
GOVERNMENT NOTICE

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

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NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004 (ACT NO. 39 OF 2004)

AMENDMENT TO THE 2007 NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT IN THE REPUBLIC OF SOUTH AFRICA

I, Bomo Edith Edna Molewa, Minister of Water and Environmental Affairs, hereby amend the 2007 National Framework for Air Quality Management in the Republic of South Africa, in terms of section 7(5) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), set out in the Schedule hereto.



BOMO EDITH EDNA MOLEWA
MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

SCHEDULE



THE 2012 NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT IN THE REPUBLIC OF SOUTH AFRICA

As contemplated in Section 7 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) and serving as the Department of Environmental Affairs' Air Quality Management Plan as contemplated in Section 15(1) of the Act.

December 2012

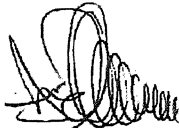
FOREWORD

It has been seven years since the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (The AQA) came into effect. Section 7 of the AQA requires the Minister to establish a National Framework for Air Quality Management. In line with that, the 2007 National Framework for Air Quality Management was established and it was a milestone in government's attempts to introduce a new efficient and effective air quality management regime in South Africa. With its establishment, all interested South Africans contributed to the establishment of the first national plan to clear our skies of pollution and ensure ambient air that is not harmful to health and well-being for the first time.

The year 2012 marks five years since the establishment of the 2007 National Framework and as the AQA stipulates, I reviewed the National Framework at the five year interval following a consultative and participatory process. The 2007 National Framework largely used cautious language as most of the work was envisaged while providing an excellent foundation for future frameworks. Although, there is some caution where new projects still need to be undertaken, the 2012 National Framework is more emphatic and has drawn largely on experiences gained over the years of the implementation of the inaugural 2007 National Framework.

During this five year period of the implementation of the 2007 National Framework, there have been major achievements in air quality management. To mention a few, air quality that is not harmful to health and well-being has been defined through the establishment of national ambient air quality standards; three national priority areas have been declared (Vaal Triangle Airshed, Highveld and Waterberg-Bojanala) and plans to improve and maintain good air quality in these areas are underway; and the South African Air Quality Information System (SAAQIS) continues to provide web-based access to national air quality information. Furthermore, the Atmospheric Pollution Prevention Act (Act No. 45 of 1965) was repealed and the AQA came into full effect on 01 April 2010. With this, atmospheric emission licensing authorities as stipulated in Section 36 of the AQA took up the licensing function. Furthermore, the national department continues to develop and maintain necessary tools for the effective and efficient implementation of the licensing function.

Finally, to provide context and accountability for measuring progress in the implementation of the Act and its National Framework in all the spheres of government, the department continues to publish annual National Air Quality Officer's Reports. The National Frameworks and all the work conducted in air quality management to date are products of the hard work and dedication of all South Africans and I take this opportunity to thank everyone who was involved.



BOMO EDITH EDNA MOLEWA
MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

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ABBREVIATIONS

AEL	Atmospheric Emission Licence
APPA	Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965)
AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
AQMP	Air Quality Management Plan
AQO	Air Quality Officer
BAT	Best Available Technology/Technique
BPEO	Best Practical Environmental Option
CAPCO	Chief Air Pollution Control Officer
CBA	Cost-Benefit Analysis
CDM	Clean Development Mechanism
DDT	Dichlorodiphenyltrichloroethane
DEA	The Department of Environmental Affairs
DMR	Department of Mineral Resources
DAFF	Department of Agriculture, Fisheries and Forestry
DoE	Department of Energy
DoH	Department of Health
DoL	Department of Labour
DRDLR	Department of Rural Development and Land Reform
DoT	Department of Transport
DCG	Department Cooperative Governance
DWA	Department of Water Affairs
EIA	Environmental Impact Assessment
EIP	Environmental Implementation Plan as defined in the NEMA
EMIs	Environmental Management Inspectors
EMP	Environmental Management Plan as defined in the NEMA
GHGs	Greenhouse Gases
IDP	Integrated Development Plan
IP&WM	Integrated Pollution and Waste Management
MEC	Member of the provincial Executive Council
MINMEC	A standing intergovernmental body consisting of at least a Cabinet member and members of the provincial Executive Councils responsible for functional areas similar to those of the Cabinet member
NACA	National Association for Clean Air
NEAF	National Environmental Advisory Forum as defined in the NEMA
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
PM	Particulate matter
POPs	Persistent Organic Pollutants
QA	Quality assurance

QC	Quality control
RoD	Record of Decision in respect of an environmental impact assessment application
SAAQIS	South African Air Quality Information System
SADC	Southern African Development Community
SAQA	South African Qualifications Authority
UNFCCC	United Nations Framework Convention on Climate Change, adopted in New York on 9 May 1992
VOCs	Volatile Organic Compounds
WHO	World Health Organization

GLOSSARY AND DEFINITIONS

Air Quality Management Plan	means a plan referred to in section 15 of AQA
Air Quality Officer	means an officer appointed in terms of section 14 of AQA as an air quality officer
Ambient air quality standards	values that define targets for air quality management and establish the permissible amount or concentration of a particular substance in or property of discharges to air based on what a particular receiving environment can tolerate without significant deterioration
Atmospheric Emission Licence	means an atmospheric emission licence contemplated in Chapter 5 of AQA
Bioaccumulation	occurs when an organism absorbs a toxic substance at a rate greater than that at which the substance is lost, i.e. it accumulates the substance over time. Thus, the longer the biological half- life of the substance the greater the risk of chronic poisoning, even if environmental levels of the toxin are very low.
Clean technology	includes the wind power, solar power, biomass, hydropower, biofuels, information technology, electric motors, lighting, and many other appliances that are now more energy efficient.
Clean fuels	any fuel that does not contain heavy metals and having a maximum benzene content of 3%, aromatics content of 42%, sulphur level of 500ppm and a maximum of oxygenate content of ethers and selected alcohols of less than 2.7%. Diesel that contains less than 500ppm of sulphur will also be included
Controlled emitter	means any appliance or activity declared as a controlled emitter in terms of section 23 of AQA
Controlled fuels	means any fuel as defined under Section 26 of AQA
Cost- Benefit Analysis	the process that involves weighing the total accepted costs against the total expected benefits in order to choose the best option
Ecological degradation	is related to the deterioration of the environment both in terms of quantity and extinction of some wildlife species and quality like air, water or land pollution
Emission inventory	a listing or register of the amount of pollution entering the atmosphere from all sources within a given time and geographic boundaries
Emission standard	a specific limit to the amount of pollutant that can be released to the atmosphere by a specified source
Environmental Management Systems	a part of the management system of an organisation in which specific competencies, behaviours, procedures and demands for the implementation of an environment policy are defined
Fugitive sources	sources of emissions that are difficult to identify and quantify. As the name implies, fugitive emissions include gases that "escape" from badly managed or maintained processes, e.g. leaky pipe-work
Greenhouse gases (GHG)	means gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation, and includes carbon dioxide, methane and nitrous oxide
Homologated	an item that is accredited or approved by an authority
ISO 14001	a system of environmental management standards that assist organisations to minimise the negative impacts, aid compliance and facilitate continual improvement
Listed activity	means any activity listed in terms of section 21 of AQA
Mitigation measures	efforts to attempt to prevent pollution or to reduce the effects of pollution that occur

Mobile source	means a single identifiable source of atmospheric emission which does not emanate from a fixed location
Non-point source	means a source of atmospheric emissions which cannot be identified as having emanated from a single identifiable source or fixed location, and includes veld, forest and open fires, mining activities, agricultural activities and stockpiles
Offensive odour	means any smell which is considered to be malodorous or a nuisance to a reasonable person
Ozone- depleting substance	means a substance having chemical or physical properties which, by its release into the atmosphere, can cause a depletion of the stratospheric ozone layer; i.e. chlorofluorocarbon (CFC) compounds, commonly called freons, and of bromofluorocarbon compounds known as halons CFCs, halons and other contributory substances are commonly referred to as ozone- depleting substances
Persistent organic pollutants (POPs)	organic compounds that are resistant to environmental degradation through chemical, biological, and photolytic processes. Because of this, they have been observed to persist in the environment, to be capable of long-range transport, bioaccumulate in human and animal tissue, bio-magnify in food chains, and to have potential significant impacts on human health and the environment i.e. aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, polychlorinated biphenyls, polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans, and toxaphene.
Point source	means a single identifiable source and fixed location of atmospheric emission, and includes smoke stacks and residential chimneys
Priority area	means an area declared as such in terms of section 18 of AQA
Priority area air quality management plan	means a plan referred to in section 19 of AQA
Provisional atmospheric emission licence	means a provisional atmospheric emission licence contemplated in Chapter 5 of AQA
Quality assurance and control	activities that determine the level of confidence in produced data and reduce error
Stratospheric ozone depletion	describes the observable decline of stratospheric ozone layer as a result of anthropogenic activities
Sustainable development	Balancing the fulfilment of human needs with the protection of the natural environment so that these needs can be met not only in the present, but in the indefinite future. The term was used by the Brundtland Commission which coined what has become the most often quoted definition of sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs.

THE 2012 NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT IN THE REPUBLIC OF SOUTH AFRICA

1. INTRODUCTION

1.1 Background

The requirements for a National Framework on Air Quality Management in South Africa are stipulated in Section 7 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), herein after referred to as the Air Quality Act or the AQA. The AQA requires the Minister, by notice in the Gazette, to establish a National Framework for achieving the objectives of the AQA. To this end, the minister published the 1st National Framework in 2007. As an inaugural framework, the 2007 framework was a less technical document that aimed at unpacking the AQA in some detail to ensure that all South Africans understand the intentions of the Act. The idea was that, with the department having initiated a number of projects and the rapidly evolving air quality management sector, the framework will evolve through the review processes. The provisions for the review of the National Framework are given in section 7 (5)(b) of the Act which states that the framework must be reviewed by the Minister at intervals of not more than five years. Thus, since 2012 marks the fifth year since the publication of the previous framework, it was necessary to undertake the review that led to the development of this framework.

1.2 Overview

The Air Quality Act of South Africa is pivoted on the Bill of Rights contained in the Constitution of South Africa. The Bill enshrines the rights of all people in the country and affirms the democratic values of human dignity, equality and freedom. The state must respect, protect, promote and fulfil the rights in the Bill of Rights.

Section 24 of the Constitution states that everyone has the right:

- a. *To an environment that is not harmful to their health or well-being; and*
- b. *To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -*
 - i *prevent pollution and ecological degradation;*
 - ii *promote conservation; and*
 - iii *secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development*

In order to give effect to this right in the context of air quality, it is necessary to ensure that levels of air pollution are not harmful to human health or well-being. It follows that the setting of ambient air quality standards is necessary, as well as mechanisms to ensure that ambient air quality standards are achieved and maintained. Hence, the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) provides an objectives-based approach to the management of air quality at different governance and operational levels and is the legislative means to ensuring that the rights described above are upheld. Therefore, in implementing the AQA it is necessary to ensure that there is clarity on governance and technical objectives so air quality management measures are implemented in a cohesive, coherent and uniform manner that ensures the most benefit for the least cost through efficient and effective use of resources.

1.3 Purpose and scope of the National Framework

The purpose of the National Framework, as stated in Paragraph 1.1, is to achieve the objectives of the AQA, and as such the National Framework provides a medium- to long-term plan of the practical implementation of the AQA.

The framework must provide mechanisms, systems and procedures to promote holistic and integrated air quality management through pollution prevention and minimisation at source, and through impact management with respect to the receiving environment from local scale to international issues. Hence, the National Framework provides norms and standards for all technical aspects of air quality management.

Section 7(1) of the AQA requires the National Framework to include the following:

- Mechanisms, systems and procedures to –
 - attain compliance with ambient air quality standards;
 - give effect to the Republic's obligations in terms of international agreements;

THE 2012 NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT IN THE REPUBLIC OF SOUTH AFRICA

- National norms and standards for –
 - the control of emissions from point and non-point sources;
 - air quality monitoring;
 - air quality management planning;
 - air quality information management; and
- Any other matter which the Minister considers necessary for achieving the object of the AQA.

Section 7(2) of the AQA requires that the norms and standards established in the National Framework are aimed at ensuring:

- Opportunities for public participation in the protection and enhancement of air quality;
- Public access to air quality information;
- The prevention of air pollution and degradation of air quality;
- The reduction of discharges likely to impair air quality, including the reduction of air pollution at source;
- The promotion of efficient and effective air quality management;
- Effective air quality monitoring;
- Regular reporting on air quality; and
- Compliance with the Republic's obligations in terms of international agreements.

The National Framework, in terms of Section 7(3) of the AQA:

- binds all organs of state in all spheres of government; and
- may assign and delineate responsibilities for the implementation of the AQA amongst:
 - The different spheres of government; and
 - Different organs of state.

1.4 Guiding principles

The National Framework is informed by the principles set out in Section 2 of the NEMA.

“SMART” principles are also relevant to goal and objective setting in air quality management. SMART principles are:

- **Specific:** Goals should be detailed and should relate to narrowly-defined tasks.
- **Measurable:** Goals should have defined end-points and a mechanism for benchmarking progress.
- **Achievable:** Goals should be set within the context of practical limitations.
- **Realistic:** Goals should acknowledge the current situation and aim to reach air quality goals that are protective of the right to an environment that is not harmful to health and well-being.
- **Time-related:** Time constraints should be factored into goal-setting exercises, and time frames provided for achieving goals that are set.

1.5 Structure of the document

- **Chapter 1** provides the purpose of the National Framework and its scope.
- **Chapter 2** provides insights into the legislative and policy context relating to air quality management.
- **Chapter 3** describes the roles and responsibilities of the stakeholders in respect of air quality management.
- **Chapter 4** outlines the integrative air quality governance cycle emphasising the dependence of successful implementation on horizontal and vertical integration.
- **Chapter 5** discusses problem identification and prioritisation, norms and standards for the setting of ambient air quality standards, for Listed Activities and emission standards, Controlled Emitters, Controlled Fuels and Air Quality Management Plans (AQMPs) and provides information on regulations, compliance and enforcement, air quality impact assessments and the linkages between the approval process for Environmental Impact Assessments (EIAs) and the application for an Atmospheric Emission Licence (AEL).

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The underpinning principles of public participation, capacity development and information dissemination are also covered in Chapter 5.

- **Chapter 6** discusses the National Framework review process.

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2. LEGISLATIVE AND POLICY CONTEXT

2.1 Introduction

The management of air quality in South Africa is influenced by policy and legislation developed at international, national, provincial and municipal levels. National policy provides the critical reference point for air quality management and is discussed in detail in Paragraph 2.2. Provincial legislation expands on the national approach and can be used to address particular air quality issues, although there are currently no examples of provincial air quality legislation within South Africa. Municipal authorities influence air quality governance through the introduction of by-laws, which are legally enforceable within the municipal authority's jurisdiction (Paragraph 2.3). In an international context, trans-boundary air pollution and global air quality impacts are relevant. South Africa has obligations under multi-lateral environmental agreements, which are discussed in Paragraph 2.4. Some progress towards regional air pollution agreements within the southern African context has recently been made and is discussed in Paragraph 2.4.4.

2.2 National policy

2.2.1 Background

Since 1965, the approach to air pollution control in South Africa was informed and driven by the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965) (hereinafter "the APPA"). The APPA did not set targets or standards that would permit the achievement of an environment that is not harmful to health or well-being. This requirement is now contained in the Bill of Rights in the Constitution of the Republic of South Africa, 1996, (see Paragraph 1.2 of this document). The Constitution is thus the pivotal piece of legislation that informs all environmental legislation.

Given this environmental right, it was clear that air quality legislation that included an underlying drive towards cleaner air was needed. Following on from this, the publication in May 2000 of a critical policy document, the White Paper on Integrated Pollution and Waste Management for South Africa – A Policy on Pollution Prevention, Waste Minimisation, Impact Management and Remediation (IP&WM, 2000) marked a turning point for pollution and waste governance in South Africa. From an air quality management perspective, the new policy represented a paradigm shift in approach and necessitated the introduction of a new approach to air quality management, which is detailed in Paragraph 2.2.3.

The new national air quality legislation forms one of a suite of laws that are framed within overarching environmental management legislation, which is outlined in Paragraph 2.2.2 as a precursor to the discussion on national air quality legislation.

2.2.2 National Environmental Management Act, 1998 (Act No. 107 of 1998) (the NEMA)

The NEMA as amended provides the legislative framework for environmental management in South Africa. Its purpose is to provide for cooperative environmental governance, and it defines principles for decision-making on matters affecting the environment. Some of the key principles of the NEMA were mentioned in Paragraph 1.4. Further principles from Chapter 1 of the NEMA that are relevant to air pollution are:

- *pollution avoidance or minimisation* - that pollution and degradation of the environment must be avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- *waste avoidance and consideration of life cycle assessment* - that waste is avoided, or where it cannot be altogether avoided, it must be minimised and re-used or recycled where possible or disposed of in a responsible manner;

The NEMA further provides for the establishment of the fora or advisory committees as a body to encourage stakeholder participation (Section 3A of the NEMA). Cooperative governance is outlined in Chapter 3 of the NEMA and mechanisms for conflict resolution in Chapter 4. Integrated Environmental Management is used as a guiding philosophy to ensure that impacts are considered across different spheres of influence, including social dimensions (Chapter 5 of the NEMA). Chapter 6 of the NEMA takes cognisance of obligations in terms of international agreements, while Chapter 7 provides legislative means for compliance and enforcement. Methods of compliance, enforcement and protection within the jurisdiction of the NEMA are detailed, and the process for developing Environmental Management Cooperation Agreements, which are a mechanism for cooperative governance, is outlined in NEMA Chapter 8.

The NEMA provides government with the regulatory tools to implement the National Environmental Management Policy. The AQA forms one of the many pieces of legislation that fall under the ambit of the NEMA.

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2.2.3 National Environmental Management: Air Quality Act, 2004 (the AQA)

The AQA represents a distinct shift from exclusively source-based air pollution control to holistic and integrated effects-based air quality management. It focuses on the adverse impacts of air pollution on the ambient environment and sets standards for pollutant levels in ambient air. At the same time it sets emission standards to minimise the amount of pollution that enters the environment.

The objects of the legislation as stated in Chapter 1 are as follows:

- to protect the environment by providing reasonable measures for -
 - the protection and enhancement of the quality of air in the Republic;
 - the prevention of air pollution and ecological degradation; and
 - securing ecologically sustainable development while promoting justifiable economic and social development; and
- generally to give effect to Section 24(b) of the Constitution of the Republic of South Africa, 1996, in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

The National Framework is one of the significant functions detailed in Chapter 2 of the AQA. The framework serves as a blueprint for air quality management and aims to achieve the air quality objectives as described in the preamble of the AQA.

Chapter 3 of the AQA covers institutional and planning matters summarised as follows:

- The Minister may establish a National Air Quality Advisory Committee as a subcommittee of the NEAF established in terms of the NEMA;
- Air Quality Officers (AQOs) must be appointed at each level of government (national, provincial, municipal);
- Each national department or province preparing an Environmental Implementation Plan (EIP) or Environmental Management Plan (EMP) in terms of the NEMA must include an Air Quality Management Plan (AQMP). Each municipality preparing an Integrated Development Plan (IDP) must include an AQMP;
- The contents of the AQMPs are prescribed in detail;
- Each organ of state is required to report on the implementation of its AQMP in the annual report submitted in terms of the NEMA.

In Chapter 4 of the AQA, air quality management measures are outlined in terms of:

- the declaration of Priority Areas, where ambient air quality standards are being, or may be, exceeded;
- the listing of activities that result in atmospheric emissions and which have or may have a significant detrimental effect on the environment;
- the declaration of Controlled Emitters;
- the declaration of Controlled Fuels
- other measures to address substances contributing to air pollution, that may include the implementation of a Pollution Prevention Plan or an Atmospheric Impact Report;
- the requirements for addressing dust, noise and offensive odours.

Licensing of Listed Activities through an Atmospheric Emission Licence (AEL) is addressed in Chapter 5 of the AQA, international air quality management in Chapter 6 and offences and penalties in Chapter 7.

2.2.4 Other related national legislation

There are many other pieces of national legislation that impact either directly or indirectly on the implementation of the AQA. These have been captured in Table 1 showing the links and relevance to air quality management in general and the implementation of the AQA in particular.

Table 1: National legislation directly or indirectly linked to the management of air quality

Legislation	Air quality management links	Relevance
National Key Points Act, 1980	<ul style="list-style-type: none"> • Provides for the protection of significant State or 	Many significant emitters have been

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Legislation	Air quality management links	Relevance
(Act No. 102 of 1980)	<ul style="list-style-type: none"> private assets, relative to national security Regulates the flow of information regarding Key Point activity Allows for measures to be implemented to maintain the security of a Key Point 	classified as National Key Points, and the Act is used to regulate access to information
Protection of Information Act, 1982 (Act No. 84 of 1982)	<ul style="list-style-type: none"> Covers the protection of information related to defence, terrorism and hostile organisations Information regarding these activities in any form is prohibited access and cannot be disseminated Prohibited places can be declared, which also fall under this protection 	Can be used to regulate access to information on air quality
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	<ul style="list-style-type: none"> Regulates burning of veld, except in state forests Allows for control and prevention of veld fires through prescribed control measures Allows for control measures to be prescribed regarding the utilisation and protection of veld that has been burned 	Addresses controlled burning, which directly impacts on ambient air quality
Local Government Municipal Structures Act, 1988 (Act No. 117 of 1998)	<ul style="list-style-type: none"> Establishes municipal categories Designates functions and powers of municipalities 	Specifies that responsibility for integrated development planning, within which air quality management plans must reside, rests with district municipalities
National Veld and Forest Fires Act, 1988 (Act No. 101 of 1998)	<ul style="list-style-type: none"> Purpose is to combat and prevent veld, forest and mountain fires Fire Protection Agency can be designated for control and has power to conduct controlled burning with respect to conservation of ecosystems and reduction of fire danger Lighting, maintenance and using of fires is regulated 	Addresses controlled burning, which directly impacts on ambient air quality
National Water Act, 1998 (Act No. 36 of 1998)	<ul style="list-style-type: none"> Establishes strategy to address management of water resources including protection and use of water Establishes management agencies Provides for pollution prevention and remediation, including land-based sources Addresses emergency incidents, including land-based pollutant sources 	Pollution sources from land-based activities that impact on water resources
Local Government Municipal Systems Act, 2000 (Act No. 32 of 2000)	<ul style="list-style-type: none"> Provides a framework for planning by local government Describes contents of an integrated development plan and the process to be followed 	Air quality management plans are to be incorporated into integrated development plans
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)	<ul style="list-style-type: none"> Provides for the health and safety of persons at work, including atmospheric emission from workplaces Sets out certain general duties of employers and to their employees Empowers the Minister of Labour to make regulations regarding various matters Further require any employer to ensure that their activities do not expose non-employees to health hazards 	The air emissions from the workplace environment has atmospheric quality implications

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Legislation	Air quality management links	Relevance
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000)	<ul style="list-style-type: none"> Facilitates constitutional right of access to any information whether held by State or another person (if it is related to exercise or protection of a right) Details the means to access records, whether public or private Does not detract from provisions in the NEMA Section 1 and Section 2 Allows for denial of access based on defence, security or international relations 	Promotes access to information, including air quality information, although it has provisions for refusing access
Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000)	<ul style="list-style-type: none"> Details the administrative procedure to be followed when carrying out an administrative action, and the process of review 	Formal interactions between government departments, the public and other stakeholders by informing due process in decision-making
International Trade Administration Act, 2002 (Act No. 71 of 2002)	<ul style="list-style-type: none"> Establishes the International Trade Administration Commission as an administrative body Regulates the import and export of controlled substances 	Import and export control related to ozone-depleting substances through the declaration of controlled substance
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)	<ul style="list-style-type: none"> States that it is necessary to submit an environmental management programme if applying for a mining right, and an environmental management plan if applying for reconnaissance permission The contents of such documents are specified and are subject to the approval of the Minister of Minerals and Energy The Minister is required to consult with any state department which administers any law relating to matters that affect the environment and must request the comments of that department on the environmental plan or programme being considered Regulations promulgated in 2004 state that the holder of a right or permit must comply with legislation relating to air quality management and control 	Grants the decision-making power on matters potentially affecting the air environment to the Minister of Minerals and Energy in the case of mining activities but includes a need to comply with the AQA
National Health Act, 2003 (Act No. 61 of 2003)	<ul style="list-style-type: none"> Makes reference to the performing of environmental pollution control by municipalities. Municipal health services are defined as including the responsibility for environmental pollution control The responsibility for municipal health services rests with metropolitan and district municipalities 	Air quality management falls within environmental pollution control
Intergovernmental Relations Framework Act, 2005 (Act No. 13 of 2005)	<ul style="list-style-type: none"> Determines a framework to facilitate interaction and coordination, in the implementation of legislation, between spheres of government Principles of participation, consultation and consideration are included Establishes structures for coordination at different spheres of government Establishes an implementation protocol mechanism as a tool for coordination Provides mechanisms for conflict resolution, including the appointment of a facilitator 	Provides mechanisms for coordination and conflict resolution across spheres of government in aspects of legislative implementation

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Legislation	Air quality management links	Relevance
Mineral and Petroleum Resources Development Act Amendment 2008, (Act 49 of 2008)	<ul style="list-style-type: none"> General amendments are made to change the requirement for an EMP to that of an environmental authorisation in mining and prospecting For authorisation, scoping, EIA, specialist reports, an EMP is needed Makes provision for monitoring and auditing of environmental performance Basic assessment report and standard EMP necessary with application Stockpiles require compliance monitoring and decommissioning Closure certificate authorisation is dependent on approval from other environmental departments that potential environmental impacts have been addressed The holder of a mining right or permit must comply with laws relating to air quality management and control 	The Amendment strengthens controls on emissions from mining activities to the atmosphere and includes an obligation to consider the AQA
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	<ul style="list-style-type: none"> Promotes cleaner technology, cleaner production and consumption practices for pollution minimisation Addresses impacts of waste disposal on the environment, including air Provides for numerous measures related to waste disposal including standards, integrated waste management planning, municipal waste management, priority wastes, licensing, waste management information system 	Closely linked through issues of emissions to the air from thermal treatment activities and landfill sites
Disaster Management Act, 2002 (Act No. 57 of 2002)	<ul style="list-style-type: none"> Provides for the declaration of certain areas as disaster areas; Disaster is defined as including the damage to the environment; Provides for an integrated and co-ordinated disaster management policy that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery; Provides for the establishment of national, provincial and municipal disaster management centres. 	Certain air pollution episodes can be disastrous. Inversely, certain disasters result in air pollution.
Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice, 2006 (Act No. 19 of 2006)	<ul style="list-style-type: none"> Provides national and international recognition of the reliability of data produced by conformity assessment bodies involved in air quality management. 	An accreditation service can be used to provide confidence to stakeholders regarding the reliability of data produced by conformity assessment bodies.

2.3 Municipal by-laws

According to Section 156(2) of the Constitution of the Republic of South Africa, 1996, a municipality may make and administer by-laws for the effective administration of matters that it has the right to administer. Air pollution is listed as a matter in which local government has authority and national or provincial government may not compromise or impede a municipality's right to exercise its powers or perform its functions. Within this context, municipalities may develop by-laws that deal with air pollution. The Model Air Pollution Control By-laws have been developed and published by the Minister in on the 2nd of July 2010 (Gazette No. 3342; Notice 579). See paragraph 5.8.2 of this document.

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2.4 International policy

South Africa has ratified several multilateral environmental agreements relating to air quality and is obligated to implement the conditions of these agreements.

South Africa's commitments in the international arena address three major air quality issues, namely, greenhouse gases and associated climate change; stratospheric ozone depletion and persistent organic pollutants (POPs).

