in the City of Johannesburg is noted as one of the major significant air pollution especially in the township area. The Department of Mineral and Energy (DME) formulated a strategy on the Integrated Clean Household Energy Strategy, which uses method classified as refining, replacing and reducing. In 2003, DME also piloted the top-down Basa njengo Magogo method (BnM) from ignition method at Orange Farm during the winter period.

The proposed strategic plan for development of the domestic emissions reduction for the City of Johannesburg will be aligned with the DME, Integrated Clean Household Energy Strategy.

Three of the City's monitoring stations; Alexandra, Jabavu and Orange farm are designed to monitor the impact of domestic fuel burning emissions. Table 1 below shows the types of analyser currently based in the three monitoring stations.

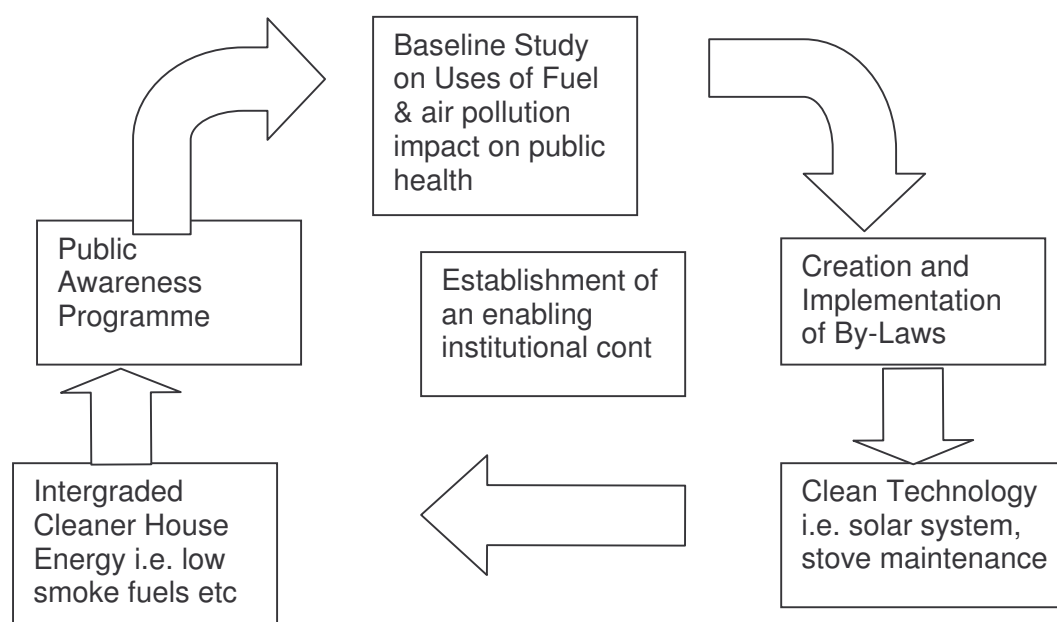
Table 1: Monitoring Station and Analyser Type for Domestic Emissions

Type of Analyser	Monitoring Stations		
	Alexandra	Jabavu	Orange Farm
Carbon Monoxide (CO)	•	•	
Particulate Matter (PM ₁₀)	•	•	
Particulate Matter (PM ₂₅)	•		
Sulphur Dioxide (SO ₂)	•		
Oxides of Nitrogen (NO _x)	•	•	
Volatile Organic Compounds	•		
Meteorological Parameters	•		
Ozone (O ₃)	•	•	

8 COMPONENTS OF THE PROPOSED DOMESTIC EMISSIONS REDUCTION STRATEGY

The proposed Action Plan comprises all the elements depicted in Figure 1 below. Each of these components is address to a large extent later in the document in addition to the five components below; establishment of an enabling institutional context is also a key to achieving the goal of emissions reduction from domestic fuel burning.

Figure 1: Elements of a Comprehensive Domestic Emissions Reduction Strategy



9 ESTABLISH AN ENABLING INSTITUTIONAL CONTEXT

In order to significantly collect research and summarise information for each component of a comprehensive domestic emissions reduction strategy, the action plan should be design based on the following institutional principle.

9.2 Institutional Aspects

9.2.1 Multi-Sectoral Approach

The activities aimed at reducing emissions from domestic fuel burning will be implemented through the involvement of multi-stakeholder group. The Air Quality Management (AQM) function within the City of Johannesburg will establish a Working Group on domestic fuel burning comprising representation from different stakeholder from DME, GDACE, DEAT, industries, business, community organisations and non-governmental organisation.

The main aim of the forum or working group will be to:

Review the various initiatives currently being implemented or proposed for implementation within the City.

- Review the emissions reduction options suitable for implementation within the City in the medium-term, e.g. energy efficient housing, low smoke fuels, stove maintenance and replacement.
- Consolidated efforts by drafting a coherent Strategy Implementation Programme and Budget for domestic fuel burning mitigation in the short –to medium -term.

A strong mechanism to bring together all stakeholders to participate in the formulation and implementation of the integrated domestic emissions reduction strategy will include a clear Terms of Reference (TOR) and various workshops to update the action plan.