2.4.1 Greenhouse gases and climate change

2.4.1.1 *United Nations Framework Convention on Climate Change (UNFCCC)*

The United Nations Framework Convention on Climate Change (UNFCCC) provides the framework for addressing climate change as a global issue and was founded in 1992, and came into force in 1994. It provides a broad consensus for establishing institutions and practices to address climate change by introducing processes of on-going review, discussion and information exchange. The UNFCCC also differentiated between the responsibilities of developed and developing countries, by designating Annex 1 and Non-Annex 1 status, respectively, to parties to the convention. Developed countries have greater commitments as stated in Annex 4 of the Convention. The framework convention is expanded on through protocols, of which the Kyoto Protocol is the most recent and well recognised.

South Africa ratified the UNFCCC in August 1997, and is classified as a non-Annex 1 Party, or a developing country. South Africa has obligations as stated in Article 4 Paragraph 1 of the UNFCCC, including the preparation of the National Communication, which incorporates an inventory of greenhouse gases (GHGs) not covered by the Montreal Protocol.

2.4.1.2 *Kyoto Protocol*

The Kyoto Protocol was adopted in December 1997 at the meeting of the Conference of the Parties to the UNFCCC, and came into force in February 2005. The protocol establishes the commitment of developed (Annex 1) countries to reduce GHG emissions by 5.2%, compared to 1990 levels, for the period 2008 – 2012. There are three principle mechanisms used to facilitate GHG emission reduction, including, the clean development mechanism (CDM), joint implementation, and international emissions trading. The purpose of the clean development mechanism is to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments.

South Africa acceded to the protocol in 2002 and it came into force in 2005. However, South Africa's status as a non-Annex 1 country implies no binding commitment to cap or reduce GHG emissions. South Africa, as a developing country, is in a position to benefit from the CDM.

2.4.1.3 *Obligations for South Africa according to the UNFCCC related to air quality*

In terms of the provisions of the UNFCCC and the Kyoto Protocol, the Republic must:

- Prepare and periodically update a national inventory of greenhouse gas emissions and sinks.
- Formulate and implement national and, where appropriate, regional programmes to mitigate climate change and facilitate adequate adaptation to climate change.
- Promote and cooperate in the development, application and diffusion of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases.

2.4.1.4 *National Climate Change Response White Paper*

The Government of South Africa has published a National Climate Change Response White Paper (October 2011) that presents the Government's vision for an effective climate change response and the long-term, just transition to a climate-resilient and lower-carbon economy and society. The Policy has two objectives:

- To effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity; and
- To make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.

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In terms of strategic priorities, the White Paper sets out South Africa's climate change response strategy to achieve the National Climate Change Response Objective in a manner consistent with the outlined principles and approach and which is structured around the following strategic priorities: risk reduction and management; mitigation actions with significant outcomes; sectoral responses; policy and regulatory alignment; informed decision making and planning; integrated planning; technology research, development and innovation; facilitated behaviour change; behaviour change through choice; and resource mobilisation.

2.4.2 Stratospheric ozone depletion

2.4.2.1 *The Vienna Convention for the Protection of the Ozone Layer*

The Vienna Convention was agreed upon in 1985, with countries expressing commitment to conduct research and share information on stratospheric ozone depletion. The convention focused on the protection of human health and the environment from adverse effects resulting from anthropogenic influences on ozone destruction. Chemicals responsible for ozone destruction were also identified and monitored. The convention provided the framework for a binding agreement on addressing ozone depletion. The convention is also viewed as significant as it demonstrates the cooperation of international governments to address a global environmental issue. South Africa acceded to the convention in January 1990.

2.4.2.2 *The Montreal Protocol on Substances that deplete the Ozone Layer*

The Montreal Protocol was signed in September 1987 as a means of addressing the production, supply and use of ozone-depleting substances. It puts in place procedures for the phasing out of chlorofluorocarbons and halons. The schedules for phase-out and obligations take cognisance of developed and developing country status, designated as Article 5 and non-Article 5 parties respectively. The protocol was significantly amended in 1990 (London Amendment) and 1992 (Copenhagen Amendment), with further amendments made in 1997 (Montreal Amendment) and 1999 (Beijing Amendment). The amendments served to include additional obligations and additional ozone-depleting substances, such as methyl bromide, hydrochlorofluorocarbons and methyl chloroform, and also to tighten schedules of compliance.

South Africa has ratified the protocol in January 1990, and acceded to all the amendments. South Africa is currently in full compliance with the conditions of the protocol.

Obligations

Parties are required to reduce or eliminate their production and consumption of ozone depleting substances (ODS) identified in the Protocol. (Consumption is defined as production plus imports minus exports of controlled substances).

Trade measures

- Parties are required to ban the import and export of controlled substances, as well as of products relying on the use of these substances, from and to States not party to the Protocol;
- Parties are to implement a licensing system for the import and export of new, used, recycled or reclaimed controlled substances, from and to other Parties to the Protocol;
- Parties are to implement measures to control the import and export of products and equipment relying on the use of controlled substances, from and to other Parties to the Protocol;
- Ban the import of HCFCs from non-parties, starting January 1, 2004; and
- Ban on trade in bromochloromethane with non-parties as of January 1, 2001.

Reporting

Parties are to provide annual statistical data to the Secretariat of the Protocol on their production and consumption of controlled substances, as well as on their imports and exports of controlled substances. Production is defined as total production minus amounts destroyed or used as chemical feedstock. Consumption is defined as production plus imports minus exports. Trade in recycled and used chemicals is not included in the calculation of consumption in order to encourage recovery, reclamation and recycling.

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2.4.2.3 Obligations for South Africa according to the Vienna Convention and Montreal Protocol related to air quality

South Africa's phases out obligations are summarised in the Table below:

Table 3: Phase out schedule for South Africa

Substance	South Africa	
	Consumption Freeze	Phase Out
Chlorofluorocarbons (CFC)	01 July 1989	01 January 1996
Halons	-	01 January 1994
Other Fully Halogenated CFCs	-	01 January 1996
Carbon Tetrachloride	-	01 January 1996
Methyl Chloroform	01 January 1993	01 January 1996
Hydrochlorofluorocarbons (HCFCs)	01 January 2013	01 January 2030
Methyl Bromide	-	01 January 2015
Bromochloromethane (BCM)	-	01 January 2002

2.4.3 Persistent pollutants**2.4.3.1 The Stockholm Convention on Persistent Organic Pollutants (POPs)**

The Stockholm Convention was signed in May 2001, and came into force in May 2004. The Convention is intended to address the production and use, or banning, of POPs for the protection of human health and the environment. Twelve pollutants are considered in the convention, including pesticides such as dichlorodiphenyltrichloroethane (DDT), industrial chemicals of hexachlorobenzene and polychlorinated biphenyls, and unintended by-products including dioxins and furans. Intentionally produced POPs are targeted for reduction and elimination, and unintentional production requires feasible elimination. The management and disposal of stockpiles of obsolete chemicals are also addressed. Trade restrictions are included in the convention. Reporting processes, implementation plans and information provision measures are also included in the convention.

South Africa ratified the convention in 2002, and it came into force in 2004. DDT is still in use in the country despite the provisions of the convention, as sufficient epidemiological evidence has been provided to motivate its continued use in the control of malaria vectors. The use of the chemical is monitored through a reporting structure. A National Implementation Plan (NIP) for the Convention was approved and published by the Minister of Water and Environmental Affairs in September 2012 and was submitted to the Convention Secretariat. The NIP requires monitoring and reporting of the Dioxins and Furans for priority areas in the South African Environment Outlook. The Africa Stockpiles Programme is also a significant measure as funds are provided by developed countries for the safe disposal of POPs and contaminated soil.

2.4.3.2 International concerns around Mercury, Lead and Cadmium

The United Nation Environmental Programme (UNEP) has convened an Intergovernmental Negotiating Committee (INC) to prepare a globally legally binding instrument on mercury. The aim of the instrument is to minimise the effects of mercury to humans and environment with the goal of eliminating anthropogenic mercury release and production where feasible. The Department of Environmental Affairs was an active participant in the INC. The final text of the instrument is now available and the Minamata Convention will be open for signing at the diplomatic conference to be hosted in Japan in October 2013. Based on the advanced text, the convention will address the following mercury issues:

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- Mercury supplies
- International trade in mercury (and mercury products)
- Mercury products and processes
- Mercury in artisanal small-scale gold mining
- Mercury emissions and releases into the environment
- Storage, waste and contaminated sites
- Financial resources and technical and implementation assistance
- Awareness raising, research and monitoring, and communication of information

The convention is likely to have implications for South Africa in a number of the areas highlighted above. South Africa is estimated to be the 6th largest emitter of mercury in the world. The emissions come predominately from our coal fired power stations. South Africa is working closely with the UNEP Global Mercury Partnership on a number of projects that aim to develop a comprehensive mercury emissions inventory and also to look at potential mitigation projects to reduce emissions of mercury. As a developing country, South Africa will require financial and technical assistance for the implementation of the convention.

With regard to Lead and Cadmium, UNEP have been working to address these pollutants since 2003. UNEP has identified priorities for action in connection with lead and cadmium. These priorities include the push to eliminate leaded paints and fuels and the promotion of environmentally sound management throughout the life cycle of lead and cadmium batteries. South Africa has already phased out leaded fuels but will monitor developments in this field in the future.

2.4.4 Regional policy

Southern Africa has made progress toward developing environmental management policy across the region, including initiatives through the New Partnership for Africa's Development (NEPAD) and the Southern African Development Community (SADC).

2.4.5 The AQA and International Policy

The AQA contains a number of direct and indirect references to "the Republic's obligations in terms of international agreements". South Africa's membership of the "global community" is recognised in the preamble to the AQA as follows "...atmospheric emissions of ozone-depleting substances, greenhouse gases and other substances have deleterious effects on the environment both locally and globally". Furthermore, greenhouse gases are captured in the definitions section of AQA.

The AQA also includes a number of direct references and provisions regarding South Africa's commitments in respect of air quality related multilateral environmental agreements as illustrated in the following -

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- **The National Framework** - In terms of section 7(1) of AQA, the Minister must establish a national framework for achieving the objectives of the Act and this framework must include, among others, mechanisms, systems and procedures to give effect to "the Republic's obligations in terms of international agreements" (Section 7(1)(b)). Furthermore, the national norms and standards established by the national framework must be aimed at ensuring "compliance with the Republic's obligations in terms of international agreements" (Section 7(2)(h)).
- **National monitoring and information management standards** - In terms of section 8(c) of AQA, the national framework must establish national standards for, among others, the collection and management of data necessary to "assess compliance with the Republic's obligations in terms of international agreements" (Section 8(c)(v)).
- **Air Quality Management Plans** - In terms of section 16(1)(a) of AQA, air quality management plans must, among others, seek to implement the Republic's obligations in respect of international agreements (Section 16(1)(a)(vii)).
- **Controlled Emitters** - In terms of section 23(2) of the AQA, in declaring a controlled emitter the Minister or MEC must, among others, "take into account the Republic's obligations in terms of any applicable international agreement" (Section 23(2)(c)).
- **Controlled Fuels** - In terms of section 26(2) of the AQA, in declaring a controlled fuel the Minister or MEC must, among others, "take into account the Republic's obligations in terms of any applicable international agreement" (S.26(2)(c)).
- **International Air Quality Management** – The AQA contains an entire chapter dedicated to international air quality management, namely, Chapter 6. It deals with air pollution that has impacts outside of our borders, as well as with contraventions of multilateral environmental agreements that address environmental pollution. It makes provision for the investigation of offences, or possible offences, and the passing of regulations to address the air quality impacts.
- **Greenhouse Gas Emission Monitoring** - Section 43 of the AQA requires an atmospheric emission licence to specify, among others, greenhouse gas emission measurement and reporting requirements (Section 43(1)(l)).
- **Regulations** - Section 53 of the AQA empowers the Minister to make regulations regarding, among others, "any matter necessary to give effect to the Republic's obligations in terms of an international agreement relating to air quality" (Section 53(a)). Furthermore, these regulations may "incorporate, by reference, any code of practice or any national or international standard relating to air quality" (Section 55(1)(d)).

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3. ROLES AND RESPONSIBILITIES FOR AIR QUALITY MANAGEMENT

3.1 Introduction

Everyone, to a greater or lesser extent, is responsible for some form of atmospheric emission that has an impact on air quality. Hence, everyone has a role and various responsibilities in respect of air quality management as the following illustrates.

3.2 Government's roles and responsibilities

The role of government is, according to Section 24 of the Constitution of the Republic of South Africa, 1996, to use legislative and other means to improve air quality and progressively ensure that ambient air is not harmful to health and well-being. Specific government's roles and responsibilities are clearly spelt out in various government policies and legislation (see Chapter 2 in this document). However, these roles and responsibilities differ across departments and spheres of government

In this regard, departments and spheres of government with specific air quality management mandates, including the Department of Environmental Affairs, the provincial environmental management departments and all municipalities, exercise their roles and functions by implementing the governance cycle described in Chapter 4 of this document. The relationships between different spheres of government in terms of air quality roles and responsibilities should be as stipulated in The Constitution of the Republic South Africa, 1996.

These differing roles and responsibilities are summarised in the following paragraphs.

3.2.1 The National Department of Environmental Affairs (DEA)

The Department of Environmental Affairs (DEA) is the national Lead Agent for environmental management, and hence air quality management, and must therefore provide national norms and standards to ensure coordinated, integrated and cohesive air quality governance.

To this end, the AQA provides for a number of DEA responsibilities within the governance cycle, which is described in Chapter 4. However, the national Minister responsible for Environmental Affairs has a number of exclusive air quality management powers as summarised below:

In this regard, the Minister must:

- Establish the National Framework that must include the items specified in Paragraph 1.2.
- Designate an officer in the Department as the national air quality officer to be responsible for coordinating matters pertaining to air quality management in national government (Section 14(1) of the AQA).
- Identify substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or any other way, present a threat to health or well-being or the environment, or which the Minister reasonably believes present such a threat, and the subsequent establishment of national standards for ambient air quality for these substances (See Paragraphs 5.3 and 5.4.3.2 on problem identification and prioritisation and ambient air quality standards), and the establishment of national emission standards from point and non-point sources for these substances or mixture of substances (See Paragraphs 5.4.3.3 on Listed Activities and emission standards).
- Prescribe the manner in which ambient air quality measurements must be carried out and reported and the manner in which measurements of emissions from point and non-point sources are carried out and reported (See Paragraphs 5.2.1.1 and 5.2.3 on ambient air quality monitoring and air quality reporting).
- Preparing a national air quality management plan (AQMP) (See Paragraph 5.4.5, page 72 on air quality management planning), and preparing an annual report providing information on progress regarding the implementation of the AQMP.

Publish and maintain a national list of activities which result in atmospheric emissions and which the Minister reasonably believes have a detrimental effect on the environment, including health, social, economic and ecological conditions, or cultural heritage, and for establishing minimum emission standards in respect of a

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substances or mixture of substances resulting from the Listed Activity (See Paragraph 5.4.3.3, page 62, on Listed Activities).

- Execute the overarching auditing function to ensure that adequate ambient and compliance monitoring occurs nationally.
- Enforce compliance with the AQA, the National Framework and any other relevant legislation.
- Review the impact on air quality of all government policies, strategies, plans, programmes and actions and ensuring that they conform to any other relevant legislation.
- Ensure performance of the Atmospheric Emission Licensing functions as stipulated in Section 36 of the AQA
- Ensure that air quality information is accessible to all stakeholders (See Paragraph 5.2.1, page 41, on SAAQIS).

The Minister may also:

- Establish a national Air Quality Advisory Committee to advise the Minister on the implementation of AQA.
- Declare an area a national Priority Area if the Minister reasonably believed that ambient air quality standards are being exceeded or are likely to be exceeded, or the area requires specific air quality management action to rectify the situation (See Paragraph 5.4.6.5 on priority area air quality management planning).
- Prescribe the regulations necessary for implementing and enforcing the approved Priority Area AQMP (See Paragraph 5.4.4, page 70, on regulations).
- Declare an appliance or activity as a Controlled Emitter if that appliance or activity results in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health or well-being or the environment, or which the Minister reasonably believes present such a threat (See Paragraph 5.4.3.4, page 68, on Controlled Emitters).
- Declare a substance or a mixture of substances, which when used as a fuel in a combustion process, results in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health or well-being or the environment, or which the Minister reasonably believes presents such a threat, as a Controlled Fuel (See Paragraph 5.4.3.5, page 69, on Controlled Fuels).
- Declare any substance contributing to air pollution as a priority air pollutant (See Paragraph 5.3.2 on identifying and prioritising pollutants of concern).
- Investigate situations which create, or are anticipated to contribute to air pollution across the Republic's borders, or air pollution that violates, or is likely to violate, an international agreement binding on the Republic in relation to the prevention, control or correction of pollution and for prescribing measures to prevent, control or correct the emissions within the Republic in consultation with the Cabinet member responsible for foreign affairs.
- Prescribe measures for the control of dust, noise and offensive odours (See Paragraph 5.5.3.6, page 80).

3.2.2 Provincial environmental departments

Provincial environmental departments are the provincial Lead Agents for environmental management, and hence air quality management, in each province and must therefore provide, where necessary, provincial norms and standards to ensure coordinated, integrated and cohesive air quality governance in the province.

As with the national department, provincial departments have a number of responsibilities within the governance cycle which is described in Chapter 4 of this document. However, each provincial Member of the Executive Committee (MEC) responsible for the environment has a number of exclusive air quality management powers as summarised below:

In this regard, the MEC must:

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- Designate an officer in the provincial administration as the provincial Air Quality Officer (AQO) who is responsible for the coordination of all air quality related matters in the province.
- Prepare a provincial AQMP as a component of the EIP (See Paragraph 5.4.6.6).
- Prepare an annual report providing information on progress regarding the implementation of the AQMP and compliance with the provincial implementation plan.
- Perform Atmospheric Emission Licensing functions as stipulated in Section 36 of the AQA
- Review the AQMPs received from the municipalities.

The MEC may also:

- Identify substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or any other way, present a threat to health or well-being or the environment, or which the MEC reasonably believes present such a threat, and the subsequent establishment of provincial standards for ambient air quality for these substances, and the establishment of provincial emission standards from point and non-point sources for these substances or mixture of substances if national standards are not sufficiently strict (See problem identification and prioritisation in Paragraph 5.3).
- Declare an area as a provincial Priority Area if the MEC reasonably believes that ambient air quality standards are being exceeded or are likely to be exceeded, or the area requires specific air quality management action to rectify the situation.
- Prepare an AQMP for the area in consultation with the AQOs in the affected municipalities (See Paragraph 5.4.6.5), and presenting this plan to the MEC within a stipulated time frame.
- Prescribe the regulations necessary for implementing and enforcing the approved Priority Area AQMP.
- Publish and maintain a provincial list of activities which result in atmospheric emissions and which the MEC reasonably believes have a detrimental effect on the environment, including health, social, economic and ecological conditions, or cultural heritage.
- Establish minimum emission standards in respect of a substance or mixture of substances resulting from the Listed Activity if implementing national standards does not achieve the desired improvement in ambient air quality in the province.
- Declare an appliance or activity as a Controlled Emitter if that appliance or activity results in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, presents a threat to health or well-being or the environment, or which the MEC reasonably believes presents such a threat.
- Declare a substance or a mixture of substances, which when used as a fuel in a combustion process, results in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, presents a threat to health or well-being or the environment, or which the MEC reasonably believes presents such a threat, as a Controlled Fuel.
- Declare any substance contributing to air pollution as a provincial priority air pollutant.
- Prescribing measures for the control of dust, noise and offensive odours in the province.
- Establish a programme of public recognition of significant achievement in air pollution prevention in the province.

3.2.3 Municipalities

As with the national department and the provincial departments, municipalities have a number of responsibilities within the governance cycle which is described in Chapter 4 of this document. However, each municipality has a number of exclusive air quality management powers as summarised below:

In this regard, the municipality must:

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- Designate a municipal AQO from its administration.
- Develop an AQMP for inclusion in its Integrated Development Plan (IDP) in accordance with Chapter 5 of the Municipal Systems Act (See air quality management planning in Paragraph 5.4.6.7, page 76).
- Prepare an annual report including progress regarding the implementation of the AQMP and compliance with the plan.

The municipality may also:

- Establish municipal standards for emissions from point, non-point and mobile sources if a municipality, in terms of its by-laws, identifies a substance or mixture of substances in ambient air which through ambient concentrations, bioaccumulation, deposition or any other way, presents a threat to health or well-being or the environment, or which the municipality reasonably believes presents such a threat.
- Require the appointment of an Emission Control Officer in a given company (Section 48 of AQA), thereby extending the powers of the authority by ensuring that the Emission Control Officer is responsible for the company applying the correct measures to minimise emissions.

In addition, Metropolitan and District Municipalities must:

- Perform Atmospheric Emission Licensing functions as stipulated in Section 36 of the AQA and carry out associated responsibilities for performing the functions of the licensing authority as set out in Chapter 5 of the AQA.

3.2.4 Other national departments

There are a number of national departments that, within their various jurisdictions, have an impact on air quality and, hence, have an interest or responsibilities in respect of managing atmospheric emissions within their jurisdictions as summarised in Table 2 below.

Table 2: National departments, other than DEA, that have an interest or responsibilities in respect of managing atmospheric emissions within their jurisdictions

National departments, other than DEA, that have an interest or responsibilities in respect of managing atmospheric emissions within their jurisdictions	
National Department	Examples of interest or responsibility
Department of Energy (DoE)	<ul style="list-style-type: none"> • Emissions resulting from the use of fossil fuels;
Department of Mineral Resources (DMR)	<ul style="list-style-type: none"> • Emissions from mining haul roads; • Dust from mine spoil tailings dumps and other mining operations; • Dust from open-cast mining operations; • Emissions from fires in coal mines, including abandoned mines.
Department of Health (DoH)	<ul style="list-style-type: none"> • Household fuel burning; • Emissions from household products; • Emissions from building materials, furniture, floor coverings, adhesives, etc.; • Emissions from medical waste treatment plants; • Emissions from hospital boilers.
Department of Agriculture, Forestry and Fisheries (DAFF)	<ul style="list-style-type: none"> • Dust from agricultural activities (e.g. ploughing); • Emissions from stubble burning; • Emissions from sugar cane burning; • Emissions from un-surfaced farm roads; • Emissions from crop-spraying; • Emissions from the burning of fire breaks; • The impact of emissions on soil quality (e.g. acidification). • Emissions from veld and forest fires; • Emissions sinks (e.g. forests as carbon sinks);
Department of Labour (DoL)	<ul style="list-style-type: none"> • Emissions within the workplace.
Department of Water Affairs (DWA)	<ul style="list-style-type: none"> • The impact of emissions on water quality (e.g. acidification).
Department of Transport (DoT)	<ul style="list-style-type: none"> • Emissions from various forms of transport (road, rail, aviation and maritime) • Emissions from transport infrastructure construction.
Department of Rural Development and Land Reform (DRDLR)	<ul style="list-style-type: none"> • Emissions from various changes in land-use (e.g. the change from virgin to agricultural land)
Department of Cooperative Governance (DCG)	<ul style="list-style-type: none"> • Emissions from national disasters where such emissions occur.

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National departments, other than DEA, that have an interest or responsibilities in respect of managing atmospheric emissions within their jurisdictions	
National Department	Examples of interest or responsibility
Department of Human Settlements (DoHS)	<ul style="list-style-type: none"> Emission from coal and wood burning, especially in dense, low-income communities.
Department of Defence (DoD)	<ul style="list-style-type: none"> Emissions from the use and/or testing of explosives and other weapons.
Department of Public Enterprises (DPE)	<ul style="list-style-type: none"> Emissions from State-owned enterprises.
Department of Trade and Industry (DTI)	<ul style="list-style-type: none"> Emissions resulting from technology choices.
Department of Science and Technology (DST)	<ul style="list-style-type: none"> Development and deployment of technologies to curb emissions and associated research activities. National Global Change Research and related activities

With regard to specific air quality management responsibilities, national departments that are responsible for preparing an Environmental Implementation Plan (EIP) or Environmental Management Plan (EMP) in terms of Chapter 3 of the NEMA are responsible for:

- Including an AQMP in their respective plans (See Paragraph 5.4.6 on air quality management planning).
- Preparing an annual report providing information on progress regarding the implementation of its AQMP.

3.3 Industry

Emissions from some industries often have a measurable impact on air quality. In this regard, industry too has a responsibility not to impinge on everyone's right to air that is not harmful to health and well-being. Furthermore, in terms of section 28 of the NEMA, industries that cause, have caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.

In terms of the AQMA, certain industries have further responsibilities, including:

- Taking reasonable steps to prevent the emission of any offensive odour caused by any activity on their premises.
- Compliance with any relevant standards for emissions from point, non-point or mobile sources in respect of substances or mixtures of substances identified by the Minister, MEC or municipality.
- Compliance with the measurements requirements of identified emissions from point, non-point or mobile sources and the form in which such measurements must be reported and the organs of state to whom such measurements must be reported.
- Compliance with relevant emission standards in respect of controlled emitters if an activity undertaken by the industry and/or an appliance used by the industry is identified as a controlled emitter.
- Compliance with any usage, manufacture or sale and/or emissions standards or prohibitions in respect of controlled fuels if such fuels are manufactured, sold or used by the industry.
- Comply with the Minister's requirement for the implementation of a pollution prevention plan in respect of a substance declared as a priority air pollutant.
- Comply with an Air Quality Officer's legal request to submit an atmospheric impact report in a prescribed form.

Furthermore, industries identified as Listed Activities (See Paragraph 5.4.3.3) have further responsibilities, including:

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- Making application for an Atmospheric Emission Licence (AEL) and complying with its provisions.
- Compliance with any minimum emission standards in respect of a substance or mixture of substances identified as resulting from a listed activity.
- Designate an Emission Control Officer if required to do so.

3.4 Labour

Workers tend to be in the frontline of pollution problems and exposure to hazardous environments. Recognising this, the NEMA protects workers refusing to do environmentally hazardous work by providing that no person is civilly or criminally liable or may be dismissed, disciplined, prejudiced or harassed on account of having refused to perform any work if the person in good faith and reasonably believed at the time of the refusal that the performance of the work would result in an imminent and serious threat to the environment. Furthermore, the NEMA also protects 'whistleblowers' by providing that no person is civilly or criminally liable or may be dismissed, disciplined, prejudiced or harassed on account of having disclosed any information, if the person in good faith reasonably believed at the time of the disclosure that he or she was disclosing evidence of an environmental risk and the disclosure was made in accordance with certain provisions.

3.5 The General Public

As mentioned in the introduction, everyone, to a greater or lesser extent, is responsible for some form of atmospheric emission that has an impact on air quality. Hence, everyone has a role and social responsibility in respect of air quality management. As private individuals, we all have a responsibility not to impinge on everyone's right to air that is not harmful to health and well-being. As with industries, in terms of section 28 of the NEMA, persons that cause, have caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.

Notwithstanding the above, it can be argued that there is a social responsibility for everyone to actively participate in air quality governance by participating in the development of the regulatory framework for air quality management. In this regard, the AQA provides numerous opportunities to submit to the Minister or MEC written or oral representations on or objections in respect of, for example:

- The National Framework or any amendment to the framework.
- Ambient air quality standards.
- The declaration of priority areas
- Priority area air quality management plans
- The listing of activities that require an Atmospheric Emission Licence to operate
- The declaration of controlled emitters.
- The declaration of controlled fuels.
- Any regulation.

Finally, the public may be directly affected by air pollution. The public and civil society groups therefore contribute local perspectives and also have an important watchdog role to play in bringing to the attention of the authorities through their municipal AQO, matters of concern or of non-compliance.

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4. APPROACH TO AIR QUALITY GOVERNANCE

4.1 Introduction

Air quality governance can be described in terms of a simplified environmental governance cycle as illustrated in Figure 1. The governance cycle provides a useful framework for achieving continuous improvement over time. An overview of each of the components with reference to the governance roles and responsibilities contained in, or implied by, the AQA is given in Paragraph 4.2.

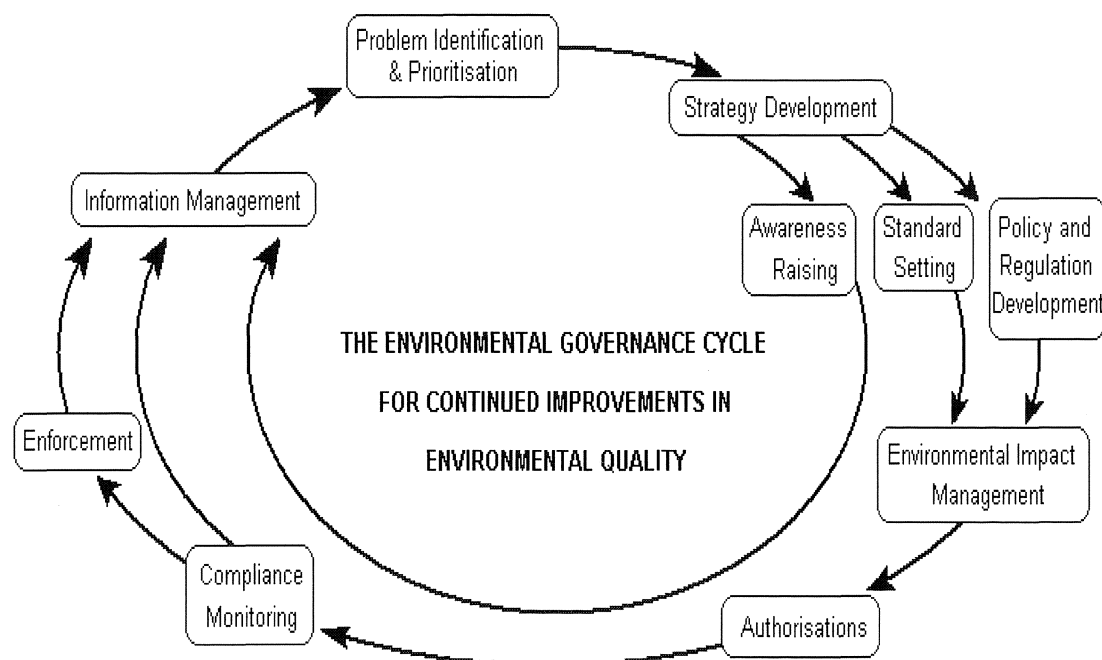


Figure 1: The environmental governance cycle for continued improvements in environmental quality

4.2 The environmental governance cycle

4.2.1 Information management

Informed decision-making is fundamental to good governance and decisions can only be informed if decision-shapers and decision-makers have ready access to accurate, relevant, current and complete information. The information management component of the governance cycle is critical and is often described as the engine that drives the cycle towards continuous improvements in environmental quality.

Given the above, it the AQA contains a number of information related provisions as illustrated in Table 3.

Table 3: Typical AQA governance functions relating to information management

Typical AQA governance functions relating to information management						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
Establish and maintain national norms and standards for air quality monitoring	7(1)(d)	PR	I	I	I	I
Establish and maintain national norms and standards for air quality information management	7(1)(f)	PR	I	I	I	I
Monitor ambient air quality and point, non-point and mobile source emissions	8(a)	O	O	PR	PR	PR
Monitor ambient air quality and the performance of municipalities in implementing the AQA	8(b)	O	PR	I	I	I

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Typical AQA governance functions relating to information management						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
Establish and maintain national standards for the collection and management of data necessary to assess: (i) compliance with the AQA; (ii) compliance with ambient air quality and emission standards; (iii) the performance of organs of state in respect of air quality management plans and priority area air quality management plans; (iv) the impact of, and compliance with, air quality management plans and priority area air quality management plans; (v) compliance with the Republic's obligations in terms of international agreements; and (vi) access to information by the public.	8(c)	PR	I	I	I	I
The compilation and submission of an annual report including information on - (a) air quality management initiatives undertaken during the reporting period; (b) the level of compliance with ambient air quality standards; (c) measures taken by to secure compliance with those standards; (d) compliance with any applicable priority area air quality management plans; and (e) air quality monitoring activities.	17	PR	PR	I	I	I
The consideration of any sound scientific information in the declaration of a controlled emitter	23(2)(d)(i)	PR	PR	I	I	I
The consideration of any sound scientific information in the declaration of a controlled fuel	26(2)(d)(i)	PR	PR	I	I	I
The development of regulations in respect of monitoring	53(m)	PR	PR	I	I	I
Key: PR Principle Responsibility in relevant jurisdiction I Input O Oversight						

4.2.2 Problem identification and prioritisation

Information and information management is not an end in itself. The gathering, storage and reporting of information is to no avail unless it is used for a purpose. Information must be analysed to identify air quality problems being experienced and also to establish whether air quality interventions are effective. AQA will not provide a solution to air quality problems in South Africa unless these problems are identified and defined and prioritised for action.

There are a number of sections in the AQA that deal with problem identification and prioritisation, including, those provided in Table 4.

Table 4: Typical AQA governance functions relating to problem identification and prioritisation

Typical AQA governance functions relating to problem identification and prioritisation						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
The identification of pollutants which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well-being or the environment	S.9(1)(a)	PR	PR	I	I	I
The declaration of an area as a priority area if ambient air quality standards are being, or may be, exceeded in the area, or any other situation exists which is causing, or may cause, a significant negative impact on air quality in the area; and the area requires specific air quality management action to rectify the situation	S.18(1)	PR	PR	I	I	I
The publication of a list of activities which result in atmospheric emissions and which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage	S.21(1)(a)	PR	PR	I	I	I
The declaration of any appliance or activity, or any appliance or activity falling within a specified category, as a controlled emitter if such appliance or activity, or appliances or activities falling within such category, result in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health or the environment.	S.23(1)	PR	PR	I	I	I

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Typical AQA governance functions relating to problem identification and prioritisation						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
The declaration of a substance or mixture of substances which, when used as a fuel in a combustion process, result in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health or the environment, as a controlled fuel.	S.26(1)	PR	PR	I	I	I
The declaration of any substance contributing to air pollution as a priority air pollutant and requiring persons falling within a specified category to submit and implement a pollution prevention plan in respect of the priority air pollutant.	S.29(1)	PR	PR	I	I	I

Key:	PR	Principle Responsibility in relevant jurisdiction	I	Input	O	Oversight
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4.2.3 Strategy development

Once problems have been identified and prioritised, strategies must be devised to address the problems. These strategies are further detailed into plans of action that guide the interventions aimed at addressing the problems.

AQA requires a comprehensive planning regime as the examples in Table 5 illustrates.

Table 5: Typical AQA governance functions relating to strategy development

Typical AQA governance functions relating to strategy development						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
The establishment and maintenance of national norms and standards for air quality management planning	S.7(1)(e)	PR	I	I	I	I
The development of air quality management plans as a component of environmental implementation plans or environmental management plans submitted in terms of Chapter 3 of the NEMA.	S.15(1)	PR	PR	I	I	I
The development of air quality management plans as a component of integrated development plans as required by the Municipal Systems Act	S.15(2)	O	O	PR	PR	PR
The development of Priority Area Air Quality Management Plans	S.19	PR	PR	I	I	I
Assessment and approval of pollution prevention plans in respect of a priority air pollutant	S.29(1)	PR	PR	I	I	I
Key:	PR	Principle Responsibility in relevant jurisdiction	I	Input	O	Oversight

4.2.4 Standard setting

Environmental improvements may also come about if certain minimum standards are set as targets and these standards are properly monitored and enforced. AQA is largely based on the use of this strategy as Table 6 illustrates.

Table 6: Typical AQA governance functions relating to standard setting

Typical AQA governance functions relating to standard setting						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
The setting of national norms and standards for: the control of emissions from point and non-point sources; air quality monitoring; air quality management planning; and air quality information management	7(1)	PR	I	I	I	I
The setting of national standards for municipalities to monitor: ambient air quality; and point, non-point and mobile source emissions.	8(a)	PR	I	I	I	I

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Typical AQA governance functions relating to standard setting						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
The setting of national standards for provinces to monitor: ambient air quality; and the performance of municipalities in implementing this Act.	8(b)	PR	I	I	I	I
The setting of national standards for the collection and management of data necessary to assess: compliance with the AQA; compliance with ambient air quality and emission standards; the performance of organs of state in respect of air quality management plans and priority area air quality management plans; the impact of, and compliance with, air quality management plans and priority area air quality management plans; compliance with the Republic's obligations in terms of international agreements; and access to information by the public.	8(c)	PR	I	I	I	I
The setting of national ambient air quality standards for identified substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well- being or the environment	9(1)(b)	PR	I	I	I	I
The setting of national standards for emissions from point, non-point or mobile sources with respect to identified substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well- being or the environment	9(1)(c)	PR	I	I	I	I
The setting of provincial ambient air quality standards for identified substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well- being or the environment	10(1)(b)	O	PR	I	I	I
The setting of provincial standards for emissions from point, non-point or mobile sources with respect to identified substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well- being or the environment	10(1)(c)	O	PR	I	I	I
The setting of municipal standards for emissions from point, non-point or mobile sources in the municipality in respect of identified substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well- being or the environment in the municipality	11(1)	O	O	PR	PR	PR
The setting of national/provincial minimum emission standards in respect of a substance or mixture of substances resulting from a listed activity	21(3)(a)	PR	PR	I	I	I
The setting of national/provincial emission standards of any specified substance or mixture of substances that may be emitted from a controlled emitter	24(1)	PR	PR	I	I	I
The setting of national/provincial standards relating to controlled fuels, including: standards for the use of the controlled fuel in combustion processes; standards for the manufacture or sale of the controlled fuel; specifications, including maximum or minimum levels or concentrations of the constituents of substances or mixtures of substances, for the composition of controlled fuels; and the prohibition of the manufacture, sale or use of the controlled fuel	27	PR	PR	I	I	I
The setting of national standards for the control of noise, either in general or by specified machinery or activities or in specified places or areas; or for determining a definition of noise; and the maximum levels of noise.	34(1)	PR	I	I	I	I
Make regulations that incorporate by reference any code of practice or any national or international standard relating to air quality.	55(1)(d)	PR	PR	I	I	I

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Typical AQA governance functions relating to standard setting						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
Key:	PR	Principle Responsibility in relevant jurisdiction	I	Input	O	Oversight

4.2.5 Policy and regulation development

Although the AQA provides the legislative framework for air quality management and despite the fact that the making of by-laws in respect of air quality management is an exclusive municipal competence, the AQA also directs or implies a number of functions in this regard as illustrated in the Table 7.

Table 7: Typical AQA governance functions relating to policy and regulation development

Typical AQA governance functions relating to policy and regulation development						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
The development and promulgation of regulations necessary for implementing and enforcing approved priority area air quality management plans, including: funding arrangements; measures to facilitate compliance with such plans; penalties for any contravention of or any failure to comply with such plans; and regular review of such plans.	S.7(1)(e)	PR	PR	I	I	I
The development and promulgation of regulations in respect of measures to prevent, control or correct the release of a substance into the air from a source in the Republic that may have a significant detrimental impact on air quality, the environment or health in a country other than the Republic.	S.50(2)	PR	I	I	I	I
The development and promulgations of regulations in respect of: any matter necessary to give effect to the Republic's obligations in terms of an international agreement relating to air quality; and matters relating to environmental management cooperation agreements, to the extent that those agreements affect air quality;	S.53	PR	I	I	I	I
The development and promulgations of regulations in respect of: emissions, including the prohibition of specific emissions, from point, non-point and mobile sources of emissions, including motor vehicles; open fires and incinerators; ozone-depleting substances; codes of practice; records and returns; labelling; trading schemes; powers and duties of air quality officers; appeals against decisions of officials in the performance of their functions in terms of the regulations; incentives to encourage change in behaviour towards air pollution by all sectors in society; requirements in respect of monitoring; the avoidance or reduction of harmful effects on air quality from activities not otherwise regulated in terms of this Act; any matter that may or must be prescribed in terms of this Act; or any other matter necessary for the implementation or application of this Act.	S.53	PR	PR	I	I	I
Key:	PR	Principle Responsibility in relevant jurisdiction	I	Input	O	Oversight

4.2.6 Environmental impact management

Through impact assessment the safety, health and environmental impacts of developments and activities are scrutinised. This process encourages participation by all stakeholders and provides decision-makers with detailed information to determine whether an activity may proceed or not, and in the case of an approval provides information on the mitigation measures that must be introduced to ensure that safety, health and environmental impacts are kept to acceptable levels.

Reference to impact management is made in a number of sections of the AQA, including:

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- An AQO may require any person to submit an Atmospheric Impact Report if it is reasonably believed that the person has contravened or failed to comply with the AQA or any conditions of a licence and the contravention has had, or may have, a detrimental effect on the environment (Section 30(a));
- An AQO may require any person to submit an Atmospheric Impact Report if a review of a licence is undertaken (Section 30(b));
- The application for an AEL, when the effect or likely effect of the pollution emitted or likely to be emitted by a Listed Activity on the environment must be considered (Section 39(b)); and,
- Significant trans-boundary impacts require management through preventative, control or corrective measures (Section 50(2)).

Furthermore, environmental impact management has been rolled out nationally and provincially in the form of the environmental impact assessment (EIA) process. This participatory process provides government with the detailed information required for it to make an informed decision on whether a development may go ahead or not and, in the case of a go-ahead, exactly what measures must be taken to ensure that safety, health and environmental impacts are kept to acceptable levels.

The use and importance of the EIA tool is fully acknowledged by the AQA and, as such, the use of EIAs is inextricably linked to the AQA's atmospheric emission licensing process as discussed in Paragraph 5.5.2.

4.2.7 Authorisations

An authorisation (permission, permit, licence, etc.) is a key component of traditional "command and control" regulatory practise. The principle authorisation in the AQA is the AEL, which is described in detail in Section 36 to Section 49. Implementation of the AQA atmospheric emission licensing system by licensing authorities is set out in Chapter 5 and other provisions of the AQA. The national department will also continue to leadership and support role in the Atmospheric Emission Licensing function.

4.2.8 Compliance monitoring

Compliance with norms and standards is an important element of the environmental governance cycle (see Figure 1) and follows authorisation. Table 8 provides examples of these functions.

Table 8: Typical AQA governance functions relating to compliance monitoring

Typical AQA governance functions relating to compliance monitoring						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
Monitoring potential illegal listed activities	S.51(1)(a)	O	PR	PR	PR	I
Monitoring compliance with emission standards in respect of the manufacture, sale or use any appliance or conducting of an activity declared as a controlled emitter	S.51(1)(a)	PR	PR	PR	PR	I
Monitoring compliance in respect to reasonable steps to prevent the emission of any offensive odour caused by any activity.	S.51(1)(a)	O	O	PR	PR	PR
Monitoring compliance with directives to submit or to implement a pollution prevention plan	S.51(1)(b)	PR	PR	I	I	I
Monitoring compliance with directives to submit an atmospheric impact report	S.51(1)(c)	PR	PR	PR	PR	PR
Monitoring compliance with notification requirements in respect of mines that are likely to cease mining operations within a period of five years	S.51(1)(d)	PR	I	I	I	I
Monitoring compliance with conditions or requirements of an atmospheric emission licence	S.51(1)(e)	O	PR	PR	PR	I
Monitoring any application for an atmospheric emission licence, or for the transfer, variation or renewal of such a licence to ensure that it does not contain false or misleading information	S.51(1)(f)	O	PR	PR	PR	I
Monitoring any information provided to an air quality officer to ensure that it does not contain false or misleading information	S.51(1)(g)	O	PR	PR	PR	I

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Typical AQA governance functions relating to compliance monitoring						
Function	AQA Ref.	DEA	Prov.	Municipalities		
				Metro	Dist.	Local
Monitoring compliance with conditions subject to which exemption from a provision of the AQA was granted	S.51(1)(h)	PR	I	I	I	I
Key: PR Principle Responsibility in relevant jurisdiction I Input O Oversight						

4.2.9 Enforcement

The AQA is regarded as a “specific environmental management Act” under the NEMA (see Section 1 of NEMA) and, as such, may be enforced by the Environmental Management Inspectors – the so-called “Green Scorpions”.

With reference to the Green Scorpions, and as an example of compliance and enforcement provisions contained in the AQA, an Environmental Management Inspector may require the holder of the licence, on request, to submit to the inspector a certified statement indicating – (i) their compliance monitoring records; (ii) particulars of instances of non-compliance; (iii) the reasons for instances of non-compliance; and (iv) any action taken, or to be taken, to prevent a recurrence of the instance of non-compliance.

This notwithstanding, enforcement and/or compliance promotion actions in response to significant non-compliance must be taken in respect of the various examples of compliance monitoring described in the previous paragraph.

Furthermore, enforcement is also addressed in the following sections of AQA:

- The Minister or MEC may prescribe penalties for any contravention of or any failure to comply with Priority Area AQMPs (Section 20(c));
- An AEL must specify the penalties for non-compliance (Section 43(1)(k)), and can include other measures necessary for enforcement (Section 43(1)(m)); and,
- Sections on offences (Section 51) and penalties (Section 52 and Section 55(2)).

4.3 The implementation of the functions by the three spheres of government

Although the above sections provide a clear indication of the various air quality management functions to be implemented by the affected spheres of government, as the national, provincial and local spheres of government are autonomous, “how” these functions are to be implemented is up to each department and/or municipality. As such, it is important that all provinces and municipalities that experience air quality issues within their jurisdictions build the necessary organisational capacity to implement these functions in an efficient and effective manner and in a manner that is commensurate with the air quality problems to be addressed. In this regard, organisational capacity refers to the structures (including sustainable funding), systems, skills, strategies, incentives and interrelationships necessary to implement these functions in an efficient and effective manner and in a manner that is commensurate with the air quality problems to be addressed.

Notwithstanding the above, although the national department cannot dictate how other autonomous spheres of government should capacitate themselves to implement their air quality management functions, it will continue to provide assistance and guidance to all spheres of government through various means, including, but not limited to: the hosting of air quality governance events (see, for example, Paragraph 4.4.6); the development of various implementation manuals, regulations, guidelines, software, standard formats, templates and best practise case studies aimed at the efficient and effective implementation of the AQA (see, for example, Paragraphs 5.4.6.2 and 5.4.2); and the hosting of short-courses in the use of these implementation manuals, guidelines, software, standard formats and templates (see Paragraph 5.9.2.4). Through this assistance and guidance, the national department also wishes to ensure that the AQA and its National Framework are implemented in a coherent, cohesive, integrated and uniform fashion.

The creation and maintenance of dedicated air quality management capacity in municipalities is necessary to ensure effective air quality management; especially for municipalities in Table 18. As such, provincial departments are encouraged to liaise with such municipalities with a view to cooperative agreements in respect of air quality management functions. This is especially relevant in respect of the atmospheric emission licensing function when considering Section 36(2) of the AQA which reads – “If a metropolitan or district municipality has delegated its functions of licensing authority

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to a provincial organ of state in terms of section 238 of the Constitution, that provincial organ of state must for the purposes of this Act be regarded as the licensing authority in the area of that municipality".

In line with the above, district municipality are also encouraged to liaise with local municipalities with a view to cooperative agreements in respect of air quality management functions.

Notwithstanding the above, how each sphere of government plans to implement its air quality management functions must be spelt out in the required provincial and municipal air quality management plans (see Paragraphs 5.4.6.6 and 5.4.6.7 respectively).

4.4 The need for vertical and horizontal integration

Government in South Africa is constituted as national, provincial and local spheres of government. The Intergovernmental Relations Framework Act (Act No. 13 of 2005) establishes a framework for the three spheres of government to promote and facilitate intergovernmental relations and to provide for mechanisms and procedures to facilitate the settlement of intergovernmental disputes. All spheres of government must work together and integrate as far as possible their actions in the provision of services. The object of this Act is to provide within the principles of cooperative government set out in Chapter 3 of the Constitution, a framework for national, provincial and local spheres of government and all organs of state to facilitate coordination in the implementation of policy and legislation.

In terms of the Constitution of the Republic of South Africa, 1996, national and provincial spheres of government have concurrent executive and legislative powers in pollution control matters, while the local sphere of government has exclusive executive and legislative powers in air pollution matters. Effective execution of duties requires integration between the spheres of government as provided for by the Intergovernmental Relations Framework Act (Act No. 13 of 2005).

Coupled with vertical integration between spheres of government, is the need for horizontal integration in order to improve air quality management.

Intergovernmental coordination and cooperation are fundamental to good air quality governance. To achieve the above, government has created a number of structures to ensure both horizontal and vertical integration as illustrated in Figure 2.

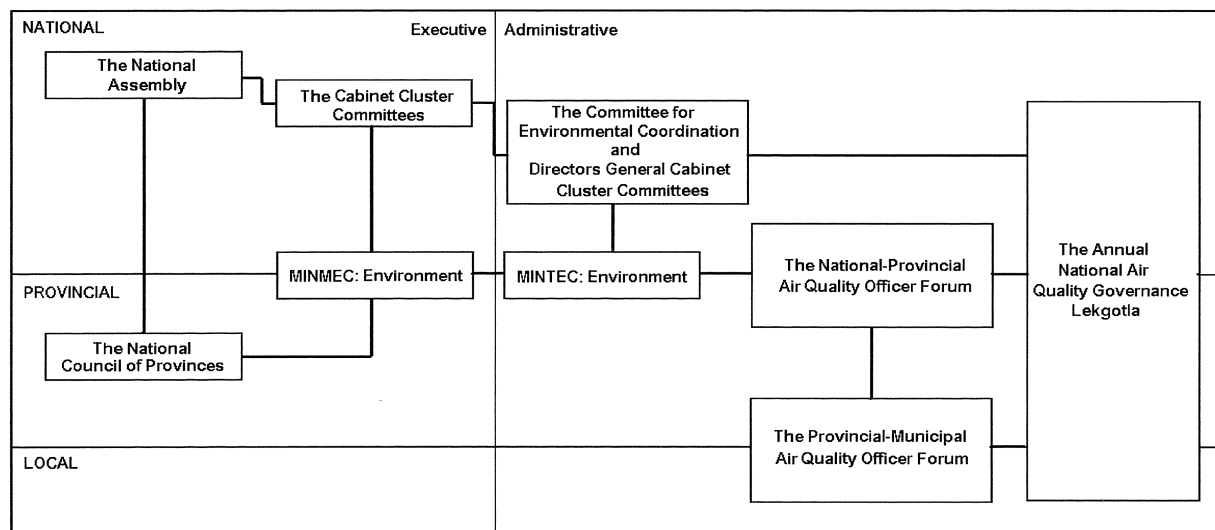


Figure 2: Intergovernmental horizontal and vertical coordination and cooperation structures associated with air quality governance.

Although Figure 2 provides the full set of linkages to the National Assembly and the National Council of Provinces, structures specifically involved in intergovernmental coordination and cooperation in respect of air quality governance as described below.

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4.4.1 MINMEC: Environment

The MINMEC: Environment is a standing intergovernmental body consisting of the Minister for Environmental Affairs and members of the provincial Executive Councils (MECs) responsible for environmental management functions. MINMEC meets quarterly.

4.4.2 MINTEC: Environment

The MINTEC: Environment is a standing intergovernmental body that provides technical input into the MINMEC. The MINTEC consists of the Director General of the Department of Environmental Affairs and Tourism and the heads of the provincial departments responsible for environmental management functions. MINTEC also meets quarterly.

4.4.3 The Committee for Environmental Coordination (CEC)

The Committee for Environmental Coordination was established in terms of Section 7 of the NEMA. The object of the Committee is to promote the integration and coordination of environmental functions by the relevant organs of state, and in particular to promote the achievement of the purpose and objectives of environmental implementation plans and environmental management plans.

The functions of the Committee include the following:

- Scrutinising, reporting and making recommendations on the environmental implementation plans;
- Investigating and making recommendations regarding the assignment and delegation of functions between organs of state under this Act or any other law affecting the environment and regarding the practical working arrangements, including memoranda of understanding, between the organs of state represented by members and other organs of state;
- Investigating and recommending the establishment of mechanisms in each province, with the concurrence of the MEC, for providing a single point in the province for the receipt of applications for authorisations, licences and similar permissions required for activities under legal provisions concerned with the protection of the environment where such authorisations, licences or permissions are required from more than one organ of state, and procedures for the coordinated consideration of such applications by the organs of state concerned;
- Making recommendations to coordinate the application of integrated environmental management, including cooperation in environmental assessment procedures and requirements and making determinations regarding the prevention of duplication of efforts;
- Making recommendations aimed at securing compliance with the NEMA principles and national norms and standards contemplated in Section 146(2)(b)(i) of the Constitution;
- Making recommendations regarding the harmonisation of the environmental functions of all relevant national departments and spheres of government;
- Advising the Minister on providing guidelines for the preparation of environmental management plans and environmental implementation plans; and
- Endeavouring to ensure compliance with the NEMA principles by making appropriate recommendations, requiring reports from its members and advising government on law reform.

The CEC comprises: the Director-General: Environmental Affairs, who acts as chairperson; the Director-General: Water Affairs; the Director-General: Energy; the Director-General: Minerals Resources, the Director-General: Rural Development and Land Reform DRDLR; the Director-General: Human Settlement; the Director-General: Agriculture, Forestry and Fisheries; the Director-General: Health; the Director-General: Labour; the Director-General: Science and Technology; the Director-General: Transport, the heads of provincial environmental departments; and a representative from the South African Local Government Association (SALGA).

4.4.4 The National-Provincial Air Quality Officers' Forum

The National-Provincial Air Quality Officers' Forum is a subset of the existing MINTEC Working Group Two (WGII). WGII meetings address air quality management issues in all spheres of government. Quarterly WGII deliberations on air quality management issues are regarded as the deliberations of the National-Provincial Air Quality Officers' Forum.

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4.4.5 The Provincial–Municipal Air Quality Officers' Forum

Every province needs to establish a Provincial–Municipal Air Quality Officers' Forum and convene quarterly forum meetings. In order to facilitate the efficient, effective and cohesive functioning of these forums, the national department provided all provincial AQOs with generic terms of reference for such forums.

The overall objective of the Forum is framed as a desired outcome as follows: *"An effective governance framework is developed, maintained and implemented in a manner that ensures that the unacceptable current and future impacts of atmospheric emissions are minimised, mitigated or managed in line with government policy, legislation, goals, strategies, norms and standards that are protective of everyone's right to an environment that is not harmful to their health or well-being and protect the environment for the benefit of present and future generations through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development."*

4.4.6 The Annual Air Quality Management Governance Lekgotla

This is a two-day event, which is aligned with the annual National Association for Clean Air (NACA) Conference, and focuses on practical air quality governance challenges facing all affected spheres of government, especially municipalities.

The Annual Air Quality Governance Lekgotla provides AQOs from all spheres of government with a unique opportunity to discuss and debate ways and means of addressing the various governance challenges and discuss planning for the year ahead. The Lekgotla is the premier event for AQOs to interact with their colleagues and peers and share experiences and lessons learned. The Lekgotla also provides the national department with an effective platform for informing all spheres of government about the national AQA rollout plans and progress reports.