9.2.2 Internal Institutional Context

The COJ Air Quality Co-ordinating Committee, with representatives from city's departments will be monitoring the implementation of the domestic emissions due burning of fuel.

10 METHODOLOGY/ACTION PLAN

The methodology of this plan will identify the project to be undertaken in order to reduce domestic emissions from burning of fuel. The domestic emissions reduction strategy is planned to be implemented in different phases as follows:

10.2 Baseline study on use of domestic fuel

The purpose of the baseline study is to undertake a baseline study that will provide information on the use of fuel such as coal, electricity, paraffin and woods as source of energy in the City of Johannesburg. The study will also look at the tyre burning hot spots and other open fire burning within the City. The study will use the primary information from DME guidelines on energy efficiency, and pre The City of Johannesburg domestic emissions reduction strategy will be aligned with the DME

Strategy on energy efficiency. This will be in a medium-term on emissions reduction options that will consider energy efficient housing, low smoke fuels, solar system, stove maintenance and replacement.

Once the baseline study is complete for a specific area, which will be part of the implementation of either of the alternative combustion method:

- a). Basa njengo Magogo technology , a top-down fire ignition method;
- b). Manufacturing and distribution of an acceptable, affordable Low -smoke fuel; or
- c).Promotion of housing insulation and energy efficient housing design.

The baseline study will also determine the status quo on the usage of domestic fuel in the City of Johannesburg. These would assist on the identification of the domestic fuel burning hot spots and prioritise it.

10.3 Creation and implement of by-law

The City recognises the need for by-laws to formulate the reduction of emissions from burning of domestic fuel. The by-law will be aligned temporarily with the Atmospheric Pollution Prevention Act, Act 45 of 1965 until it is repealed and thereafter to part 4 of the Air Quality Act of 39 of 2004.

10.4 Clean Fuel Technology

The City of Johannesburg domestic emissions reduction strategy will be aligned with the DME Strategy on energy efficiency. This will be in a medium-term on emissions reduction options that will consider energy efficient housing, low smoke fuels, solar system, stove maintenance and replacement.

10.5 Integration Clean Household Energy Strategy

The City is in the process of developing a project proposal on demonstrating an alternative fire lighting methods, Basa njengo Magogo and Low-smoke Imbawulas during the coming winter months of 2007 in Jabavu and Alexandra. Previously these have been implemented in Orange Farm and other parts of Soweto. The production and distribution of these methods will create jobs for the unemployed, but on short-term bases.

10.6 Develop an Air Quality Awareness Programme

A compressive awareness programme on issues of air quality management is currently under development. This program will also focus on mitigation measures which are currently being implemented within the City, that is, Low-smoke Imbawulas and Basa njengo Magogo methods. These will be implemented in partnership with the Alexandra Renewal Project and through the DANIDA project. Public awareness of severity of air pollution and its deleterious effect on public health will encourage people to reduce emissions from domestic fuel burning especially in poor areas.

The AQM function will also seek partnerships with NGO, Youth Services and other stakeholders within the community on the implementation of the projects. This will

help on the sustainability and promotion of the project as well as creation of short-term employment for the youth and unemployed individuals.

In addition to this awareness programme the City of Johannesburg is planning an Air Quality Day in the 5th of June 2007 (World Environment Week) to educate the public on Air Quality related issues. This will be accompanied by road shows and various demonstrations in Alexandra, Jabavu and Orange Farm.

10.7 Environmental Management Inspectors (EMI)

Officials in municipalities may be designated as EMIs by the relevant provincial MEC. After being designated, the Environmental Management Inspectors (EMI) will be responsible for enforcing NEMA, AQA or, potentially APPA on a temporary basis until it is repealed. An EMI will have all the power assigned in terms chapter 2, 5, 7 & 8 of the Criminals Procedure Act (No. 51 of 1977) to a police official who is not a commissioned officer. These chapters deal with search warrants, entering of premises, seizure, forfeiture and disposal of property connected with offences as well as powers relating to arrest, issuing of written notices to appear in court and the issuing of admission of guilt fines.

11 IMPLEMENTATION ARRANGEMENT

The proposed action plan will have targets for short-term, medium and long-term interventions.

6.1 Short-term actions (6-month)

- Air Quality Officials trained and designated as Environment Management Inspectors (EMIs);
- Establishment of a domestic emissions Working Group, which will have representatives from local, provincial and national government, the private sector, non-government organisation, government agencies and academic institutions;
- Conduct Baseline Study as part of the implementation of the domestic emissions mitigation programs in Alexandra and Jabavu that will provide information on the use of domestic fuel and air pollution impact on public health;
- Implement two domestic emission mitigation programs one in Alexandra and the other in Jabavu, Soweto;
- Develop and distribute education awareness material related to issues of air pollution;
- Conduct road shows during the demonstration of the two mitigation programs in Alexandra and Jabavu

6.2 Medium and Long-term actions (1 – 3years)

- Review the emissions reduction options such as energy efficient housing, solar water heating, low-smoke fuels, stove maintenance and replacement;
- Develop and implement by-laws;
- Develop COJ State of Energy Report, Climate Change and Energy Strategy