4.5 3D governance model

The emphasis on both vertical and horizontal integration for effective environmental governance may be expressed in a multi-dimensional 3D governance model depicted in Figure 3. The central vertical core represents the coordinating department of each of the spheres of government, ranging from the national sphere, and the provincial spheres to municipalities. Vertical integration between the spheres of government is expressed by the vertical arrows. Responsibilities for elements within the environmental governance cycle rest with various government spheres, hence integration between them is critical.

The need for horizontal integration is expressed by the interrelationships which radiate from each of the coordinating departments, terminating in circles that represent subsidiary but important departments and stakeholders in the implementation of air quality governance.

4.6 Cross-cutting issues

Underpinning the 3D governance model described above are three cross-cutting issues essential for its successful integration. These are public participation, capacity development and information dissemination. Described as one of the fundamental principles of sustainable development, public participation ensures the public's right to know and the right to participate in decision-making and is considered further in 5.9.1. Capacity development is of particular importance in the South African context and is judged as critical for the successful implementation of the AQA (See 5.9.2). The third cross-cutting issue, namely information dissemination, relates to all aspects of air quality management and is addressed in Paragraph 5.9.3.

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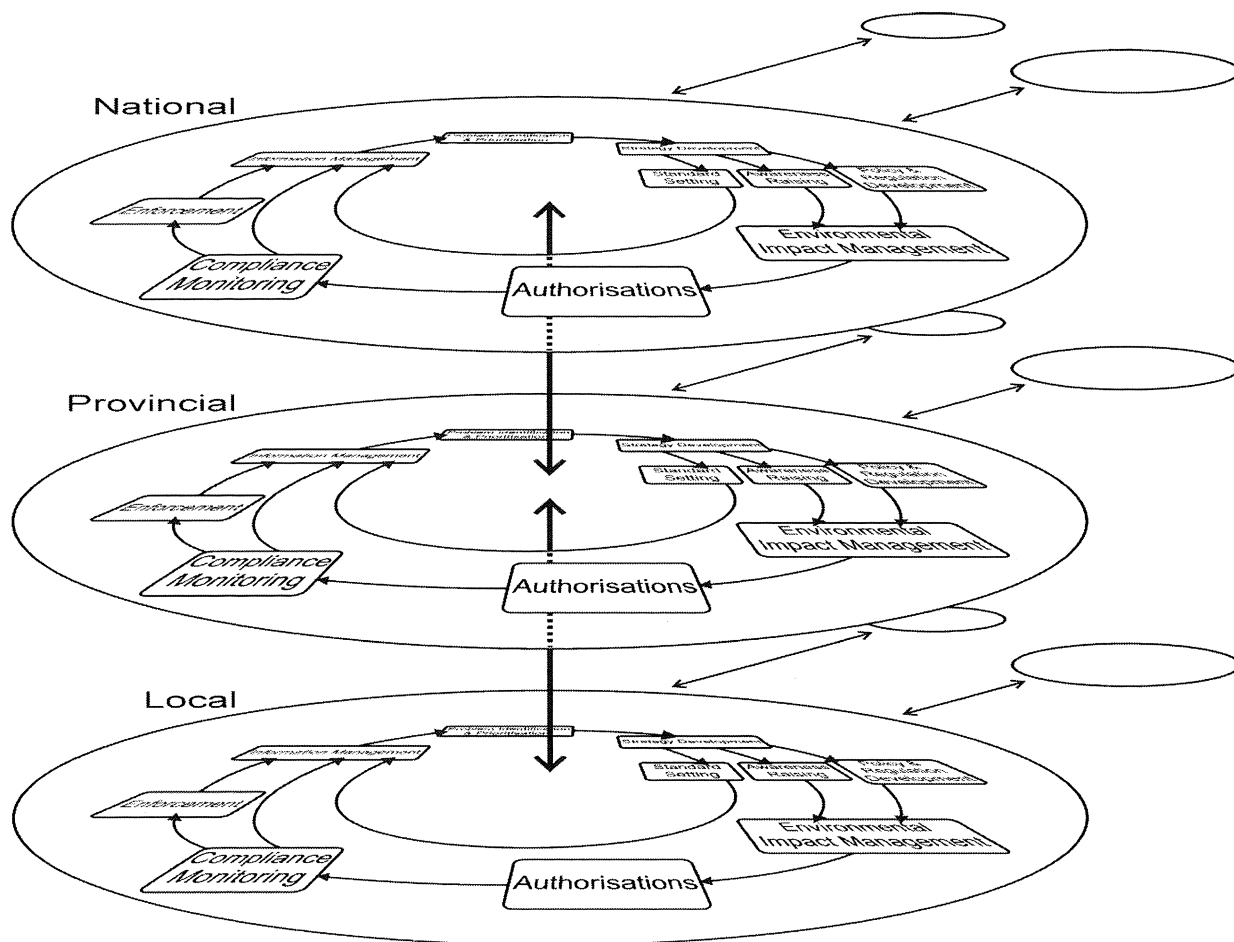


Figure 3: The 3D governance model

5. TOOLS FOR THE IMPLEMENTATION OF THE NATIONAL FRAMEWORK

5.1 Introduction

The implementation of the National Framework is dependent on a combination of both process/governance and technical mechanisms/measures. The process issues are overarching and integrated throughout the National Framework and include among others cooperative governance and enforcement. The technical mechanisms and measures are more specific and include norms and standards for matters relating to air quality management and meeting the requirements of the AQA.

5.2 Air quality information management

Informed decision-making is fundamental to good governance and decisions can only be informed if decision-shapers and decision-makers have ready access to accurate, relevant, current and complete information. Constructive participation in, and implementation of, air quality management matters are also dependent on the same information. Section 32 of the Constitution of the Republic of South Africa, 1996, states that all South Africans have the right of access to any information held by the state, and any information that is held by another person and that is required for the exercise or protection of any rights. Section 32 further states that national legislation must be enacted to give effect to this right. In this regard, the Promotion of Access of Information Act, 2000 was enacted to give effect to the constitutional right of access to information. For example, Section 31(1)(a) of the NEMA provides that "every person is entitled to have access to information held by the State and organs of state which relates to the implementation of the NEMA and any other law affecting the environment, and to the state of the environment and actual and future threats to the environment, including any emissions to water, air or soil and the production, handling, transportation, treatment, storage and disposal of hazardous waste and substances".

Implicit in this right is that all South Africans shall have access to air quality information and that access shall be facilitated by the AQA and through the National Framework. In order to uphold this right and effectively address the air quality information requirements contained in the AQA, the national department, in partnership with the South African Weather Service (SAWS), have established the South African Air Quality Information System (the SAAQIS), and developed guidance manuals and publications to provide support to AQOs and air quality information to a wider audience. Air quality information management is discussed in this paragraph, considering the requirements of the SAAQIS (5.2.1), the DEA publication series (5.2.2) and air quality reporting (5.2.3).

Management of air quality information in this paragraph includes the following:

- Ambient air quality information;
- Norms and standards for air quality monitoring;
- Emission inventories (including GHG inventory);
- Listed Activities and compliance monitoring;
- Air quality related legislation and regulations;
- Norms and standards for air quality information management;
- Air Quality Management Plans;
- Air quality publications; and
- Technical and scientific air quality reports.

5.2.1 The South African Air Quality Information System (SAAQIS)

The SAAQIS (www.saaqis.org.za) makes air information available to stakeholders, provide a common system for managing air quality in South Africa and provide uniformity in the way data; information and reporting are managed in South Africa. A central aim of the SAAQIS is that it allows the public access to air quality information. Improving the availability of information facilitates transparency in processes, informs decision making, and builds capacity. The SAAQIS streamlines the flow of relevant information; provides a tool to assist in managing air quality and builds awareness about air quality among stakeholders in general. Where appropriate air quality information is geographically referenced through a GIS interface. The SAAQIS is built in such a way as to assist providers and users of information

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and, thereby, motivate the maintenance and updating of information by users. In achieving the objectives of the SAAQIS, the South African Weather Service (SAWS) as the custodian of the SAAQIS and performs air quality information functions stipulated in the South African Weather Service Act.

The SAAQIS aims to:

- Ensure that air quality information management and reporting requirements directed or implied by the AQA are met efficiently and effectively;
- Ensure that air quality management decisions, interventions, activities and actions are informed by accurate, current and complete information;
- Ensure that accurate, current, complete and relevant air quality information is available to all stakeholders and the public;
- And provide all South African's with information on the state of their air quality and the status of efforts to progressively ensure their right to air that is not harmful to health and well-being.

5.2.1.1 The national department's SAAQIS Phases Development

The SAAQIS is a dynamic information management system that will continue to grow in scope, complexity, utility and sophistication over time. The development of the SAAQIS is being carried out in phases to achieve the completion of the full system, allowing for modification and separate tendering at each phase. The suitability and user requirements of the each module are accessed and clarified before the implementation of each phase and adjusted where necessary. In this regard, a three-phase approach has been followed as:

SAAQIS Phase I – general air quality information, web landing page, document management module and the ambient air quality monitoring.

The national department's SAAQIS Phase I Development Project was initiated in July 2007 and was completed in September 2009. At the end of this project a number of tools were. The tools comprise different kinds of modules and components, services that can be accessed from a user-friendly interface. A variety of stakeholders can contribute with data and information, and in return, they benefit by having access to other information and a range of services. SAAQIS contains three main modules:

- Information input modules;
- Information extraction modules; and
- Application tools.

Each one of these modules has a number of different sub-modules that are designed for the different tasks needed by the system's users.

SAAQIS Phase II – the National Atmospheric Emission Inventory System (NAEIS)

At this stage, it is envisaged that the National Air Quality Officer will establish the internet-based National Atmospheric Emission Inventory System (NAEIS) as a component of SAAQIS. Once the NAEIS is established, AEL holders shall submit annual emissions inventory reports in the form necessary for the compilation of the national emission inventory profile. The system will also provide an emission inventory reporting platform for non-listed activities, including all sector categories from the Intergovernmental Panel for Climate Change (IPCC) such as Energy; Industrial Processes and Product Use (IPPU); Agriculture, Forestry and Other Land Use (AFOLU) and Waste. Emissions will be estimated inside NAEIS or outside the system depending on the emission sources types. The NAEIS will provide guidance and methodologies for the compilation both air pollutants and greenhouse gases emission inventories following best international practices. These tools will be available for emission inventory compilation by all spheres of government. The NAEIS will also serve as a platform for current and future emissions estimations. Section 5.2.1.5 gives more detail regarding the atmospheric emission inventory information management plans for the near future. The NAEIS will include the following:

- Details of emissions from all source types (e.g. point, mobile, area, line, volume).
- Details of emissions by pollutant and greenhouse gas type.

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- Norms and standards for emission inventories compilation.
- Examples of emission inventories compiled in South Africa.
- Search tools to interrogate the inventories.
- Details of licensed emissions.
- A database of emission factors for various activities.
- Documentation on Best Available Techniques (BAT).
- The NAEIS has been under development since April 2011 and will be finalised in 2014.

Table 9: Emissions Inventory Modules development targets

Key Milestone, Product or Output	Timeframe
Emission Inventory tools to be developed in the SAAQIS	
Emission inventory compilation tool	2014/15
Top-down and bottom-up Greenhouse Gas Inventory compilation tool	
Emission data reporting facilitation tool	
Emission data report/view generating tool	
Emission data import facility component	
Emission data assessment tool	
Emission data export tool	
Emission inventory guidelines, manuals and reporting regulations	2015/16

SAAQIS Phase III – the air quality real time reporting and forecasting

- This component of SAAQIS will provide air quality forecasting information to the general public. The forecasting will communicate to the public how polluted the air is at a point in time or how polluted it is forecast to become. It is envisaged that a National Air Quality Index will be developed to assign health related warning messages to pollution forecasts as part of the SAAQIS phase III. With this, SAAQIS will be able to advise the public on the possible precautionary actions to take in order to reduce adverse air quality effects.

5.2.1.2 Ambient air quality information

The SAAQIS provides information on how to produce and present ambient air quality data. Ambient air quality information is achieved by deploying monitoring equipment (e.g. passive and/or continuous monitoring equipment) and analysing the results. The SAAQIS also provides the users with quality assurance and quality control (QA/QC) systems, data storage and presentation/reporting routines to assist users in meeting their monitoring and reporting requirements. The SAAQIS provides assistance with the importing of raw data into the system and associated reporting requirements, validation, assessment and exporting of the data, as well as the reporting and viewing of processed data. Currently the SAAQIS ambient air quality information management module (SAAQIS Phase I) is undergoing major revisions to improve its functionality and data manipulation capabilities. This upgrade is expected to be complete by 2014.

Table 10: SAAQIS ambient air quality related implementation targets

Key Milestone, Product or Output	Timeframe
SAAQIS Phase I upgrade	2013/14
Reporting of all government-owned air quality monitoring stations into SAAQIS	Ongoing Quarterly reporting
National Ambient Air Quality Monitoring Strategy	2013/14
Live reporting of air quality monitoring stations into SAAQIS (at least 30%)	2015/16

5.2.1.3 Ambient air quality monitoring

In order to ensure integrity, quality and representativeness of the ambient monitoring data, ambient air quality monitoring needs to be conducted according to accepted norms and standards. The SAAQIS will make national norms and

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standards for ambient air quality monitoring available. The norms and standards for air quality monitoring will include the following:

- Procedures on ambient monitoring programme design, pollutants to monitor, considerations on siting of stations and monitoring station classifications.
- Procedures on the use of verified monitoring equipment, reference and equivalence monitoring methods in accordance with appropriate norms.
- Procedures on how ambient air quality data will be recorded, analysed, processed, reported and archived following best-practice principles.
- Guidance on monitoring station operation, maintenance and calibration following best-practice principles.
- Quality control and quality assurance procedures fit for ambient air quality monitoring and reporting.
- Guidance concerning air quality measurements by passive sampling.
- Systems for transferring data in SAAQIS.
- National Air Quality Index for simplified reporting of daily air quality to the general public.

Table 11: SAAQIS ambient air quality monitoring related implementation targets

Key Milestone, Product or Output	Timeframe
National norms and standards for air quality monitoring	2013/14

Notwithstanding the monitoring standards underway, the following should be taken into account when siting monitoring equipment:

Location

In respect of the macro-scale siting of SO₂, NO₂, PM₁₀, CO, C₆H₆ and Pb sampling points, sampling points directed at the protection of human health shall be sited to provide:

- data on the areas within zones and agglomerations where the highest concentrations of pollutants occur to which the highest density of the population is likely to be directly or indirectly exposed for a period which is significant in relation to the period used to derive averages in the case of limit value(s), and
- data on levels in other areas within the zones and agglomerations which are representative of the exposure of the general population.

The following factors can also be taken into account:

- interfering sources affecting the airflow in the vicinity of the sampler, e.g. overhanging trees, etc;
- security;
- access;
- availability of electrical power and telephone communications;
- visibility of the site in relation to its surroundings;
- safety of the public and operators;
- desirability of co-locating sampling points for different pollutants;
- educational awareness opportunity associated with the siting; and
- planning requirements.

Criteria for determining the recommended minimum number of sampling sites

The number of sampling sites will vary according to the class of air quality experienced in a given area (See Figure 7, page 61). Monitoring in areas where class 1 or class 2 is experienced does not need to be as intensive as that in class 3, 4 or 5 air quality areas. The intensity refers to the type of monitoring required and the recommended number of monitoring sites required.

The recommended minimum number of sampling points for fixed measurements to assess compliance with SO₂, NO₂, PM₁₀, CO, C₆H₆ and Pb limit values for the protection of human health and alert thresholds in zones and agglomerations

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where fixed measurement is the sole source of information is presented in Table 12. The recommended minimum number of sampling points for O₃ measurement is presented in Table 13.

In the case of areas polluted by NO₂, particulate matter, benzene and carbon monoxide, in class 4 and 5 air quality areas, at least one urban background station and one traffic-orientated station will be included, provided this does not increase the number of sampling points.

For the assessment of pollution in the vicinity of point sources, the number of sampling points for fixed measurements will be calculated taking into account emission densities, the likely distribution patterns of ambient air pollution and potential exposure of the population.

Sampling points for fixed measurements shall be sited so as to ensure that the samples taken will be representative of the exposure of the sampled population.

Table 12: Recommended minimum number of sampling points for fixed measurements to assess compliance with national ambient standards for SO₂, NO₂, PM₁₀, CO, C₆H₆ and Pb (adapted from SANS 1929)

Population density in agglomeration or zone (thousands)	Recommended minimum number of sampling points		
	Class 4 and 5 air quality areas	Class 3 air quality areas	Class 1 and 2 air quality areas
0 – 249	1	1	Not applicable
250 – 499	2	1	1
500 – 749	2	1	1
750 – 999	3	1	1
1000 – 1499	4	2	1
1500 – 1999	5	2	1
2000 – 2749	6	3	2
2750 – 3749	7	3	2
3750 – 4749	8	4	2
4750 – 5999	9	4	2
> 6000	10	5	3

Table 13: Recommended minimum number of sampling points for fixed measurements to assess compliance with ozone limits values for the protection of human health in zones and agglomerations where fixed measurement is the sole source of information (adapted from SANS 1929).

Population density in agglomeration or zone (thousands)	Recommended minimum number of sampling points		
	Agglomerations (urban and suburban) ^a	Other zones (suburban and rural) ^a	Rural background
0 – 249	-	1	One station per 50 000 km ² as an average density over all zones within the country ^b
250 – 499	1	2	
500 – 999	2	2	
1000 – 1499	3	3	
1500 – 1999	3	4	
2000 – 2749	4	5	
2750 – 3749	5	6	
> 3750	One additional station per two million inhabitants	One additional station per two million inhabitants	

^a least one station in suburban areas, where the highest exposure of the population is likely to occur. In agglomerations, at least 50% of the stations will be located in suburban areas.

^b One station per 25 000 km² for complex terrain is recommended.

Requirements for meteorological monitoring

Meteorological monitoring is an important aspect of air quality management. Monitoring and analysis of meteorological conditions should be part of air quality monitoring programme.

5.2.1.4 The National Air Quality Indicator

The national department has developed a methodology for calculating and ascertaining an indicator to monitor the state and trend of air ambient quality in South Africa, the National Air Quality Indicator (NAQI). The methodology will be

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published as part of the revised National Framework for Air Quality Management in South Africa in the National Norms and Standards for Air Quality Monitoring during 2014.

Identifying pollutants to be considered in the national indicator is relatively easy as the pollutants must include those for which the National Ambient Air Quality Standards have been set - the criteria pollutants. However, although all monitoring stations are measuring some of the criteria pollutants, they may not be measuring all of the pollutants. At least for the immediate future, the pollutants chosen for the indicator are those:-

- That are considered to be problems at the majority of measurement points, i.e. problem pollutants at a national scale; and
- That are measured at the majority of stations; and where historical data sets are available to measure progress since, at least, 2005.

From these criteria, particulate matter (PM₁₀ of aerodynamic diameter equal or less than 10 µm) is the first obvious choice with sulphur dioxide (SO₂) second. There is really no benefit in considering an indicator in respect of pollutants that seldom, if at all, exceed national standards such as carbon monoxide.

The NAQI has been developed to weigh, balance and manipulate data in such a way as to provide a verifiable and reportable measure of air quality at the national scale that is broadly accepted as being an adequate indicator, much like the National Ambient Air Quality Standards (NAAQS) are broadly accepted as a proxy for air that is not harmful to health and well-being. The NAQI will be used by a range of stakeholders from air quality managers to the general public. The main purposes of a NAQI are to:

- Inform the objectives of the AQA (enhancement, protection, governance).
- Monitor national progress in implementing AQA policy targets – towards national compliance by 2020.
- Provide an overall picture on the efficacy of air quality interventions.
- Provide a monitoring tool to measure the effects of policy responses.
- Serve as an environmental air quality indicator in order to assess the condition and reflect air quality trends nationally.
- Provide a tool to support policy-makers in air quality management, policy development, prioritisation and evaluation; and
- Serve as a communication tool on air quality matters by simplifying complex atmospheric observations to plots and figures easily understood by the public.

The indicator has been developed on the following basic principles:

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- *Simple, but not simplistic* - As the indicator is meant to provide all South Africans with an indication of the quality of their air as well as whether this quality is improving or getting worse, the indicator must be simple enough for anyone to understand. However, it should not attempt to over-simplify what is actually a very complex concept, i.e. the indicator should not end up being regarded as simplistic and of little value by air quality managers.
- *Credibility* - Everyone should have confidence that the indicator provides a fair indication of the quality of their air as well as whether this quality is improving or getting worse.
- *Transparency and complexity* - In order to ensure the credibility of the indicator, methodologies of defining the indicator and the types and sources of data must be fully transparent, i.e. anyone should theoretically be able to generate the indicator.
- *Accuracy and reproducibility* - In order to reinforce the credibility of the indicator, the data used in the generation thereof must be accurate, complete and current. Furthermore, the use of the agreed methodologies must render the same result every time.
- *Sensitivity* - The indicator must be sensitive enough to demonstrate significant changes over time, but must not be so sensitive as to allow dramatic changes resulting from once-off or isolated events.
- *Balance* - As discussed above, the indicator must provide a balanced measure, for e.g. if one solitary measurement reflects non-compliance it would be unfair for the indicator to reflect that the entire nation is non-compliant.

The number of monitoring stations reporting to SAAQIS changes over the years as more monitoring stations begin to report to the SAAQIS. Also, the NAAQS annual average of PM₁₀ is getting stricter from 01 January 2015. These changes would impact the credibility of the NAQI as the value will be derived from a continuously moving baseline and target. For these reasons, the NAQI will be defined over specified reporting phases/periods during which the number of stations and the NAAQS are constant:

- **NAQI Reporting Phase I - 2008 to 2014**
 - In this phase, the NAQI will be based on the monitoring stations that have been operating since 2008.
 - The annual average NAAQS of PM₁₀ will be 50 µg/m³.
 - The NAQI from 2008 annual averages of PM₁₀ and SO₂ will serve as the baseline for this reporting phase.
 - It is envisaged that, once more networks start reporting to the SAAQIS, particularly with the increase in historical observations, a better picture on the trends will emerge.
- **NAQI Reporting Phase II – from January 2015 to 2020**
 - In this second phase, all stations measuring PM₁₀ and SO₂ from 2014 will be incorporated into the development of the NAQI.
 - The annual average NAAQS of 40 µg/m³ of PM₁₀ will also apply.
 - The NAQI from 2014 annual averages of PM₁₀ and SO₂ will serve as the baseline for this reporting phase.
 - It is also envisaged that by 2014, all government stations will be reporting to SAAQIS.
 -
- **NAQI Reporting Phase III and future phases**
 - To be defined in the future and specified in future National Frameworks.

5.2.1.5 Atmospheric emission inventory information management

Emission inventory information for air pollutants and greenhouse gases from all source sector types will be accessible from the National Atmospheric Emission Inventory System (NAEIS), which is described in Section 5.2.1.1. A National Atmospheric Emission Inventory System Data Management Policy will be developed to specify the protocols for data management and levels of accessibility for all users including stakeholders/general public. This data management policy and associated work packages will also give guidance with regard to the specific location of the NAEIS according to legal mandates, objectives of and the desired integrity of the system.

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5.2.1.6 Listed Activities and compliance monitoring

Databases for Listed Activities and compliance monitoring will be accessible from the SAAQIS. Norms and standards for the production of information from operators of Listed Activities will be provided through the SAAQIS. Within the context of stack and other emitter-based monitoring data, protocols may be included in the SAAQIS to incorporate emissions data in a more significant manner. Further policy development will be necessary to establish strict parameters within which emitter-based monitoring data will be used, in order to maintain impartiality within the system.

Table 14: SAAQIS listed activity related implementation targets

Key Milestone, Product or Output	Timeframe
Database of Listed Activities	2014/2015

5.2.1.7 Policy, legislation and regulations

SAAQIS provides current legislation, regulations and by-laws through a user-friendly interface. The interface helps the user find relevant parts of the legislation and regulations. The SAAQIS provides search facilities in the documents, general advice to stakeholders and guidance as to roles and responsibilities of different actors and agencies within the various regulations that are available.

Table 15: SAAQIS policy and legislation related implementation targets

Key Milestone, Product or Output	Timeframe
All current policy and legislation	Ongoing

5.2.1.8 South African air quality research reference database

A large body of scientific literature that has been generated by the South Africa air quality scientific community over the years has been drawn together into the *South African Air Quality Research Reference Database*. This includes information on publications in the formal peer reviewed literature, presentations at international and national scientific conferences, 'grey literature' i.e. institutional research reports and post graduate theses. The database is searchable by fields that include details of the publication, and where this information is housed and available. The database has a facility for authors to record new material as it is published. This database is made publicly available via a link from the SAAQIS.

5.2.1.9 Air Quality Management Plans

Methodological approaches and guidance on the standards expected for development of the Air Quality Management Plans (AQMP manual) are available via the SAAQIS. AQMPs that have been developed at national, provincial and municipal spheres, and for Priority Areas are also made available.

5.2.1.10 Additional aspects of the SAAQIS

The SAAQIS is intended to provide a complete solution to the management of air quality information in South Africa, therefore the components discussed are expanded on and enhanced through mechanisms for education and skills development and accessing support on air quality issues and management. Provisions may also be included in the SAAQIS for:

- Interactive training using e-learning techniques;
- A support centre or helpdesk for assistance on air quality information related queries;
- A national website for updates on air quality status;
- A media library containing air quality information from media sources;
- A database of key stakeholders;
- A library of relevant links to relevant national and international air quality information.

5.2.2 Air quality publications

A series of information booklets are being developed by the national department with the objective of advancing the science and understanding of air quality management and to address the responsibility regarding the provision of air quality information to the public. The information series is also aimed at providing air quality management practitioners

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with technical guidance. The completed publications are available from the national department and will be available for downloading on SAAQIS. The titles of the booklets and their publication status are presented in Appendix 1.

The publications are structured in series that are aimed at specific target groups:

Series A: the general information series. This series are aimed at a general readership.

Series B: the specialist information series. The series is targeted at undergraduate students and practising professionals. It comprises booklets covering topics such as air pollution meteorology, air pollution dispersion modelling, pollution control approaches, impacts of air pollution and international agreements and climate change.

Series C: the governance information series. This series provides detailed information on the implementation of air quality management, aimed at practitioners.

Series D: the cleaner production series. The series is aimed at cleaner production and various booklets book will be developed for sectors that have been identified as priorities (see relevant prioritisation Paragraph 5.3.3, page 46).

5.2.3 Air quality reporting

The main objective of reporting on air quality is to convey information to a target user group, with variation in the purpose and content of air quality reports according to user groups. The following sections outline different types of air quality reports that may be required. Reporting on international commitments is governed by the stipulations in the Climate Change White Paper

5.2.3.1 Atmospheric impact reports

An AQO may require any person to submit an Atmospheric Impact Report, in accordance with Section 30 of the AQA, provided that there is reasonable suspicion that the person has on one, or more, occasions contravened or failed to comply with the AQA or any condition of their AEL. The contents and compliance requirements of an Atmospheric Impact Report are detailed in Paragraph 5.5.4.

5.2.3.2 State of air reporting

State of environment report is necessary to describe baseline environmental conditions against which changes or trends may be measured. These reports are important in prioritising and setting goals for environmental management and will include a chapter on the state of the air. This chapter will be reviewed every 5 years and include the following:

- A set of defined indicators to measure ambient air quality;
- Information on:
 - Air quality standards and objectives;
 - Ambient air quality monitoring activities;
 - Listed Activities and their related emissions;
 - Status of ambient air quality and trends;
- Air quality management initiatives.

5.2.3.3 The Air Quality Officers' annual reports

In order to meet the progress reporting requirements in respect of air quality management plans, all municipal AQOs will be required to submit a Municipal Air Quality Officer's Annual Report to the provincial AQO at least 1 month prior to the Annual National Air Quality Governance Lekgotla (see Paragraph 4.4.6, page 39). The provincial AQOs will then use these reports to inform the compilation of a Provincial Air Quality Officer's Annual Report to be submitted to the National AQO at least 2 weeks prior to the Lekgotla. The National AQO will then compile the draft National Air Quality Officer's Annual Report for presentation to the Lekgotla for ratification and submission for publication. Details on the structure and content of the National Air Quality Officer's Annual Report can be found in Paragraph 6.2 of this document.

5.3 Problem identification and prioritisation

5.3.1 Introduction

There are a number of areas in South Africa that have recognised air quality problems (see Paragraph 5.3.4). These are areas where there are industrial activities resulting in emissions at various levels depending on quantities emitted and

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number of pollutant sources per area; low-income residential areas using coal and wood stoves for cooking and heating; and other sources of pollution that are identified in various AQMPs. As South Africa is a relatively dry country, dust pollution is also problematic. Sources of dust include construction, agricultural and industrial activities and mining and dust from un-surfaced roads in a large number of rural villages and low-income urban residential areas is a significant air pollution problem. Vehicle emissions from trucks and private vehicles exacerbate the air pollution problem.

A standard approach is required to identify situations of poor air quality and to quantify the scale and nature of the non-compliance in order to prioritise its importance for air quality management intervention. Prioritising poor air quality situations allows for a structured and coordinated approach to addressing the issues, including the focussing of resources. There are a number of sections in the AQA that deal with problem identification and prioritisation, including, among others:

- The Minister must identify pollutants which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well-being or the environment or which the Minister reasonably believes present such a threat (Section 9(1)(a));
- The Minister may declare an area as a priority area if the Minister reasonably believes that: ambient air quality standards are being, or may be, exceeded in the area, or any other situation exists which is causing, or may cause, a significant negative impact on air quality in the area; and the area requires specific air quality management action to rectify the situation (Section 18(1));
- The Minister must publish a list of activities which result in atmospheric emissions and which the Minister reasonably believes have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage (Section 21(1)(a));
- The Minister may declare any appliance or activity, or any appliance or activity falling within a specified category, as a controlled emitter if such appliance or activity, or appliances or activities falling within such category, result in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health or the environment or which the Minister reasonably believes presents such a threat (Section 23(1));
- The Minister may, by notice in the *Gazette*, declare a substance or mixture of substances which, when used as a fuel in a combustion process, result in atmospheric emissions which through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health or the environment or which the Minister reasonably believes present such a threat, as a controlled fuel (Section 26(1)); and
- The Minister may declare any substance contributing to air pollution as a priority air pollutant and require persons falling within a specified category to submit and implement a pollution prevention plan in respect of the priority air pollutant (Section 29(1)).

The underlying requirement for problem identification and prioritisation is information. Some guidelines are provided here for identifying and prioritising pollutants, emitters and areas of concern.

5.3.2 Identifying and prioritising pollutants of concern

Section 9 of the AQA provides the Minister with a legal mandate to identify a national list of pollutants of in the ambient which present a threat to human health, well-being or environment, herein referred to as criteria pollutants, and establish acceptable ambient air quality standards for such pollutants. Eight criteria pollutants have been identified to date (see Table 16) in accordance with Section 9 of the AQA. Ambient air quality standards have been established and gazetted for all of these criteria pollutants. In time and according to defined/identified need, additional pollutants are added to the list. These future pollutants can be categorised as either of national or provincial significance. In the case of pollutants that have a provincial significance the MEC may declare these as provincial pollutants of concern.

The following guidelines will be applied when identifying and prioritising pollutants of concern:

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- The possibility, severity and frequency of effects, with regard to human health and the environment as a whole, with irreversible effects being of special concern;
- Ubiquitous and high concentrations of the pollutant in the atmosphere;
- The feasibility of monitoring the air pollutant;
- Potential environmental transformations and metabolic alterations of the pollutant, as these changes may lead to the production of chemicals with greater toxicity or introduce other uncertainties;
- Persistence in the environment, particularly if the pollutant is not biodegradable and able to accumulate in humans, the environment or food chains;
- The impact of the pollutant taking the following criteria into consideration;
 - Size of the exposed population, living resources or ecosystems;
 - The existence of particularly sensitive receptors in the zone concerned;
- Pollutants that are controlled by international conventions.

Furthermore, the Minister may declare any substance contributing to air pollution as a priority pollutant in terms of section 29 of AQA. Any person conducting an activity which involves emission of a priority pollutant may be required to develop, submit and implement an atmospheric pollution prevention plan in the manner that has been prescribed by the Minister. The Minister may also require monitoring, evaluation and reporting for the atmospheric prevention plans.

Table 16: Pollutants of Concern

Current criteria pollutants	Potential priority pollutants	Possible Future Pollutants of Concern	
		National Pollutants	Local Pollutants
Sulphur dioxide (SO ₂); Nitrogen dioxide (NO ₂); Ozone (O ₃); Carbon monoxide (CO); Lead (Pb); Particulate matter (PM ₁₀); Particulate matter (PM _{2.5}); Benzene (C ₆ H ₆).	Carbon dioxide (CO ₂) Methane (CH ₄) Nitrous oxide (N ₂ O) Hydrofluorocarbons (HFCs) Perfluorocarbons (PFCs) Sulphur hexafluoride (SF ₆)	Mercury (Hg); Dioxins; Furans; POPs; Other VOCs; N ₂ O;	Chrome (Cr ₆ ⁺); Fluoride (particulate and gas); Manganese (Mn). Hydrogen Sulphide (H ₂ S) Asbestos Black carbon

All other atmospheric emission of pollutants controlled by international conventions ratified by South Africa will be controlled through regulations to be published in terms of the AQA.

5.3.3 Identifying and prioritising emitters of concern

The following factors must be considered when identifying and prioritising emitters of concern:

- Emitters located in relatively close proximity to sensitive receptors, e.g. residential areas, schools, hospitals or sensitive ecological areas;
- Emitters of pollutants of concern based on volumes of emission and the nature of the pollutant, i.e. those identified in Table 16;
- Emitters that cannot, or do not, operate successfully within the conditions of their AEL;
- Emitters that are not regulated by an AEL, but emit pollutants identified to be of concern;
- Peak emissions in short time steps, and;
- Emitters of pollutants identified by multilateral environmental agreements that are ratified by South Africa.

5.3.4 Identifying and prioritising areas of concern

Air quality areas of concern are all areas where the ambient air quality does not comply with the national ambient air quality standards. In some cases this includes areas that there is sufficient evidence suggesting that the area(s) will not be able to comply with national ambient air quality standards in the near future.

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5.3.4.1 National and Provincial Priority Areas of Concern

According to section 18 of AQA, the minister (in case of national) or the MEC (for province) may declare an area as a national or provincial priority area respectively if either believes that:-

- Ambient air quality standards are being, or may be, exceeded in the area, or any other situation exists which is causing, or may cause, a significant negative impact on air quality in the area; and
- The area requires specific air quality management action to rectify the situation.

The Minister or MEC may at a later stage withdraw the declaration of a priority area if the area has achieved compliance with ambient air quality standards for a period of at least two years. The process for declaration and management of a priority area is summarised in the below:

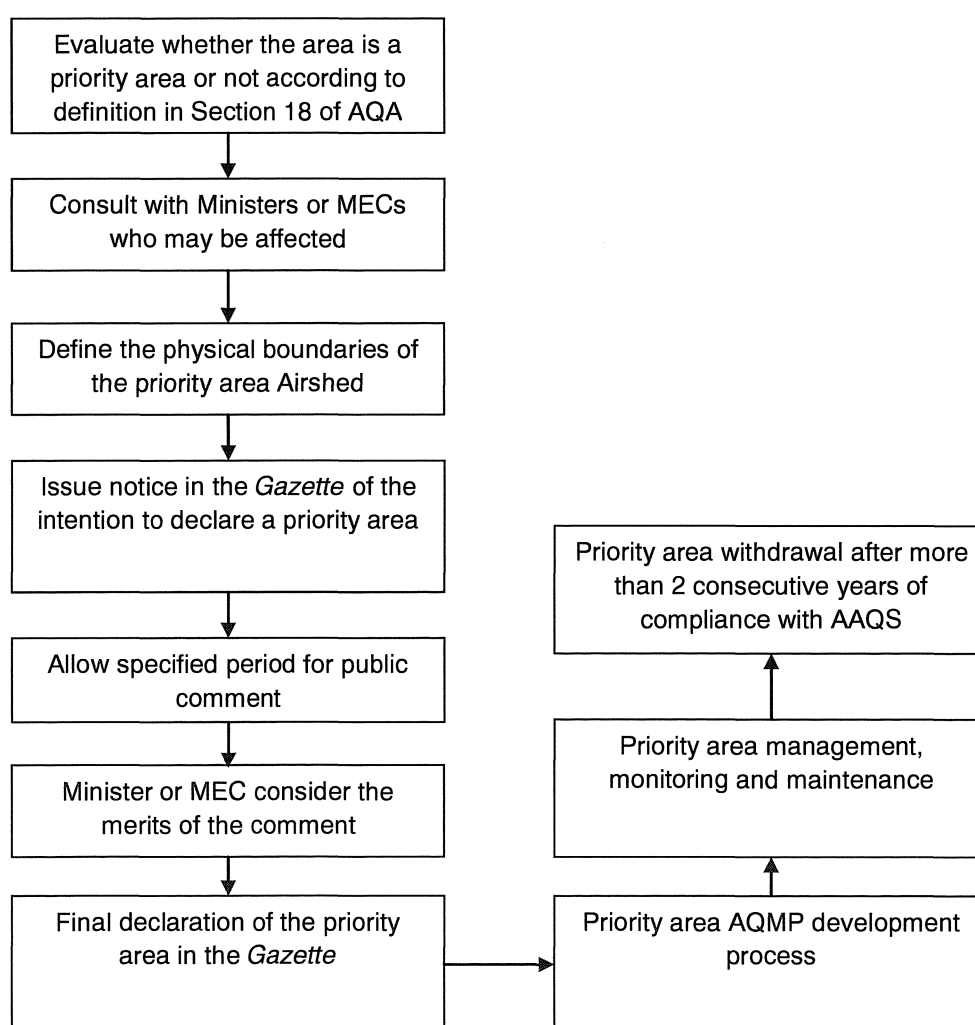


Figure 4: Summary of a process for priority area declaration and management

At national level, the following national priority areas (Table 17 below) have been declared by the Minister. No provincial priority areas have been declared to-date.

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Table 17: Declared national priority areas

Priority area	Status
Vaal Triangle Airshed Priority Area	Declared in 2006. AQMP developed and under implementation
Highveld Priority Area	Declared in 2008. AQMP developed and under implementation
Waterberg-Bojanala Priority Area	Declared in 2012. AQMP development process initiated

5.3.4.2 *Municipal Areas of Concern*

Since the partial entry into effect of the AQA in 2005, and the subsequent development of its National Framework, the DEA has attempted to identify areas of concern within the republic with emphasis mostly on Metropolitan and District Municipalities. In doing so, the DEA developed table 24 of the 2007 National Framework – this table is currently shown in Table 18 of this document. The National Framework classified municipalities as either:

- **Acceptable** – generally good air quality;
- **Potentially Poor** – air quality may be poor at times or deteriorating; or
- **Poor** – ambient air quality standards regularly exceeded.

Table 18 replaces the former National Framework table 24. As it was with the former table 24, the information used to rate the air quality status in Table 18 has been gathered from a number of different sources; including:

- The State of Air Report;
- NAQMP Phase II Project Report – Summary of Ambient Air Quality Monitoring in South Africa;
- Discussions with national, provincial and municipal air quality officials;
- Environmental Impact Assessments;
- Atmospheric Emission Licensing Applications;
- Strategic Environmental Assessments;
- Monitoring Campaigns; and
- Academic Research.

In essence, where monitoring stations exist (as shown in column 5), the ratings were based on data reported to SAAQIS from those stations. For areas where there is no monitoring, the ratings were based on other means highlighted in the previous paragraph. In attempt to validate the information in this table, DEA has initiated a Passive Sampling Campaign under the project “Table 24 Ground Truthing”. Passive samplers have been placed in the various locations (see column 6 of table below) to provide a cost effective means of confirming the ratings with regard to municipalities of concern.

A complete set of validated results of the current round of passive sampling campaigns will be available in 2013. It is expected that the results of the campaign will aid in the subsequent Framework reviews and improvement of this table.

Table 18: Metropolitan and District Municipalities initially rated as having Poor or Potentially Poor Air Quality

Province	Metro / District Municipality	Local Municipality	Initial Air Quality Rating	Number of Government – Owned Air Quality Monitoring Stations	National Ambient Air Quality Passive Sampling Campaign
Eastern Cape	Nelson Mandela Bay Metro	n/a	Poor	3	None
Free State	Motheo DM	Mangaung	Potentially Poor	3	None
	Lejweleputswa DM	Matjhabeng	Potentially Poor	0	None

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Province	Metro / District Municipality	Local Municipality	Initial Air Quality Rating	Number of Government – Owned Air Quality Monitoring Stations	National Ambient Air Quality Passive Sampling Campaign
Gauteng	Fezile Dabi DM	Metsimaholo	Poor	1	None
	City of Johannesburg Metro	n/a	Poor	8	None
	City of Tshwane Metro	n/a	Poor	6	None
	Ekurhuleni Metro	n/a	Poor	9	None
	West Rand DM	Randfontein	Potentially Poor	1	Mohlakeng
		Westonaria	Potentially Poor	0	Bekkersdal
		Mogale City	Poor	1	Krugersdorp
		Merafong City	Potentially Poor	0	None
	Sedibeng DM	Emfuleni	Poor	1	None
		Midvaal	Poor	1	None
		Lesedi	Poor	0	None
KwaZulu-Natal	Ethekwini Metro	n/a	Poor	12	None
	uMgungundlovu DM	The Msunduzi	Potentially Poor	2	None
	Uthukela DM	Emnambithi-Ladysmith	Potentially Poor	0	None
		Umtshezi	Potentially Poor	0	None
	iLembe DM	Mandini	Potentially Poor	1	Mandini
		KwaDukuza	Potentially Poor	0	KwaDukuza
	Uthungulu DM	uMhlathuze	Poor	1	Richardsbay
	Amajuba DM	Newcastle	Potentially Poor	1	Newcastle
	Ugu DM	Umdoni	Potentially Poor	0	Umdoni
		Hibiscus Coast	Potentially Poor	1	Hibiscus
Limpopo	Mopani DM	Ba-Phalaborwa	Potentially Poor	0	None
	Capricorn DM	Polokwane	Potentially Poor	0	Polokwane
	Waterberg DM	Lephalale	Potentially Poor	1	None
	Greater Sekhukhune DM	Greater Tubatse	Potentially Poor	1	None
Mpumalanga	Ehlanzeni DM	Thaba Chweu	Potentially Poor	0	None
		Mbombela	Potentially Poor	0	Nelspruit
		Umjindi	Potentially Poor	0	None
	Gert Sibande DM	Msukaligwa	Poor	1	None
		Pixley Ka Seme	Poor	0	None
		Lekwa	Poor	0	None
		Dipaleseng	Poor	0	None
	Nkangala DM	Delmas	Poor	0	None
		Emalahleni	Poor	2	None
		Steve Tshwete	Poor	2	None
North-West	Bojanala Platinum DM	Madibeng	Potentially Poor	1	Brits
		Rustenburg	Poor	3	Marikana
	Dr Kenneth Kaunda DM	City of Matlosana	Potentially Poor	0	Kanana Township
Northern Cape	Kgalagadi DM	Gamara	Potentially Poor	0	None
	Siyanda DM	//Khara Hais	Potentially Poor	0	None
	Frances Baard DM	Sol Plaatjie	Potentially Poor	0	Kimberley

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Province	Metro / District Municipality	Local Municipality	Initial Air Quality Rating	Number of Government – Owned Air Quality Monitoring Stations	National Ambient Air Quality Passive Sampling Campaign
Western Cape	City of Cape Town Metro	n/a	Poor	12	None
	West Coast DM	Saldanha Bay	Poor	0	None
	Cape Winelands DM	Drakenstein	Potentially Poor	0	None
		Stellenbosch	Potentially Poor	0	None
	Eden DM	Mossel Bay	Potentially Poor	0	None
		George	Potentially Poor	1	None

The national department, based on available information, reasonably believes that: (i) municipalities that are rated as Potentially Poor in Table 18 may be Class 3 or 4 Air Quality Areas (see 5.4.3.2, page 58); and (ii) municipalities that are rated as Poor in Table 18 may be Class 4 or 5 Air Quality Areas.

Given the above, municipalities that are listed in Table 18 will be prioritised for support in terms air quality management.

5.4 Strategy development

5.4.1 Introduction

This section of the National Framework provides details on the mechanisms and norms and standards to address the air quality issues that have been identified and prioritised in the previous section. The various sections that follow, namely Awareness-raising, Standard Setting, Regulations and Air Quality Management Planning are directly aligned with the stages of the governance cycle (Figure 1).

5.4.2 Awareness-raising

The AQA does not provide specifically for awareness-raising activities, however, awareness-raising is one of the strategies identified in the air quality governance cycle depicted in Figure 1 aimed at addressing air pollution problems. In contrast to the formulation of policy and legislation, and the setting of norms and standards, awareness-raising aims to bring about positive changes in air quality by voluntary rather than forced means. Improvements in public knowledge through environmental education, sharing of knowledge and experience, and access to information, can lead to voluntary changes that are often more sustainable than forced changes initiated by legislation.

Awareness-raising is directly linked to two of the cross-cutting issues in the National Framework, namely capacity development (See Paragraph 5.9.2) and information dissemination (See Paragraph 5.9.3). By raising awareness, community well-being and empowerment is promoted and a contribution is made to capacity development. It is important to recognise the value and potential of well-informed and committed citizens for effecting positive change in air quality. Meaningful public involvement in air quality management issues will be strongly encouraged (See Paragraph 5.9.1). Access to information is a key factor in raising awareness and increasing the knowledge of the public (See Paragraph 5.2.1).

Strategies to raise awareness will emphasise the adverse impacts of air pollution, climate change and ozone layer protection, human health and the environment; and the benefits of clean air. All spheres of government have a responsibility to raise awareness around air quality issues amongst the public, the private sector and their own departments. Strategies to raise awareness include, among others the following:

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- Media campaigns in the press, on radio, television, bill boards, etc.;
- Public seminars and workshops;
- Distribution of information material
- Effective education programmes developed for primary and secondary schools taking into account the local context;
- The organisation of clean air events to coincide with recognised events such as World Environment Day; and
- Maintenance of an informative and up-to-date website.

5.4.3 Standard setting

The AQA provides for the setting of standards for:

- Ambient air quality;
- Listed activities;
- Controlled emitters, and
- Controlled fuels.

The setting of these standards shall follow problem identification and prioritisation process. Depending on the nature of the standard, the process followed in establishing the standards must consider various factors such as, but not limited to:

- The health, safety and environmental protection objectives;
- Analytical methodology;
- Technical feasibility;
- Monitoring capability; and
- Socio-economic consequences.

5.4.3.1 *The generic standard setting process*

The process of developing standards (for ambient air quality, emitted air pollutants by listed activities, controlled emitters and controlled fuels) in terms of AQA is summarised in Figure 5 below.

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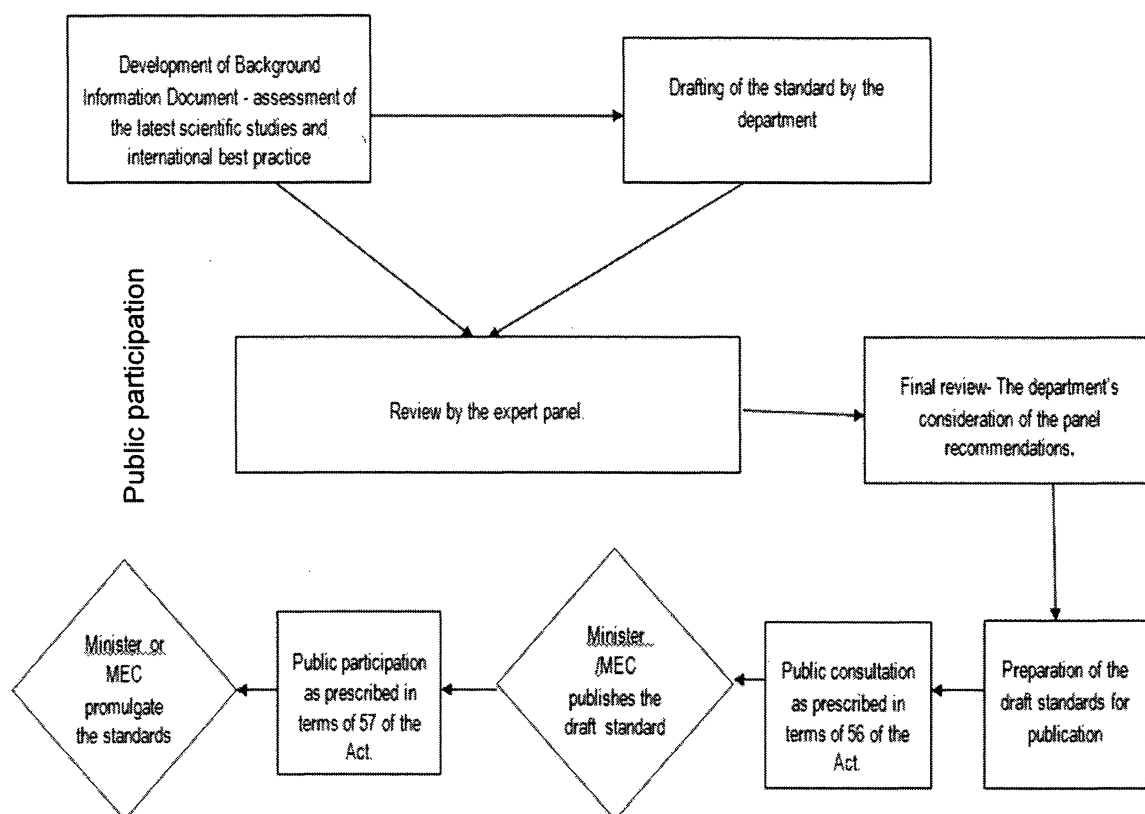


Figure 5: The generic standard setting process

The process in figure above can be divided into three main steps namely: standard drafting, review by the technical and affected sectors, and publication of standards

Standard drafting

According to AQA, the Minister must (or MEC or municipality may) identify substances or mixtures of substances in ambient air (Section 9(1)(b)), emitted pollutants (Section 9(1)(c)), controlled emitters (Section 23(1)) or controlled fuels (Section 26(1)) that present a threat to health, well-being or the environment through any means. The identification of these will consider the guidelines provided on problem identification and prioritisation in Paragraph 5.3 of this document.

During the standard setting process, the national or provincial department will assess the latest scientific and technological information about either the pollutant or emission source (in case of an emitter) that present a threat to environment or well-being. This assessment will include but not limited to health and environmental risk assessment, establishment of potential to emit; possible control measures and any other factor that may be necessary for decision-making.

Review of proposed standard by expert panel

The department will establish and chair the expert panel for the review of recommended standards. This expert panel will include, but not necessarily be limited to representatives from: the national department, affected national departments, provincial and municipal government, industry, business, civil society and the academia. In this regard, the department, together with the relevant organisations will make every effort to ensure that the membership of the expert panel is representative and balanced.

In developing the recommendation on the standard, the expert panel shall follow specific processes outlined for ambient air quality standards, and for emission standards for listed activities, controlled emitters and controlled fuels. The role of the expert panel is to undertake an independent review of the standard proposed by an organ of state based on the latest scientific information.

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Once the expert panel has submitted its findings/review outcomes, the department must establish the standard in accordance with AQA. In terms of Section 56(2), the standard setting process must include: (a) consultations with all Cabinet members whose areas of responsibility will be affected by the standards, (b) consultations with the MECs responsible for air quality in each province that will be affected by the standards, and (c) allow public participation in the process in accordance with Section 57.

Publication of the standard

With regard to Section 57(1) of the AQA the Minister must give notice of the proposed standards in: (a) the Gazette; and (b) at least one newspaper distributed nationally. In accordance with Section 57(2) of the AQA the notice described above must: (a) invite members of the public to submit written representations on or objections to the standards to the Minister within an appropriate time (a minimum of 30 days) of publication of the notice in the Gazette; and (b) contain sufficient information to enable members of the public to submit meaningful representations or objections.

In respect of Section 57(3), the Minister may in appropriate circumstances allow any interested person or community to present oral representations or objections to the Minister, or a person designated by the Minister.

In terms of Section 57(4), the Minister must give due consideration to all representations or objections received or presented before setting the standards.

In considering the technical complexity that may be associated with these standards, the Minister will positively consider a comment period longer than the minimum requirement.

5.4.3.2 South African national ambient air quality standards**Introduction**

In order to uphold the constitutional right to an environment that is not harmful to health and well-being, the setting of ambient air quality standards is mandatory. This document provides clarity on how these standards will be set.

Ambient air quality standards are defined in the Integrated Pollution and Waste Management policy (IP&WM, 2000) as those that define *"targets for air quality management and establish the permissible amount or concentration of a particular substance in or property of discharges to air, based on what a particular receiving environment can tolerate without significant deterioration"*.

In line with the World Health Organisation's position, the primary aim of ambient air quality standards is to provide a uniform basis for the protection of public health and ecosystems from the adverse effects of air pollution, and to eliminate or reduce to a minimum, exposure to those pollutants that are known or likely to be hazardous.

Ambient standards therefore provide the benchmark for air quality management and governance. Examples of how ambient standards are used are as follows:

- To objectively define what quality of ambient air South Africans agree is not harmful to their health and well-being;
- To inform decisions on what type of developments are appropriate in specific areas;
- To use as a yardstick to measure air quality management performance;
- To provide the basis for triggering air quality governance interventions.

The IP&WM Policy clearly recognises both the political and technical dimensions of standard setting, namely:

- The universal, consultative application of the standards-setting process, taking into account the needs of, and information possessed by, the polluter, government departments, the scientific community and civil society;
- Guidelines for the development of the approach to, and the setting of standards, drawn up as part of the national strategies in collaboration with all relevant parties;
- The provision of access for civil society to the standards-setting process and the standards themselves, in accordance with the commitment to more readily available air quality management information.

Process for ambient air quality standards setting

The standards setting process is more than just the identification of the defined standard of a specific pollutant. A number of factors beyond the exposure-response relationship need to be taken into account. These factors include understanding the current concentration of pollutants and exposure levels of the population, the specific mixture of air pollutants, and the specific social, economic and cultural conditions encountered within a country. A technical and legal

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process must be followed to ensure the proposed ambient air quality standards can be achieved in practice and at a justifiable cost.

This process also includes the review of all available toxicological and epidemiological information and all available information of the effects on the receiving environment. The specific standard setting process is depicted in Figure 6 and includes:

- Identification of critical factors for health impact;
- Identification of sensitive sub-populations;
- Review of available databases for health status;
- Review of available databases for ambient air quality information, and
- Review and assessment of international guidelines and standards.

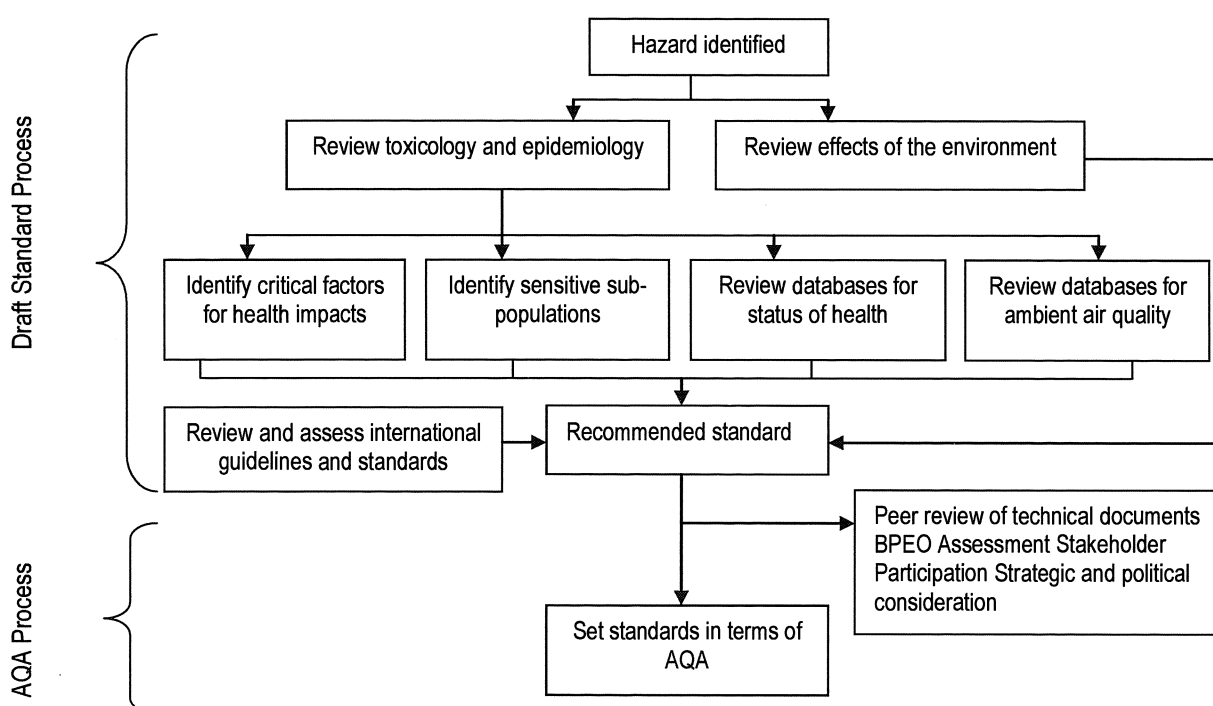


Figure 6: The standard setting process for ambient air quality

A standard may have many components that define it as a "standard". These components may include some or all of the following:

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- **Limit values** – a numerical value associated with a unit of measurement and averaging period that forms the basis of a standard;
- **Averaging period** – a period of time over which an average value is determined;
- **Permissible frequencies of exceedence** – a frequency (number/time) related to a limit value representing the tolerated exceedence of that limit value, i.e. if exceedences of the limit value are within the tolerances, then there is still compliance with the standard;
- **Measurement method** – a scientifically accepted standard reference method ; and
- **Compliance time frames** – a date when compliance with the standard is required. This provides a transitional period that allows for activities to be undertaken ensuring compliance by the compliance date.

Given the above, a standard often comprises a limit value for an averaging period with associated tolerances and compliance time frames.

The limit values (concentrations) are based on a scientific process. A further review of the limit values and a feasibility assessment is however required in order to establish ambient air quality standards that includes amongst other, political and socio-economic considerations, which are agreed by all South Africans. This further process includes:

- Technical feasibility, i.e. is it possible to monitor the pollutant with the accuracy required by the proposed limit value?
- Economic feasibility, i.e. can the proposed limit values for the selected pollutant be achieved in practice at an affordable cost?
- Cost-benefit, i.e. is the cost of achieving the proposed limit value offset by similar reductions in the externalised cost to society associated with current levels of the pollutant?
- Public participation that assures, as far as possible, social equity or fairness, and understanding of the scientific and economic consequences.
- Socio-economic considerations, e.g. consideration of the social and economic implications of compliance or non-compliance.
- Strategic and political considerations, e.g. considerations of ambient standards in energy planning.

Implementation of ambient air quality standards

This discussion relates to the implementation of ambient air quality standards and refers to Figure 7. For a given pollutant, the ambient air quality standard's limit value is indicated as the bold horizontal line across the centre of Figure 7. This line therefore defines the agreed ambient standard's limit value for the given pollutant, i.e. concentrations of a given pollutant below this value are not considered harmful to health and well-being, while those above this line are considered to pose a possible risk to health and well-being. The different colour bands in Figure 7 and the degree of governance and air quality management that is required in each are described below.

- **Target Levels** – will be the ambient air quality targets for ambient air in South Africa that provide an adequate “development buffer” between air that is considered harmful and air that is not considered harmful to health and well-being. Target levels will be set at 80% of the national ambient air quality standards, where feasible (e.g. taking into account natural background levels for particular pollutants).
- **Green Zone – Class 1 Air Quality Area** – will be the areas where ambient air quality remains within Target Levels and no substantive corrective air quality management interventions are required other than basic good air quality governance – e.g. EIAs, licensing, periodic monitoring, etc.
- **Alert Levels** – will be the levels of ambient air quality where “pre-emptive” governance interventions are triggered that provide an adequate “intervention development buffer” between air that is considered harmful and air that is not considered harmful to health and well-being. Alert levels will be set at 90% of the national ambient air quality standards, where feasible.
- **Blue Zone – Class 2 Air Quality Area** – will be the areas where ambient air quality remains within Alert Levels, but “pre-emptive” air quality management interventions are required other than basic good air quality governance – e.g. an investigation into the causes of air pollution through, among others, the compilation of emission inventories and/or static air quality monitoring campaigns.
- **Purple Zone – Class 3 Air Quality Area** – will be the areas where ambient air quality remains within the

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standards, but sustained air quality management interventions are required to, at least, maintain or improve this situation – e.g. detailed investigation into the causes of air pollution through, among others, the compilation of emission inventories and/or static air quality monitoring campaigns, the detailed implementation of an air quality management planning regime, the design and implementation of targeted air quality improvement interventions, the review of Atmospheric Emission Licences in the area, etc.

- *The AQA Section 9 Ambient Air Quality Standard* – will be the limit values of ambient air quality where immediate governance interventions are triggered with the aim of, at least, bringing the area into compliance with the standard. This standard is the boundary between air that is considered potentially harmful and air that is not considered harmful to health and well-being.
- *Orange Zone – Class 4 Air Quality Area* – will be the areas where ambient air quality represents a possible threat to health and well-being and requires immediate and sustained air quality management interventions to, at least, bring the area into compliance with the standards within agreed time frames. In order for government to prioritise efficient and effective air quality interventions, although immediate interventions are required, Class 4 Air Quality Areas need not necessarily be declared as priority areas in terms of the AQA. However, without limiting the types of interventions to be undertaken, the following interventions must be undertaken by the affected Air Quality Officers - detailed investigation into the causes of air pollution through, among others, the compilation of detailed emission inventories and continuous and/or static air quality monitoring campaigns, the detailed implementation of the AQA air quality management planning regime, the design and implementation of targeted air quality improvement interventions, the review of Atmospheric Emission Licences in the area, strict enforcement of AEL conditions, etc. (See Chapter 4 of this document - Roles and Responsibilities).

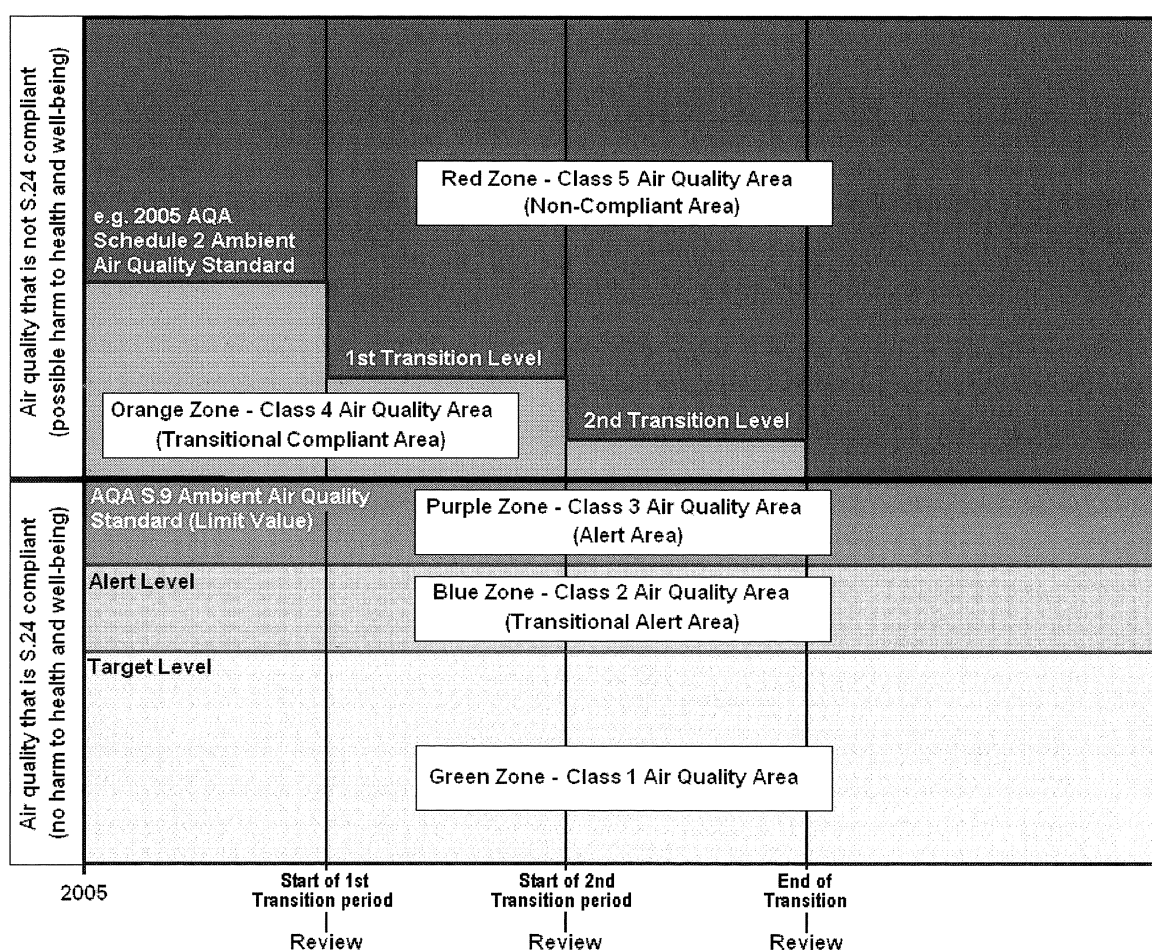


Figure 7: Framework for the use and application of the standards or objective-based approach to air quality management

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- **Red Zone – Class 5 Air Quality Area** – will be the areas where ambient air quality represents a possible threat to health and well-being and requires immediate and sustained air quality management interventions to, at least, bring the area into compliance with the standards within agreed time frames. Class 5 Air Quality Areas must immediately be declared national or provincial priority areas in terms of the AQA.
- **Transition Levels** – these levels represent the time frames for compliance with the standards. These levels will be used to inform all interventions taken in respect of Class 4 and 5 Air Quality Areas. The interim standards as provided in Schedule 2 to the AQA provide the current level tolerance. The 1st transitional compliance period (i.e. the 1st transition period and associated transition level in Figure 7) is then likely to have a tolerance of 50% of the difference between the standards provided in Schedule 2 to the AQA and the national ambient air quality standards. The final, transitional compliance period (i.e. the 2nd transition period and associated transition level in Figure 7) is then likely to have a tolerance of 50% of the difference between the 1st Transition Level and the national ambient air quality standards.
- **Review** – a review of the Target Levels, Alert Levels, national ambient air quality standards and Transition Levels must be undertaken at the end of each transition period or as part of the required the AQA National Framework review process (see 6, page 92).
- **Permitted Exceedences** – as infrequent exceedences of the standards may not be reflective of the general air quality of an area, permitted exceedences in respect of all national ambient standards are informed by those reflected in Schedule 2 of the AQA and through the standard setting process. Details of the frequency of exceedences must be detailed in the respective AQMP.

Ambient air quality standards are specific to individual pollutants. In reality pollutants do not occur in the atmosphere in isolation, but any number may exist. A standard approach to addressing the risk to a number of pollutants will be considered for the review of the National Framework through a health-based air quality index.

5.4.3.3 Listed activities and related emission standards

Introduction

One of the tools for controlling industrial emissions to the atmosphere is the traditional permit or licence which identifies activities that may only operate if they are correctly permitted to do so by the regulatory authority, and only if the conditions set in the permit or licence are met. This form of regulation was the basis for regulatory control of industrial emissions in terms of the APPA and has been repeated, with some significant modifications, in the AQA.

Section 21 of the AQA states that the Minister must publish a list of activities which result in atmospheric emissions, and which she reasonably believes have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage. The list applies nationally. The MEC may publish a list of activities which applies to the relevant province only.

Once identified, these activities are known as Listed Activities and require an AEL or provisional AEL in order to operate. Section 21 of the AQA also requires the setting of minimum emission standards for specified pollutants or mixtures of substances emitted by the identified activities. The permissible amount, volume, emission rate or concentration of the pollutant or mixture of pollutants must be specified as well as the manner in which measurements of such emissions must be carried out.

To this end, the Minister has in March 2010 published the first list of activities and their associated minimum emission standards. The list was revised and the amended list, which repealed the original 2010 list, was published in 2013 (Government Gazette No.37054, Notice No.893 of 22 November 2013). This list provides the minimum requirements for emissions control and reporting in the country. Table 19 provides the activities listed on this Notice:

Table 19: The 2013 list of activities and associated emissions standards

The 2013 List of Activities	
Categories	Sub-Categories
1. Combustion Installations	(1) Subcategory 1.1 Solid Fuel Combustion Installations (2) Subcategory 1.2: Liquid Fuel Combustion Installations (3) Subcategory 1.3: Solid Biomass Combustion Installations (4) Subcategory 1.4: Gas Combustion Installations (5) Subcategory 1.5 Reciprocating Engines

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2. Petroleum Industry, the Production of Gaseous and Liquid Fuels as well as Petrochemicals from Crude Oil, Coal, Gas or Biomass	<ul style="list-style-type: none"> (1) Subcategory 2.1: Combustion Installations (2) Subcategory 2.2: Catalytic Cracking Units (3) Subcategory 2.3: Sulphur Recovery Units (4) Subcategory 2.4: Storage of Petroleum Products (5) Subcategory 2.5: Industrial Fuel Oil Recyclers
3. Carbonisation and Coal Gasification	<ul style="list-style-type: none"> (1) Subcategory 3.1: Combustion Installations (2) Subcategory 3.2: Coke Production (3) Subcategory 3.3: Tar Processes (4) Subcategory 3.4: Char, Coal and Black Carbon Production (5) Subcategory 3.5: Electrode Paste Production (6) Subcategory 3.6: Synthetic Gas Production and Cleanup
4. Metallurgical Industry	<ul style="list-style-type: none"> (1) Subcategory 4.1: Drying and Calcining (2) Subcategory 4.2: Combustion Installations (3) Subcategory 4.3: Primary Aluminium Production (4) Subcategory 4.4: Secondary Aluminium Production (5) Subcategory 4.5: Sinter Plants (6) Subcategory 4.6: Basic Oxygen Furnaces (7) Subcategory 4.7: Electric Arc Furnaces (Primary and Secondary) (8) Subcategory 4.8: Blast Furnaces (9) Subcategory 4.9: Ferro-Alloy Production (10) Subcategory 4.10: Foundries (11) Subcategory 4.11: Agglomeration Operations (12) Subcategory 4.12: Pre-Reduction and Direct Reduction (13) Subcategory 4.13: Lead Smelting (14) Subcategory 4.14: Production and Processing of Zinc, Nickel and Cadmium (15) Subcategory 4.15: Processing of Arsenic, Antimony, Beryllium, Chromium and Silicon (16) Subcategory 4.16: Smelting and Converting of Sulphide Ores (17) Subcategory 4.17: Precious and Base Metal Production and Refining (18) Subcategory 4.18: Vanadium Ore Processing (19) Subcategory 4.19: Production and /or Casting of Bronze, Brass and Copper (20) Subcategory 4.20: Slag Processes (21) Subcategory 4.21: Metal Recovery (22) Subcategory 4.22: Hot Dip Galvanizing (23) Subcategory 4.23: Metal Spray
5. Mineral Processing, storage and handling	<ul style="list-style-type: none"> (1) Subcategory 5.1: Storage and Handling of Ore and Coal (2) Subcategory 5.2: Drying (3) Subcategory 5.3: Clamp Kilns for Brick Production (4) Subcategory 5.4: Cement Production (using Conventional Fuels and Raw Materials) (5) Subcategory 5.5: Cement Production (using alternative Fuels and/or Resources) (6) Subcategory 5.6: Lime Production (7) Subcategory 5.7: Lime Production (using alternative Fuels and/or Resources) (8) Subcategory 5.8: Glass and Mineral Wool Production (9) Subcategory 5.9: Ceramic Production (10) Subcategory 5.10: Macadam Preparation (11) Subcategory 5.11: Alkali Processes
6. Organic Chemical Industry	<ul style="list-style-type: none"> (1) The production, or use in production of organic chemicals not specified elsewhere including acetylene, acetic, maleic, phthalic anhydride or their acids, carbon

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	<p>disulphide, pyridine, formaldehyde, acetaldehyde, acrolein and its derivatives, acrylonitrile, amines and synthetic rubber.</p> <p>(2) The production of organo-metallic compounds, organic dyes and pigments, surface active agents.</p> <p>(3) The polymerisation or co-polymerisation of any unsaturated hydrocarbons, substituted hydrocarbon (including vinyl chloride).</p> <p>(4) The manufacture, recovery or purification of acrylic acid or any ester of acrylic acid.</p> <p>(5) The use of toluene di-isocyanate or other di-isocyanate of comparable volatility; or recovery of pyridine.</p>
7. Inorganic Chemical Industry	<p>(1) Subcategory 7.1: Production And Or Use In Manufacturing Of Ammonia, Fluorine, Fluorine Compounds, Chlorine, and Hydrogen Cyanide</p> <p>(2) Subcategory 7.2: Production of Acids</p> <p>(3) Subcategory 7.3: Production of Chemical Fertilizer</p> <p>(4) Subcategory 7.4: Production, use in Production or Recovery of Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Lead, Mercury, and or Selenium, by the Application of Heat.</p> <p>(5) Subcategory 7.5: Production of Calcium Carbide</p> <p>(6) Subcategory 7.6: Production or use of Phosphorus and Phosphate Salts not mentioned elsewhere</p> <p>(7) Subcategory 7.7: Production of Caustic Soda</p>
8. Thermal Treatment of Hazardous and General Waste	<p>(1) Subcategory 8.1: Thermal Treatment of General and Hazardous Waste</p> <p>(2) Subcategory 8.2: Crematoria and Veterinary Waste Incineration</p> <p>(3) Subcategory 8.3: Burning Grounds</p> <p>(4) Subcategory 8.4: Drum Recycling Processes</p>
9. Pulp and Paper Activities, Manufacturing including By-Products Recovery	<p>(1) Subcategory 9.1: Lime Recovery Kiln</p> <p>(2) Subcategory 9.2: Chemical Recovery Furnaces</p> <p>(3) Subcategory 9.3: Chemical Recovery Copeland Reactors</p> <p>(4) Subcategory 9.4: Chlorine Dioxide Plants</p> <p>(5) Subcategory 9.5: Wood Burning, Drying and the Production of Manufactured Wood Products</p>
10. Animal Matter Processing	<p>(1) Processes for the Rendering Cooking, Drying, Dehydrating, Digesting, Evaporating Or Protein, Concentrating Of Any Animal Matter Not Intended for Human Consumption</p>

Procedure for the listing of activities

In publishing a list of activities, the Minister or MEC is required to follow a consultative process as outlined in Sections 56 and 57 of the AQA. This includes consultation with all Cabinet members (members of the Executive Council in the case of the MEC), whose areas of responsibility will be affected by the listing, and public participation by allowing for a minimum 30-day comment period.

The identification and prioritisation of the activities to be added or removed from the list of activities shall be based on but not limited to factors outlined in 5.3.3. The targeting of industries where the benefits of regulation are expected to outweigh the costs, based on experience from developed and developing countries, substantially reduces the risks of economic impacts arising due to the emission standards set.

The listing of activities therefore must be informed by appropriate analysis, such as cost-benefit analysis (CBA). In targeting industry sectors for which information on emissions and impacts is less available or inconclusive, particularly those comprising small and/or older operations, provision for CBA studies will be made so as to extend the list of

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activities and associated set of national minimum emission standards in a manner which does not lead to unjustified economic impacts or mass non-compliance.

In summary, the procedure for listing of activities is depicted in the flowchart in Figure 8. The identification of all potential Listed Activities will be based on assessment of local industries based on but not limited to factors outlined in 5.3.3, (Step 1 in Figure 8). A prioritisation process based on those known to be significant emitters will be undertaken to arrive at an revised list of Listed Activities. Prioritisation will be informed by appropriate analysis (e.g. CBA) which would include potential detrimental effects to human health (Step 2). Thereafter, there is an appropriate comment period for a minimum 30-day period (Step 3) and the publication of the final list of Listed Activities (Step 4). There is provision for a regular review of the Listed Activities every five years (Step 5), but this does not preclude the ability of the Minister or MEC to amend the list either by adding further activities (Step 6) or removing activities (Step 7) from the list at shorter time intervals.

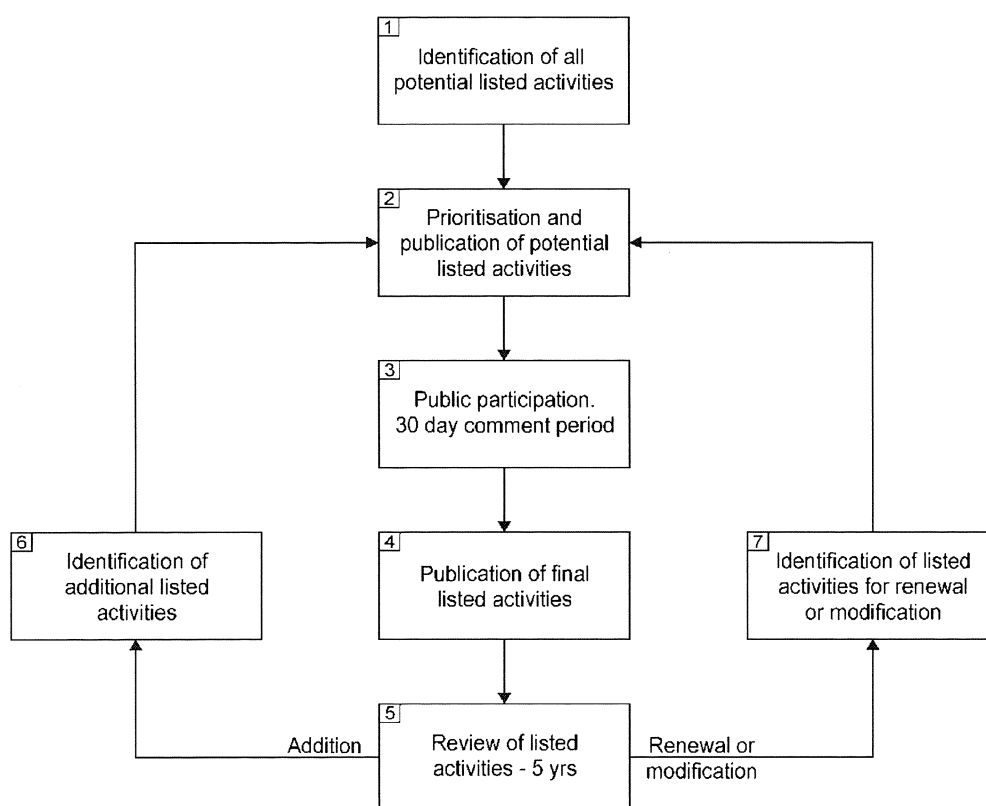


Figure 8: Procedure for the identification of listed activities

Standard-setting process for listed activities

The approach for establishing emissions standards for Listed Activities will follow the generic approach outlined in Paragraph 5.4.3.1 of this document. As the result of the variety of emission standards that might be established, and different approaches that may be adopted, the criteria followed by the department shall form part of the draft technical standard that will be used by the Expert Panel. In adopting the criteria to follow, the department shall use the following principles outlined in this section.

The use of Best Practicable Environmental Option

As discussed above, the process to establish national emission standards will be based on the application of the Best Practicable Environmental Option (BPEO) principle informed by the Best Available Technology/Technique (BAT) approach. Section 4(2)(b) of NEMA requires that "environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable

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environmental option" (BPEO). The national department has defined BPEO as the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society in the long-term as well as in the short-term (DEAT, 2004).

The BPEO test for a decision comprises the following components:

- **Best** – meaning "state of the art", most effective or most beneficial. "best" is informed by information provided in peer-reviewed local and international literature;
- **Practicable** – meaning feasible, realistic, possible, workable, practical, viable or doable, i.e. it is the opposite of impossible. "practicability" is informed by cost-benefit analyses (CBA), accessibility, cost effectiveness, availability and other information provided in peer-reviewed local and international literature; and
- **Environmental option** – meaning that the option must be measured in terms of its impact on the environment, where the environment means the surroundings within which humans exist and that are made up of: (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; any part or combination of (i) and (ii) and the interrelationships among and between them; and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

In the standard setting context, specifically with respect to technically-based standards (e.g. emission standards) the "best" component of BPEO principle will be informed through the use of the Best Available Technology/Technique (BAT) approach. BAT implies the consideration of technologies or techniques that deliver pollution controls to the best degree technologically possible, without economic or other considerations. In this regard BAT is measured with reference to best practice documentation published internationally.

In the application of BAT for the purpose of informing emissions standards and monitoring protocols for the prioritised industry types, reference must be made to the best practice documentation published internationally. Emission standards must not prescribe the use of one specific technique of technology (i.e. where possible, technology forcing must be avoided).

A lower limit can be set for activity, throughput or production rate, or uncontrolled emission rate to prevent the inclusion of a large number of small facilities, which would be more appropriately controlled under Section 23 (Controlled Emitters) of the AQA if control is deemed necessary. Emission standards must be specified primarily for point sources (stacks and vents) where emission monitoring is possible. Where the control of diffuse emissions is considered significant enough to warrant inclusion in national standards (e.g. fugitive dust at bulk ore/coal handling and processing plants and certain metallurgical industries; evaporative emissions from bulk chemical storage and handling), emission limits expressed in the form of specific best practice control measures which are applicable across individual industries must be stipulated (e.g. floating roof tanks), or alternatively, a comprehensive fugitive emission management plan must be put in place.

Only those pollutants recognised to pose a potential threat to health and/or the environment must be selected for the setting of emission standards for each industry type selected (with the exception of incineration for which an extended number of substances must be regulated in line with current local and international experience). Reference must be made to international information and approaches in the selection of the most suitable substances to target. Where appropriate, use will be made of surrogate parameters to reduce compliance monitoring costs. In the procedure which is described below, there is a mechanism for reviewing this recommendation.

Format for expressing emission standards

The AQA stipulates that emission standards must include the permissible amount, volume, emission rate or concentration of that substance or mixture of substances that may be emitted and the manner in which measurements must be carried out. This requirement in the AQA came about as a result of the manner in which emission standards have been historically specified within the APPA Registration Certificates (i.e. typically as emission concentrations without limits on volumetric flows or on total masses of emissions). The specification of a total mass as a permissible amount or a volume in a general national minimum emission standard intended to regulate a number of individual industries is problematic, unless it is specified on a per unit production or output basis i.e. a performance standard.

Emission standards must be expressed either as an emission concentration or a performance standard (i.e. amount of pollutant emitted per unit of activity) or, where appropriate, a combination of both, with the actual concentration or level of performance taken from BAT. Total masses of emissions permissible can be included in the AELs of Listed Activities.

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Measurement of emissions

The AQA stipulates that the manner in which the measurement of emissions from Listed Activities is undertaken must be specified. For purposes of compliance monitoring, it is necessary to carry out measurement of emissions.

The emission monitoring required clearly depends on the nature of the source, the pollutant and the emission standard. Emission standards expressed as emission concentrations require direct stack monitoring. The sector-specific monitoring method and frequency will be taken from internationally available best practice documentation. In most cases, continuous emissions monitoring will be prescribed for the larger sources of criteria pollutants as is typically best practice, with periodic (e.g. annual) testing campaigns stipulated for metals, persistent organic compounds etc. Continuous stack monitoring will be required in areas that are not in compliance with ambient air quality standards, especially within declared priority areas where the emissions from the stack significantly contribute to poor air quality in the area. Emission standards expressed as a performance standard (e.g. kg of pollutant per ton product) requires a combination of direct monitoring and product tonnage tracking methods.

Compliance time frames

Compliance time frames have been informed by industry cycles. Based on international experience, an effective approach would be to set minimum time frames for compliance nationally (taking account of industry cycles), with provision being made for more restricted compliance time frames to be specified by provinces or municipalities for industries within their jurisdictions and/or stricter timetables being negotiated for inclusion in permits. Compliance time frames, in line with international trends are typically:

- 2 to 3 years in the case of new or substantially modified facilities;
- 5 to 10 years in the case of existing facilities, potentially differentiated by age.

Given the potential economic implications of emission standards, and mindful that emission standard setting in South Africa was not based on comprehensive sector-based CBA (at least not for the initial group of Listed Activities as the intention was to ensure that there is no regulatory vacuum when the APPA was repealed), provision has been made for specific industries to apply for possible extensions to compliance time frames, provided ambient air quality standards in the area are in compliance and will remain in compliance even if the postponement is granted. The proponent of a Listed Activity is allowed to apply for a postponement of the compliance date according to Section 21 of the Act, and for such application to be positively considered, the following conditions must be met:

- An air pollution impact assessment being compiled in accordance with the regulations prescribing the format of an Atmospheric Impact Report (as contemplated in Section 30 of the AQA) by a person registered as a professional engineer or as a professional natural scientist in the appropriate category;
- Demonstration that the facility's current and proposed air emissions are and will not cause any adverse impacts on the surrounding environment;
- A concluded public participation process undertaken as specified in the NEMA Environmental Impact Assessment Regulations;
- Any reasonable additional requirements specified by the National Air Quality Officer;
- The application must be submitted to the National Air Quality Officer at least 1 year before the specified compliance date.

This provision would ensure that any requirement to upgrade is informed by an understanding of any environmental impact of the affected plant. At the end of the extension period, a further extension could be granted subject to a repeat of the conditions above-mentioned.

Phase-in and transitional arrangements

As outlined above, the initial list of activities comprises industry types which are known to be potentially significant in terms of their atmospheric emissions, and where based on experience from developed and developing countries, economic risks are likely to be minimal. Additional measures to reduce risk during this initial phase include: (i) restricting pollutants for which emission standards are specified to the key ones for that industry type, thus reducing compliance monitoring and reporting costs; (ii) taking industry cycles into account in the setting of national minimum compliance

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timeframes, and (iii) making provision for industries to apply for extensions based on impact assessments being undertaken.

Allowance is made for emission standards to be varied to take account of the age of facilities. The setting (retention) of less stringent emission standards for older facilities has a place in the regulatory process internationally. It is however notable that these emission standards are not static, but that there are time frames within which facilities are expected to meet firmer standards. Generally, the approach adopted is to link required improvements to major plant modifications and to take advantage of industry cycles.

A further transitional arrangement practised internationally is the specification of general emission standards for application to industries for which sector-specific emission standards are not yet applicable. Taking into account the recommendation that a select list of industry types be prioritised for the setting of specific emission standards, general emission standards for application to industries which are initially not listed are to be used.

Compliance tolerances

Compliance tolerances will be dealt with as part of the standard setting process.

5.4.3.4 Controlled Emitters

Introduction

According to Section 23 of the AQA, the Minister or MEC may declare any appliance or activity, or any appliance or activity falling within a specified category, as a controlled emitter if it results in atmospheric emissions which present a threat to health or the environment or which the Minister or MEC reasonably believes presents such a threat. The controlled emitter regulatory tool is principally for the management of emissions from widespread, small-scale emitters.

The following controlled emitters have been identified and the status of declaration is presented in Table 20:

- Small boilers
- Temporary asphalt plants
- Other examples of potential emitters include, but not limited to, the following:
- Temporary charcoal production facilities
- Fuel transfer facilities

Identification of controlled emitters

The procedure for identification and declaration of controlled emitters will be based on a prioritisation process taking account of the following factors:

- Severity of impacts on health and well-being;
- Activity likely to yield the most incremental improvement in ambient air quality;
- International experience;
- Availability of technology.

In declaring an appliance or activity as a controlled emitter, the Minister or MEC is required to:

- follow a consultative process in accordance with sections 56 and 57 of the AQA;
- to apply the precautionary principle contained in the NEMA;
- to take account of international obligations;
- to consider any sound scientific information; and
- to consider any risk assessments.

Activities/appliances likely to be declared potential controlled emitters within the next five years will be prioritised following a similar procedure outlined in Paragraph 5.4.3 of this document.

Standard-setting process for controlled emitters

Once an appliance or activity is declared a controlled emitter, emission standards must be set. The standards must set the permissible amount, volume, emission rate or concentration of any specified substance or mixture of substances that may be emitted from the controlled emitter. The manner in which the measurements of emissions from controlled

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emitters must be carried out must also be prescribed. International best practice, with the consideration of local circumstances, must be used to inform the principles upon which standards are based and the standard setting process.

Compliance time frames

Compliance time frames will be established for each of the controlled emitters taking account risks to human health, relative contribution to ambient air quality levels, and ability to monitor for compliance.

Compliance tolerances

Compliance tolerances will be determined as part of the standards setting process.

5.4.3.5 Controlled Fuels**Introduction**

Section 26 of AQA provides for the Minister or MEC to declare a substance or mixture of substances as a controlled fuel, if when it is used as a fuel in a combustion process, it results in emissions to the atmosphere which the Minister or MEC reasonably believes present a threat to health or the environment. Controlled fuels may be defined as those substances or mixtures of substances that have caloric value but are not controlled by the Department of Energy and are sometimes referred to as alternative fuels.

Examples of potential controlled fuels include:

- Waste organic chemicals;
- Tyres; and
- Spent pot linings.

Procedure for identification of controlled fuels

Identification of controlled fuels is likely to be influenced by other legislation, especially the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as most of these are classified as wastes or by-products. As these pieces of legislation promote the re-use of substances or mixture of substances that have specified calorific values, the controlled fuel tool shall be used to ensure that this reuse is conducted in a manner that does not impact negatively on ambient air quality. Currently, the National Policy on Thermal Treatment of General and Hazardous Waste (Government Gazette No.32439, Government Notice No.777 of 24 July 2009) provides the framework in which thermal waste treatment technologies shall be implemented in the country with respect to the following:

- Incineration of general and hazardous waste in dedicated incinerators or other high temperature thermal treatment technologies, including but not limited to pyrolysis and gasification; and
- The co-processing of selected general and hazardous waste as alternative fuels and/or raw materials (AFR) in cement production.

In relation to this policy framework, thermal treatment and the use of AFRs are listed in terms of Section 21 of the AQA, and associated minimum emission standards are specified. The Minister has recently published her intention to establish the national standard for the assessment of waste for landfill disposal, which restricts the land filling of waste with specific calorific value (Government Gazette No.35572, Notice No.615 of 10 August 2012). This intent on the promotion of reuse of this waste is further supported by the AQA with respect to combustion of waste in a manner that does not impact negatively on ambient air quality.

As further policy framework is developed for the use of alternative fuels and raw materials, controlled fuel tool will, where appropriate, be used to regulate the manufacture, use and/or prohibition of such fuels. Where requirements are made in other legislation (e.g. AFR requirements in the thermal treatment policy), such requirements shall be adopted and/or implemented using other air quality tools (e.g. listed activities).

Standard-setting process for controlled fuels

The generic procedure described in Paragraph 5.4.3 above on standard setting will be utilised for this.

Compliance time frames

Timeframes for compliance for controlled fuels will be dealt with as part of the standards setting process.

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5.4.3.6 Noise and odour

Section 34 of the AQA makes provision for the Minister to prescribe national standards for the control of noise in general or by specified machinery or activities or in specified places or areas. In so doing, as well as defining noise and determining maximum levels of noise.

Notwithstanding the above, the impact of noise and odour are usually localised and, hence, are best managed at the provincial and local level through regulations and by-laws. In order to promote a uniform approach to noise and odour management, the national department has dealt with these issues in its model air pollution control by-laws (see 5.8.2.3, page 84).

Section 35 of the AQA makes provision for the Minister or the MEC to prescribe measures for the control of offensive odours emanating from specified activities. It is the responsibility of the occupier of any premises to take all reasonable steps to prevent the emission of any offensive odour caused by any activity on their premises.

The DEA has developed a best practice guidance document for odour management from the three main industrial sectors regulated in terms of Category 10 (Animal Matter Processing) of the listed activities and associated minimum emission standards. The sectors covered include fishmeal plants, tanneries and rendering plants. While the document is limited to these sectors, the principles and techniques described in the document are broadly applicable to other sectors which generate noxious or offensive odours.

5.4.3.7 Dust

Section 32 of the AQA makes provision for the Minister or the MEC to prescribe measures for the control of dust in specific places or areas, or by specified machinery or in specific instances. While dust generally does not pose a health risk, it may be regarded as a nuisance. It is the responsibility of the owner of the dust generating activity to take reasonable measures to limit the nuisance factor.

With respect to this, the Minister has published in the gazette the regulations for the control of dust in 2013 (Notice 827, Government Gazette No.36974). These regulations provide requirements for measures for the control of dust, which includes the requirements for monitoring, dust management plan development and implementation and reporting. The regulations shall apply nationally.

5.4.4 Regulations

Table 20 below lists the regulations that have been promulgated to-date and those that are intended to be promulgated under AQA.

Table 20: Schedule of Government notices and regulations in terms of the AQA

Ref.	Description	Current status	Proposed publication date for public comment	Proposed date for final publication
AQA Section 64(2)	Commencement notice of certain sections of the AQA (excluding sections 21, 22, 36 to 49, 51(1), 51(1)(f), 51(3), 60 and 61)	Published on 09 September 2005 (Notice 898, Government Gazette No.28016).	Done	
AQA Section 18(1)	Vaal Triangle Air-Shed Priority Area Declaration	Declared on 21 April 2006 (Notice 365, Government Gazette No.28732).	Done	
AQA Section 7(1)	National Framework for air quality management in the Republic of South Africa	This document	Done	
	Correction Notice: Substitution of the map describing the boundaries of the VTAPA	Notice published on 17 August 2007 (Notice 711, Government Gazette No.30164).	Done	
AQA Section 9(1)(a) & (b)	Notice identifying substances in ambient air and establishing national standards for the permissible amount or concentration of each substance in ambient air – the 1 st ambient air quality standards.	Published on 09 June 2006 (Notice 528, Government Gazette No.28899)	Done	
AQA	Notice declaring the 2 nd National Priority	Declared as the National Priority	Done	

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Ref.	Description	Current status	Proposed publication date for public comment	Proposed date for final publication
Section 18(1)	Area (Highveld Priority Area).	Area on 23 November 2007 (Notice 1123, Government Gazette No. 30518).		
AQA Section 19(5)	Notice publishing the Vaal Triangle Air-shed Priority Area Air Quality Management Plan	The VTAPA AQMP final publication was on 28 May 2009 (Notice 613, Government Gazette No. 32263).	Done	
AQA Section 20	Regulations for implementing and enforcing the Vaal Triangle Air-shed Priority Area Air Quality Management Plan.	Promulgated on 29 May 2009 (Notice 614, Government Gazette No. 32254).	Done	
AQA Section 53(p)	Regulations on model air pollution control by-laws to be adopted by municipalities.	Promulgated on 02 July 2010 (Notice 579, Government Gazette No. 33342).	Done	
AQA Section 9(1)	National ambient air quality standards	Final publication was done on 24 December 2009 (Notice 1210, Government Gazette No. 32816)	Done	
AQA Section 64	Minister's notice bringing the remainder of the AQA into operation, namely, sections 21, 22, chapter 5, 51(1)(e), 51(1)(f), 51(3), 60 and 61 (APPA repealed)	Notice published on 26 March 2010 (Notice 220, Government Gazette No. 33041)	Done	
AQA Section 32	National Dust control regulations	Final regulations published on 01 November 2013 (Notice 827, Government Gazette No. 36974)	Done	2012/13
AQA Section 9(1)	National Ambient air quality standard for particulate matter of aerodynamic diameter less than 2.5 micron metres	Notice published on 29 June 2012 (Notice 486, Government Gazette No. 35463)	Done	2012/13
AQA Section 18(1)	Declaration of Waterberg Bojanala Priority Area	Declared as the National Priority Area on 08 March 2013 (Notice 154, Government Gazette No. 36207).	Done	Done
AQA Section 19(5)(a)	Highveld Priority Area AQMP	Final AQMP was published on 02 March 2012 (Notice 144, Government Gazette No. 35072)	Done	
AQA Section 30	Regulations prescribing the format of atmospheric impact report.	Final regulations published on 11 October 2013 (Notice 747, Government Gazette No. 36904)	Done	2013
AQA Section 53(p)	Regulations on fee calculator to be used in calculating the prescribed processing fee for atmospheric emission licence as required by Sections 37, 44, 45 and 47.	Published for public comments on 08 March 2013 (Notice 171, Government Gazette No. 36207)	Done	2013/14
AQA Section 53	Draft regulations regarding Air Dispersion Modelling	Published for public comments on 14 December 2012 (Notice 1035, Government Gazette No. 35981)	Done	2013
AQA Section 21	Section 21 Amendment Notice: Listed activities and minimum emissions standards	Published for public comments on 22 November 2013 (Notice 893, Government Gazette No. 37054)	Done	2013
AQA Section 23	Declaration of Small boilers as controlled emitters	Final notice to declare small boilers as controlled emitters has been published on 01 November 2013 (Notice 831, Government Gazette No. 36973)	Done	2013

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Ref.	Description	Current status	Proposed publication date for public comment	Proposed date for final publication
AQA Section 23	Draft Declaration of mobile asphalt plants as controlled emitters	Draft Notice to declare mobile asphalt plants as controlled emitters will be published for comments in 2013	2013	2014
AQA Section 53(a)	Possible regulations relating to emissions reporting and information management.	Process initiated	2013/14	2014
AQA Section 29	Regulations for Declaration of GHGs as priority pollutants	Process Initiated	2014	

5.4.5 Economic instruments

The National Treasury has developed a draft policy paper to outline the role that market-based instruments, specifically environmentally-related taxes and charges, could play in supporting sustainable development in South Africa, and to outline a framework for considering their potential application (National Treasury, 2006). The draft policy paper focuses on the options for environmental fiscal reform and the policies and measures capable of contributing to both revenue requirements and environmental objectives.

Options include:

- Levies;
- Reforms to existing environmentally-related taxes;
- Development of new environmentally-related taxes;
- Reforming non-environmentally-related taxes with environmental incentives; and
- Fiscal incentives to improve environmental outcomes.

With regard to air quality related taxes and charges, the National Treasury has introduced CO₂ emissions tax on new passenger motor vehicles. The main objective of this tax is to influence the composition of South Africa's vehicle fleet to become more energy efficient and environmentally friendly. New passenger cars will be taxed based on their certified CO₂ emissions at R75 per g/km for each g/km above 120 g/km. The emissions tax currently applies to passenger cars, but will be extended to commercial vehicles once agreed CO₂ standards for these vehicles are set.

5.4.6 Air Quality Management Plans

Section 15 of AQA stipulates that each national department or province responsible for preparing an environmental implementation plan or environmental management plan must include in that plan an air quality management plan. Furthermore, each municipality must include an air quality management plan in its integrated development plan (IDP) (Municipal Systems Act: Chapter 5). The DEA has developed and published a manual for AQMP development in South Africa in order to provide guidance to all spheres of government on the processes involved in developing an AQMP. The first manual was published in 2008 and was reviewed and re-published in 2012. The aim of the manual is to improve and harmonise the quality of AQMPs produced by the various spheres of government. Further to authorities' AQMPs, the Act states that a person conducting a listed activity (see Paragraph 5.3.3) which involves the emission of a substance declared as a priority air pollutant may be required to develop, submit and implement a pollution prevention plan (Section 29 of the AQA). This latter plan may also be regarded as a form of air quality management planning.

All air quality management plans (AQMPs) are logical descriptions of interventions and required resources aimed at implementing a strategy or strategies to achieve a specific air quality objective(s).

The nature of the involvement and the degree or depth of management required in each of the generic activities will vary for different government departments and for different planning and implementation spheres in government. Furthermore, the intensity of air quality management planning, implementation and control will differ depending on the class of air quality experienced in the area.

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The successful development and implementation of an AQMP is also dependant on multi-stakeholder involvement throughout the process. The identification and establishment of stakeholder groups must be done in the beginning of AQPM development.

5.4.6.1 The AQMP development process

Notwithstanding the class of air quality experienced in a given area (See bands in Figure 7), all air quality management planning follows a systematic process illustrated in Figure 9. The process of AQMP development starts with the establishment of stakeholder groups, defining of the boundaries of the AQMP geographic area and the establishment of a baseline. Baseline assessment involves gathering of both geographic and air quality information which is critically important in informing the AQMP. Information on the quality on ambient air and emission sources may be readily available in the AQMP area from monitoring or modelling activities, emissions inventories, research campaigns, etc. Where such information is not available, acceptable methods should be deployed to gather such information (e.g. through emission inventories, monitoring and modelling). Monitoring can be augmented with modelling to expand the spatial coverage and should be done in accordance with the Regulations on Air Dispersion Modelling published by the department. Modelling also allows the opportunity to subjectively assess and select emissions control options or intervention that will result in the greatest amount of progress towards achieving the goal of the AQMP

The next step in AQMP development is Gap Analysis. Whether data exists or not, an assessment needs to be made on the adequacy of the data; with recommendations of how such data can be improved or how data can be acquired (in case it does not exist).

Based on the baseline information the goal of the AQMP is established. Where air quality standards are not met, the general goal will be to ensure compliance with standards. Where there is compliance, the goal will be to maintain good air quality or to further improve air quality.

Step 5 is especially required where AQMP goals are not met. The step involves the development of interventions to achieve specific air quality/ AQMP objectives

Implementation of interventions stipulated in the AQMP should be monitored and reported on. Since no air quality conditions remain the same over time, it is important that the AQMP revised from time to time to cater for the prevailing air quality issues.

The Air Quality Management Planning Manual for has been developed by the national department and it elaborates this process further and is available in the SAAQIS website.

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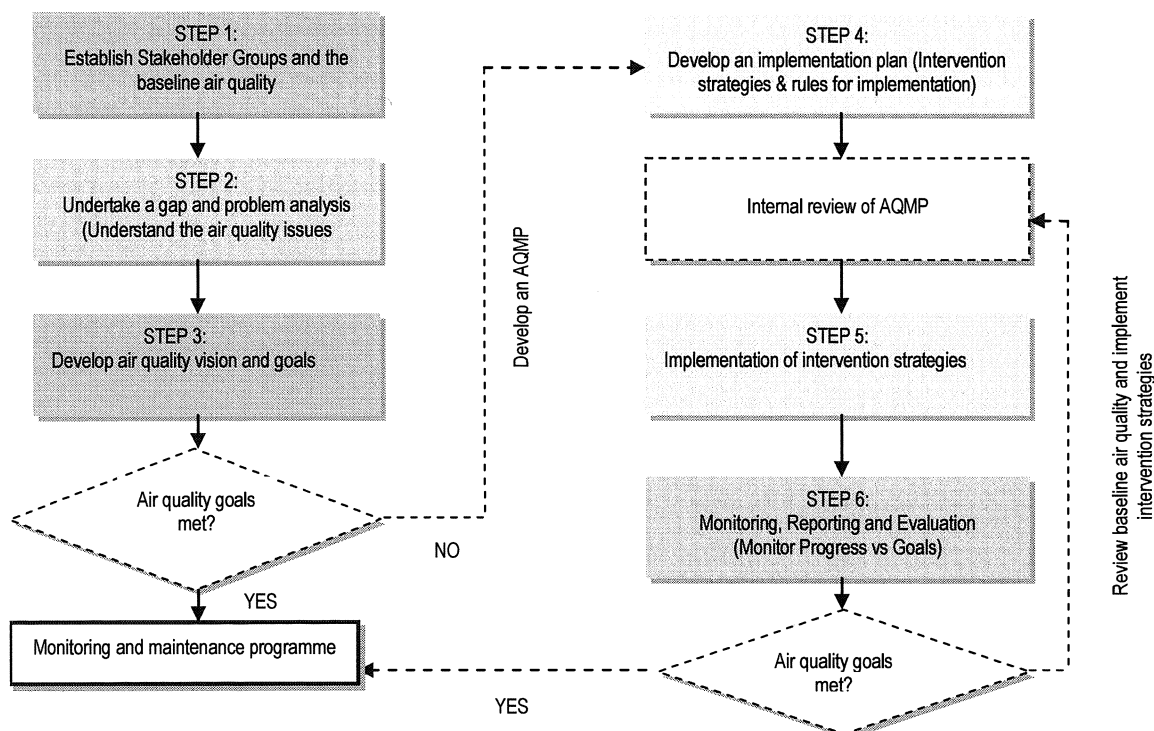


Figure 9: The generic air quality management planning process

5.4.6.2 The national air quality support programme

The national department has developed an AQMP Support Programme to ensure that the DEA provide effective and efficient support to AQMP development country wide thereby fulfilling the requirements of Section 15 of the AQA. The support program identified areas that require priority in terms of AQMP support. These are areas that have poor air quality, have demonstrated the need for support and there are resources available in a short to medium term to support them.

5.4.6.3 The National Air Quality Management Plan

As the National Framework includes a logical description of the national department's interventions and required resources aimed at implementing a strategy or strategies to achieve the objectives of the AQA, the National Framework serves as the Department of Environmental Affairs' Air Quality Management Plan as contemplated in section 15(1) of the AQA.

5.4.6.4 AQMPs for other National Government Departments

Each national department that is responsible for preparing an environmental implementation plan or environmental management plan must include in that plan an air quality management plan (NEMA: Chapter 3). The main air quality management goal for national government departments is: to ensure that activities that fall within their jurisdiction do not compromise ambient air quality; to ensure implementation of the Republic's obligations in respect of international agreements; and to ensure that their air quality management plan is coordinated with the National AQMP, i.e. the National Framework. Not all national departments need to actively participate in the development of the national AQMP.

The list below provides an indication of departments that must prepare AQMPs and make an input to the national AQMP:

- The Department of Mineral Resources (DMR) sets regulations, norms, standards and guidelines for dust control from mine spoil tailings and other mining operations.
- The Department of Energy (DoE) is also involved in fuel specifications, the use of low-smoke fuels and

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renewable energy initiatives.

- The Department of Health (DoH) sets regulations and guidelines for all medical wastes and treatment facilities, in consultation with the national department, and regulates the medical industry within the context of environmental and health legislation.
- The Department of Agriculture, Forestry and Fisheries (DAFF) is involved in dust from agricultural activities and the use of herbicides and pesticides.
- The Department of Labour (DoL) sets regulations for air quality in workplaces.
- The Department of Water Affairs (DWA) sets regulations for forest and veld fires.
- The Department of Transport (DoT) sets regulations in respect of roads and various modes of transport.
- The Department of Defence (DoD) is involved in military exercises that have an impact on air quality.
- The Department of Rural Development and Land Reform (DRDLR) is involved in the improvement of rural livelihoods through among other things energy projects, education and awareness etc.
- The Department of Human Settlement (DHS) is involved in allocation of houses for low-income earners. Also develops energy efficient housing guidelines.
- The Department of Trade and Industry (DTI) is involved in the setting of standards for alternative energy technologies.

Air quality information

In order to contribute towards a coordinated approach to air quality management in South Africa, national government department must have a fundamental understanding of the air quality implications of their technology, development and economic planning. While this may not be air quality information *per se*, information on motor vehicle emission characteristics and fuel specifications, as example, have implications on air quality, as do national planning decisions on public transport alternatives.

Control options (interventions)

Development of interventions will require coordinated decision making and the nature of the control options will vary from department to department.

Implementation of interventions

Implementation of interventions may not be limited to a single department and will require coordinated governance, hence the need for horizontal integration (see Figure 2).

Evaluate change and efficacy of intervention

The efficacy of these interventions will be evaluated, through the National Framework review process and through evidence of improved air quality in state of the air reporting.

Climate change response

In order to contribute toward a coordinated approach to climate change response in South Africa, national government departments must have a fundamental understanding of the climate change implications of their technology, development and economic planning and/or their vulnerability to climate change.

5.4.6.5 Priority Area AQMPs

AQMPs for declared priority areas must be developed in accordance with the manual for AQMP development in South Africa (including other related regulations, guidelines, software, standard formats, templates and best practise case studies that may be available) and should be aimed at the efficient and effective implementation of the air quality management planning and reporting regime.

5.4.6.6 Provincial AQMPs

Each province responsible for preparing an environmental implementation plan must include in that plan an air quality management plan (NEMA: Chapter 3).

As with the priority area AQMPs, provincial AQMPs must be developed in accordance with the Manual for AQMP Development in South Africa (including other related regulations, guidelines, software, standard formats, templates and

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best practise case studies that may be available) and should be aimed at the efficient and effective implementation of the air quality management planning and reporting regime.

5.4.6.7 Municipal AQMPs

Each municipality must include an air quality management plan in its Integrated Development Plan (Municipal Systems Act: Chapter 5).

As with the priority area AQMPs and provincial AQMPs, municipal AQMPs must be developed in accordance with the Manual for AQMP Development in South Africa (including other related regulations, guidelines, software, standard formats, templates and best practise case studies that may be available) and should be aimed at the efficient and effective implementation of the air quality management planning and reporting regime.

The status of AQMP development each year (indicating those municipalities that have developed and those that are in the process of developing AQMPs), will be published annually in the National Air Quality Officer's (NAQO) Annual report.

5.4.6.8 Atmospheric Pollution Prevention Plans

According to section 29 of the AQA, the Minister may declare any substance contributing to air pollution as a priority air pollutant, thereby requiring emitters of such pollutants to develop atmospheric pollution prevention plans. Work is currently underway to declare GHGs as priority pollutants

Setting an air quality and greenhouse gases emissions goal

The main air quality management and greenhouse gas reduction goal for emitters of priority pollutants is to comply with the requirements of a pollution prevention plans in respect of air pollutants and greenhouse gases if these are requested by the Minister or MEC in terms of section 29 of the AQA, or to demonstrate the nature, extent or significance of any environmental impact, for existing or new developments and to ensure implementation of the Republic's obligations in respect of international agreements.

Air quality information

The air quality information requirements for an emission reduction strategy must include a comprehensive site emission inventory. Detailed information is also required on concentrations of pollutants in ambient air from monitoring, and where appropriate complemented by air dispersion modelling in order to measure progress towards the specified goal.

Control options (interventions)

Control options available to other emitters may include, but not be limited to:

- Alternative fuels;
- Alternative technology;
- The installation of emissions abatement technology;
- Process changes; and/or
- Behavioural changes, e.g. selection of a non-polluting mode of transport.

Implementation of interventions

Implementation of interventions will be specific to the intervention and the targeted emission source or sources. The rules for implementation and sequence of events will have to be agreed upon among the participating government departments and experts. For point sources this will be specified in the AEL.

Evaluate change and efficacy of intervention

The efficacy of the interventions needs to be evaluated through measurement specific to the intervention, e.g. emission monitoring for emissions reduction or licence interventions, or ambient monitoring for interventions that impact on residential sources. In this case the AEL must establish time frames for measurement and reporting. Efficacy of interventions for emitters of priority pollutants can also consider emissions reduction as a result of a particular intervention in relation to the set Desired Emission Reduction Outcomes (DEROs)

5.4.6.9 AQMP reporting requirements

Section 17 of AQA requires that all National departments that are required to develop AQMPs, report on implementation of their AQMPs as part of the annual EIP or EMP reporting contemplated in section 16 (1)(b) of NEMA.

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Each province or municipality that is required to develop an AQMP in terms of section 15 of AQA, also needs to submit a report on implementation of the AQMP. This report should be submitted as part of the Air Quality Officers' report described in Paragraph 5.2.3.3 of this document.

A report on implementation of an AQMP for emitters of priority pollutants will be provided as part of their respective AEL requirements and will be submitted to the relevant licensing authority.

5.4.6.10 Human health impact assessments

One of the objectives of the AQA is to give effect to section 24(b) of the constitution in order to enhance the quality of ambient air for the sake of ensuring an environment that is not harmful to health and well-being of the people. For this reason therefore, air quality management and planning should take into account the impacts of air quality on human health and the interventions developed should be aimed primarily at minimising the of air pollution on the health of the people.

The Department on Environmental Affairs has initiated a study to assess the impacts of air pollution in the Vaal Triangle Airshed Priority Area. The study will assess the existing diseases and health profiles in relation to prevailing ambient air quality conditions – short and long term, using questionnaires and approved medical tests. It is expected that a similar approach will be replicated in all the other priority areas.

Table 21: Human health impacts assessments projects implementation targets

Key Milestone, Product or Output	Timeframe
Vaal Triangle Airshed priority area health study project completed	2015
Highveld priority area health study projects	2017
Waterberg-Bojanala priority areas health study projects	2018

5.4.7 National Air Quality Management Strategies

In order to manage non-industrial emission sources contributions to ambient air quality, the department is developing specific strategies aimed at reducing emissions from these non-point sources. Firstly, the department has drafted a strategy to Address Air Pollution in Dense Low-income Settlements. The strategy focuses on the establishment of a coordinating structure consisting of various departments with the aim of ensuring that efforts to reduce emissions in low-income settlements are effective and focuses on priority areas. Secondly, the department has drafted an Integrated Strategy on the Control of Vehicle Emissions. This strategy focuses on interventions aimed at reducing emissions from motor vehicles at national level and with major focus on large metropolitan areas. All these strategies are developed in collaboration with the implementing departments and entities.

Table 22: Air quality management strategies implementation targets

Key Milestone, Product or Output	Timeframe
Strategy to Address Air Pollution in Dense Low-income Settlement	2013/14
Integrated Strategy on the Control of Vehicle Emissions	2013/14

It is encouraged that where possible, provinces and municipalities develop strategies that allow for effective management of problematic pollution sources. Example, Gauteng Province (through Gauteng Department of Agriculture and Rural Development) is developing a strategy for the control of dust from mines in collaboration with the Department of Mineral Resources.

5.5 Impact management

5.5.1 Environmental Impact Assessments

The Environmental Impact Assessment (EIA) process is well established in South Africa. It aims to assess the likely

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impacts of a proposed development or activity, with the intention of providing sufficient information to aid decision-making. The key legislation for the implementation of the EIA process is NEMA, together with the Environmental Impact Assessment Regulations, 2010, published under Government Notice No. R.543 of 18 June 2010 read with Listing Notices 1, 2 and 3, published under Government Notices R.544, R.545 and R.546 of 18 June 2010 respectively, which provides a list of activities identified in terms of Section 24 of NEMA.

The requirements of the AQA interface with the EIA process in a number of ways that are addressed in the following paragraphs. First, the process of granting an AEL is related to the issuing of an Environmental Authorisation (EA) for an EIA application as discussed in Paragraph 5.5.2 of this document. The intergovernmental cooperation and coordination that is required is illustrated in Figure 10 (see also 4.4). Secondly, the AQA has introduced some fundamental changes to air quality legislation in South Africa that will shape and inform the specialist Air Quality Impact Assessment reports, which generally form part of an EIA process. These latter aspects are considered in Paragraph 5.5.3 of this document.

5.5.2 EIA-AEL procedural relationship

The linkage between the EIA process for a listed activity and the AQA's atmospheric emission licensing process is illustrated in the simplified flow chart in Figure 10. Licensing Authorities (Section 36 of the AQA) are charged with implementing the atmospheric emission licensing system. This function can be delegated in terms of section 238 of the Constitution of the Republic of South Africa, 1996.

The competent authority in the case of EIA applications, either province or national, is responsible for the issuing of an EA for a listed activity.

The EIA and AEL applications and decision-making processes are phased as shown in Figure 10 to take account of the information needs of each. When considering an application for an AEL, according to section 39 of the AQA, the licensing authority must take into account, amongst others, the pollution being or likely to be caused by that activity and the effect on the environment, including health, economic conditions, cultural heritage and ambient air quality.

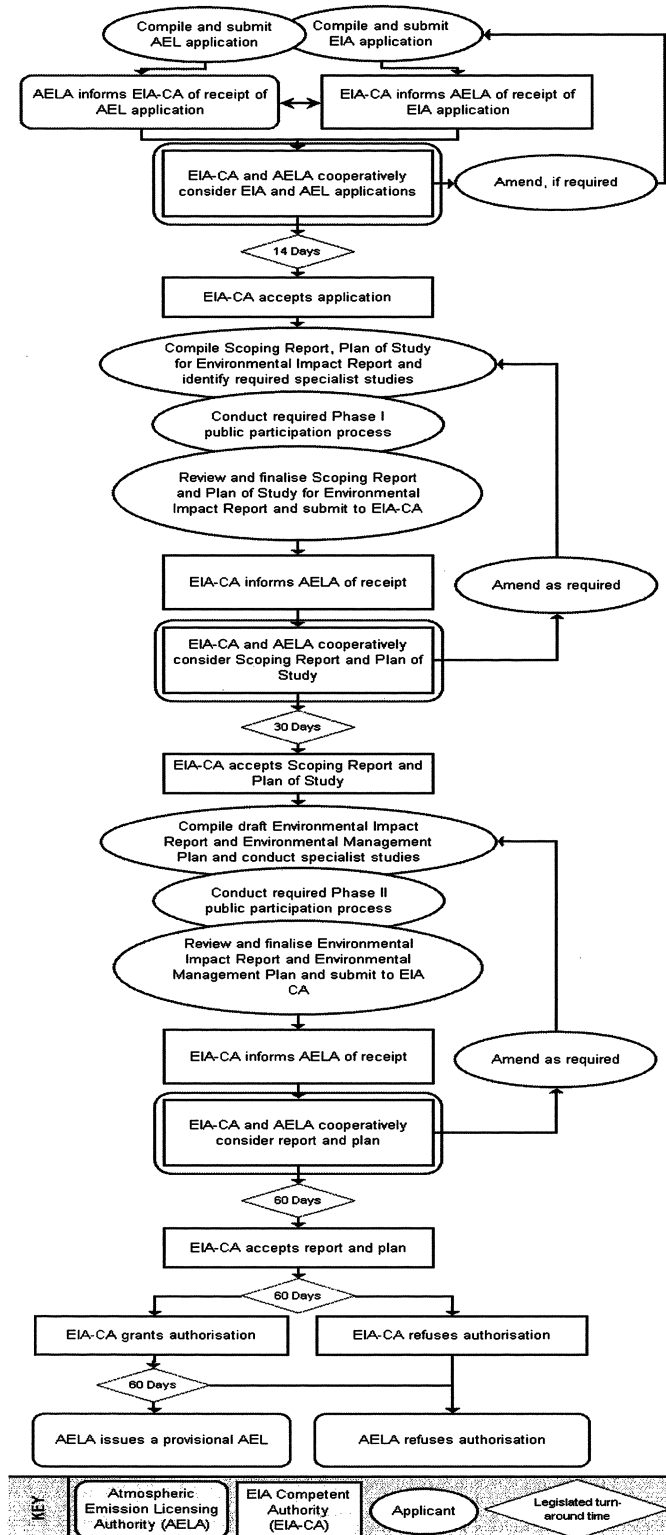


Figure 10: The interrelationship between the atmospheric emission licensing and environmental impact assessment processes

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In order for the licensing authority to properly discharge its duties, this information must be available to inform the decision. Hence, it is necessary for the EIA process and specialist Air Quality Impact Assessment to have been completed prior to the decision on an AEL application by the licensing authority. It is important that there only be one information gathering phase and this is most appropriately done during the EIA process. The licensing authority and competent authority reviews must be synchronised and interaction between the relevant municipal and provincial authorities as shown in **Error! Reference source not found.** Ideally, they should review the information jointly. The applicant needs to ensure that all the necessary information and relevant documentation is received by both EIA and AEL authorities at the right time to allow for alignment.

An EA in the EIA process must precede and inform the AEL decision. The EIA process is required to consider all potential environmental impacts, not only impacts of atmospheric emissions. The specialist Air Quality Impact Assessment is one of a number of possible specialist studies. Conceivably, the listed activity could result in significant impacts, other than those on the atmosphere, which could result in a negative EA, thus negating the need for an AEL application.

The public participation requirements of the EIA process are also more comprehensive and may contribute meaningfully to the atmospheric emission licensing process if the two processes are aligned. The public participation process required for an AEL application is specified in section 38 (3) of the AQA. An applicant must bring the application to the attention of relevant organs of state, interested persons and the public. The applicant is required to publish a notice in at least two newspapers in the area where the listed activity is to be undertaken. By aligning the public participation of the two processes, it is clear that the interests of the public are served through the more comprehensive public participation requirements of the EIA process, which may include newspaper advertisements, preparation of Background Information Documents, mail drops, public meetings and on-site notices; duplication of the public participation process is avoided; and the requirement to bring the AEL application to the attention of stakeholders can be limited to two newspaper advertisements in view of the extensive public participation that was undertaken as part of the EIA process.

5.5.3 Atmospheric Impact Assessment Reports

In general, all development applications involving listed activities will be required to undergo an EIA and will require a specialist Air Quality Impact Assessment study. Through its various requirements, the AQA prescribes and informs the scope and content of such specialist Air Quality Impact Assessment studies. The key elements of the AQA that are relevant to the EIA process are summarised, followed by the establishment of norms for a specialist Air Quality Impact Assessment report based on these requirements.

Key requirements of the AQA are as follows:

5.5.3.1 Human health impacts

One of the objectives of the AQA is to give effect to our constitutional right to an environment that is not harmful to the health and well-being of people (section 24 of the Constitution of the Republic of South Africa). The emphasis on human health requires that the specialist Air Quality Impact Assessment for a proposed listed activity includes an assessment of potential health impacts. The level of detail required is dependent on the nature and extent of atmospheric emissions and could range from a simple comparative assessment of predicted ambient air quality levels with ambient air quality standards through to a full health risk assessment.

5.5.3.2 Ambient air quality standards

The AQA is effects-based legislation, with the result that activities that result in atmospheric emissions are to be determined with the objective of achieving health-based ambient air quality standards. Each new development proposal with potential impacts on air quality must be assessed not only in terms of its individual contribution, but in terms of its additive contribution to baseline ambient air quality i.e. cumulative effects must be considered.

5.5.3.3 Point source emission standards

The AQA may also prescribe minimum standards for certain point source emissions and these must be taken into account in the specialist study.

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5.5.3.4 Mitigation measures

Related to the above, the AQA states that the Best Practicable Environmental Option (BPEO) that would prevent, control, abate or mitigate pollution, must be used.

5.5.3.5 Atmospheric Emission Licence (AEL) requirements

Notwithstanding the procedural linkages between an EIA and an AEL (see Paragraph 5.5.2), the AQA prescribes factors that need to be taken into account by licensing authority when considering an application for an AEL (Section 39 of the AQA) and also stipulates the contents of AELs (Section 43 of the AQA).

Factors that need to be taken into account include, amongst others:

- the effect or likely effect of pollution on the environment, including health, social and economic conditions, cultural heritage and ambient air quality.
- the contents of an AEL or provisional AEL must include, amongst others:
 - the maximum allowed amount, volume, emission rate or concentration of pollutants that may be discharged into the atmosphere under normal working conditions, and under normal start-up, maintenance and shut-down conditions;
 - any other operating requirements relating to atmospheric discharges, including non-point source.

The information required by the licensing authority in the licensing process, such as atmospheric emission impacts, discharges to the atmosphere under various scenarios and fugitive emissions, is best addressed in the specialist Air Quality Impact Assessment study.

5.5.3.6 Odour, noise and dust

The national Minister or the provincial Member of the Executive Council (MEC) may prescribe measures for the control of dust, noise and offensive odours. Further, the occupier of any premises must take all reasonable steps to prevent the emission of any offensive odour caused by an activity on the premises. Currently there is no obligation to consider odour, noise and dust impacts as part of the specialist Air Quality Impact Assessment study, but there may be circumstances where these are required, particularly if it is likely that the AEL will specify conditions in respect of odour and noise in accordance with Section 43(2) (a) of the AQA.

5.5.3.7 International obligations

The AQA requires that AQMPs seek to implement South Africa's obligations in respect of international agreements and an AEL must specify greenhouse gas emission measurements and reporting requirements (Section 43(1)(l) of the AQA). In view of this, specialist Air Quality Impact Assessments must consider greenhouse gas emissions as well.

5.5.4 Atmospheric Impact Reports

An AQO may require the submission of an Atmospheric Impact Report in terms of section 30 of the AQA, if:

- The AQO reasonably suspects that a person has contravened or failed to comply with the AQA or any conditions of an AEL and that detrimental effects on the environment occurred or there was a contribution to the degradation in ambient air quality. The environment is defined as including health, social, economic and ecological conditions, as well as cultural heritage;
- A review of a provisional AEL or an AEL is undertaken in terms of section 45 of the AQA.

The DEA has published the regulations with respect to the Atmospheric Impact Report in 2013 (Government Gazette No.36904, Notice 747 of 11 October 2013). The format for an Atmospheric Impact Report includes the following aspects, among others:

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- Introductory section containing, amongst other, company details, location and nature of the activity;
- Individual process details including a balance sheet of inputs, outputs and emissions;
- Detailed information on point source and fugitive emissions, and a summary of emissions under emergency and upset conditions;
- Impact of the activity on ambient air quality in the area;
- Compliance history; and
- Current or planned air quality interventions.

Table 23: Atmospheric impact reporting implementation targets

Key milestones	Target date
Regulation in respect of the prescribed form for Atmospheric Impact Report (section 30 of the AQA)	2013

5.6 Authorisations

Authorisation is required in order to operate any listed activity anywhere in the Republic if that activity appears on the national list, or anywhere in a province where the activity may be listed. The authorisation for the operation of a listed activity is gained through the atmospheric licensing process, described in Chapter 5 of the AQA. Some relevant excerpts are provided here:

The licensing authorities specified in Section 36 of the AQA are charged with implementing the atmospheric emission licensing system and must for this purpose perform the functions of licensing authority as set out in Chapter 5 of the AQA and other provisions of the AQA. Application for atmospheric emission licences and the procedure for licence applications are discussed in sections 37 and 38 of the AQA.

The factors to be taken into account by licensing authorities are detailed in section 39 of the AQA; and include, among others:

- Any applicable minimum standards set for ambient air and point source emissions;
- The best practicable environmental options available that could be taken to prevent, control, abate or mitigate that pollution; and to protect the environment, including health, social conditions, economic conditions, cultural heritage and ambient air quality, from harm as a result of that pollution;

The issuing of AELs and the contents of an AEL is detailed in sections 42 and 43 of the AQA. A provisional AEL and an AEL must specify:

- the activity in respect of which it is issued;
- the premises in respect of which it is issued;
- the person to whom it is issued;
- the period for which the licence is issued;
- the name of the licensing authority;
- the periods at which the licence may be reviewed;
- the maximum allowed amount, volume, emission rate or concentration of pollutants that may be discharged in the atmosphere -
 - under normal working conditions; and
 - under normal start-up, maintenance and shut-down conditions;

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- any other operating requirements relating to atmospheric discharges, including non-point source or fugitive emissions;
- point source emission measurement and reporting requirements;
- ambient air quality measurement and reporting requirements;
- penalties for non-compliance;
- greenhouse gas emission measurement and reporting requirements; and
- any other matters which are necessary for the protection or enforcement of air quality.

Furthermore, an AEL may:

- specify conditions in respect of odour and noise;
- require the holder of the licence to comply with all lawful requirements of an environmental management inspector carrying out his or her duties in terms of the NEMA, including a requirement that the holder of the licence must, on request, submit to the inspector a certified statement indicating:
 - the extent to which the conditions and requirements of the licence have or have not been complied with;
 - particulars of any failure to comply with any of those conditions or requirements;
 - the reasons for any failure to comply with any of those conditions or requirements; and
 - any action taken, or to be taken, to prevent any recurrence of that failure or to mitigate the effects of that failure.

Section 44 of the AQA discusses the requirements relating to the transfer of provisional AEL and AEL.

A licensing authority must review a provisional AEL or an AEL at intervals specified in the AEL, or when circumstances demand that a review is necessary (section 45 of the AQA). The AEL holder and the relevant provincial AQO must be informed of the intention to review the AEL. For the review, the AQO may require the AEL holder to compile and submit an atmospheric impact report (See Paragraph 5.4.2.1).

AQA requires that the applicant for an AEL must bring the application to the attention of the public by issuing a notice in at least two local newspapers. The notice must also indicate where and when public comments can be submitted. In addition to these legal requirements, the applicant must ensure that the application is brought to the attention of interested and affected local groups and community organisations, such as church groups, schools, crèches, or hospitals. In addition, municipal and provincial health authorities, as appropriate, must be involved in giving consideration to the licensing application process. The relationship between the EIA and AEL application is shown in Figure 10.

In cases where the application is subject to EIA requirements (i.e. for new developments or facility expansion), the public participation processes required under the AQA and the EIA Regulations must be undertaken in an integrated manner.

The licensing authority will impose a fee to any applicant of an AEL in terms of section 37(2) of AQA.

Table 24: Atmospheric emission licensing implementation targets

Key milestones	Target date
Publication of Atmospheric Emission Licensing manual	2013/2014
Annual progress reports on the National Licensing Authorities' Support Programme	Annual
Atmospheric Emission License Processing Fee Calculator published	2013/14

5.7 Compliance monitoring

5.7.1 Introduction

An important element of the environmental governance cycle is that of ensuring compliance with air quality management requirements as stated in the relevant legislation. A number of tools are provided for in the AQA, including compliance monitoring, the provision of emission control officers, and processes for voluntary compliance measures. These tools

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allow for the analysis of the compliance of various regulated activities, and are used in relation to the most appropriate level of government.

5.7.2 National measures

National responsibilities in terms of compliance monitoring relate to responsibility in respect of international commitments, monitoring compliance with goals of national Priority Area AQMPs (See Paragraph 5.4.5) and with conditions relevant to air quality contained in EIA Authorisations issued by national government. Reporting on compliance will be included in the national AQO's annual report.

National government will further undertake compliance monitoring on behalf of provinces if province fails to fulfil its executive obligation in this respect (See Chapter 3 of this document on roles and responsibilities).

5.7.3 Provincial measures

The provincial AQO is responsible for monitoring compliance with the targets specified in the provincial AQMP and for reporting compliance in the annual report. The provincial AQA is also responsible for compliance monitoring with the conditions relevant to air quality contained in EIA and AEL authorisations that are issued by the province.

5.7.4 Municipal measures

The municipality AQO also has compliance monitoring and reporting requirements regarding AQMPs that are consistent with requirements at national and provincial levels. Compliance monitoring at municipal level deals specifically with AELs, and uses licences as the primary means to ensure compliance with ambient air quality standards.

The Atmospheric Impact Reports are an additional means of monitoring compliance and can be requested of any individual that is under reasonable suspicion of contravening the AQA or causing negative impacts, as well as within the context of a licensing process (See Paragraph 5.5.4).

5.8 Enforcement

In terms of Chapter 7 of the NEMA, the functions of the Environmental Management Inspectors (EMIs) are to monitor compliance with, and enforce the NEMA and specific environmental management legislation, known as "specific environmental management acts".

The following officials may be designated as EMIs:

- Officials in the national department and other organs of state. These officials are designated by the Minister.
- Officials in provincial environmental departments and provincial organs of state, and municipalities. These officials are designated by the MEC.

Officials designated as EMIs in terms of the NEMA are able to enforce the AQA. EMIs are given a range of powers that include rights of inspection, investigation, gathering of evidence and enforcement, to enable them to fulfil their functions.

5.8.1 Offences

Section 51(1) of the AQA, a person is guilty of an offence if that person:

- conducts a listed activity without a provisional AEL or AEL as of the 1st April 2013;
- contravenes or fails to comply with a condition or requirement of an AEL;
- emits air pollutants at concentrations above emission limits specified in an AEL as a result of a listed activity;
- manufactures, sells or uses any appliance or conducts an activity declared as a controlled emitter, that does not comply with specified standards;
- operates a controlled emitter when emissions from that controlled emitter do not comply with standards;
- fails to take all reasonable steps to prevent the emission of any offensive odour caused by an activity on their

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premises;

- fails to submit or to implement a pollution prevention plan when required to do so;
- fails to submit an atmospheric impact report when required to do so;
- fails to notify the Minister of the likely cessation of mining activities and the plans that are in place for rehabilitation and the prevention of pollution by dust once mining operations have ceased;
- supplies false or misleading information in an application for an AEL, or for the transfer, variation or renewal of such a licence;
- supplies false or misleading information to an AQO;
- contravenes or fails to comply with a condition subject to which exemption from a provision of this Act was granted in terms of Section 59.

Penalties (Section 52 of the AQA) may be incurred if a person is convicted of an offence as described above. A person is liable to a fine not exceeding R5 million, or to imprisonment for a period not exceeding 5 years and in case of a second or subsequent conviction, to a fine not exceeding 10 years or in both instances to both a fine and such imprisonment. A fine must be determined with due consideration of the following factors:

- the severity of the offence in terms of the impact, or potential impact, on the health, well-being, safety and the environment;
- the monetary or other benefits which accrued to the convicted person through the commission of the offence; and
- the extent of the convicted person's contribution to the overall pollution load of the area under normal working conditions.

In addition to penalties, other regulatory tools include an Atmospheric Impact Report (section 30 of the AQA), which is discussed in detail in Paragraph 5.5.4 of this document, and a Pollution Prevention Plan (section 29 of the AQA). The Minister or MEC may declare any substance contributing to air pollution as a priority air pollutant, and require any person responsible for the emission of such a substance to prepare, submit for approval and implement a pollution prevention plan in respect of a substance declared as a priority air pollutant.

5.8.2 By-laws

5.8.2.1 Local government competence

Section 156 of the Constitution of the Republic of South Africa, 1996, provides for the powers and functions of municipalities. Section 156(1)(a) of the Constitution of the Republic of South Africa states that "A municipality has executive authority in respect of, and has the right to administer the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5".

Section 156(2) of the Constitution of the Republic of South Africa, 1996 – "A municipality may make and administer by-laws for the effective administration of the matters which it has the right to administer". Section 156(3) of the Republic of South Africa, 1996 – "A by-law that conflicts with national or provincial legislation is invalid. If there is a conflict between a by-law and national or provincial legislation that is inoperative, the by-law must be regarded as valid for as long as that legislation is inoperative".

5.8.2.2 Schedule 4 functional areas

In Part A of Schedule 4 of the Constitution of the Republic of South Africa, 1996, which are the (functional areas of concurrent national and provincial legislative competence), one of the functional areas listed is "pollution control" while "air pollution" is listed in Part B of Schedule 4. This means that national and provincial spheres of government must cooperate in regulating and/or administering pollution control matters, while local government has exclusive executive and administrative authority in dealing with air pollution matters. In addition, in terms of Section 151(4) of the Constitution of the Republic of South Africa, 1996, the national or a provincial government may not compromise or impede a municipality's ability or right to exercise its powers or perform its functions.

5.8.2.3 Model air pollution control by-laws

Section 46(1) of the NEMA allows the Minister to make model by-laws aimed at establishing measures for the management of environmental impacts of any development within the jurisdiction of a municipality, which may be adopted by a municipality as municipal by-laws. In terms of section 46(2) of the NEMA, any municipality may request the

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Director-General to assist it with the preparation of by-laws on matters affecting the environment and the Director-General may not unreasonably refuse such a request.

The AQA brings the system of air pollution control in line with the constitutional allocation of functions between the national, provincial and local spheres of government. It is within this constitutional approach and cooperative governance that the department has developed model air pollution control by-laws on the 2nd of July 2010 (Gazette No. 3342; Notice 579). The by-laws were published under AQA and may be adapted and adopted by municipalities. The objective of the model air pollution control by-laws is to ensure uniformity across the country on air quality management and not to impose the model bylaw on municipalities. The uniformity in air quality management will nonetheless assist government in implementing and enforcing air quality management plans and achieving acceptable ambient air quality.

One of the purposes, as set out in section 46(4)(a) of the NEMA, is to mitigate adverse environmental impacts. The model by-laws include measures for environmental management, including the following –

- auditing, monitoring and ensuring compliance; and
- reporting requirements and the furnishing of information.

5.9 Cross-cutting principles

5.9.1 Public Participation

5.9.1.1 *The importance of public participation in air quality decision-making*

Government plays a crucial role in achieving and maintaining clean air in South Africa, but it cannot reach this goal alone. Active participation and contributions from individual citizens and citizen groups is of utmost importance in developing, implementing and enforcing air quality management decisions within the context of the AQA. The potential benefits of public participation are numerous. If well-planned and managed, public participation can bring new and important knowledge to the table, mediate between conflicting perspectives early in the process and facilitate more efficient air quality governance. Equally important, public participation in air quality management plays a vital role in strengthening and deepening democracy in South Africa and in giving effect to the constitutional right to an environment which is conducive to health and well-being.

Section 4(2) of the NEMA, which is the overarching environmental law in South Africa embodies a number of principles aimed at ensuring effective and equitable public participation. These principles were listed in Paragraph 1.4 of this document.

5.9.1.2 *Promoting best practices for effective and equitable public participation*

When designing and implementing air quality decision-processes, all three spheres of government in South Africa must strive to apply best practices of engaging with stakeholder groups and citizens, with the goal of reaping the full benefits of public participation. Although the AQA prescribes a standard approach to participation in its Sections 56 and 57, experience suggests that implementing the following measures and principles will significantly contribute towards ensuring effective and equitable participation, as called for in the NEMA. However, experience has also shown that a “one-size-fits-all” approach to public participation is not always effective or efficient and, as such, a flexible and innovative approach to participation must be considered.

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5.9.1.3 Establishment of a national air quality reference group

In order to design and implement participation processes that are both efficient and effective, the national department may establish a representative national reference group or advisory committee (see Figure 11) as and when required. The committee may comprise of representatives from industry, business and civil society, to provide strategic guidance to the National AQO on important aspects of air quality management, especially with respect to participatory processes.

The objective of national air quality reference group will be to:

- Inform the National Air Quality Officer of the views of stakeholders regarding the implementation of the AQA and the National Framework;
- Advise the National Air Quality Officer on any matter concerning air quality management and governance and specifically the setting and achievement of objectives and priorities for air quality governance;
- Advise the National Air Quality Officer on appropriate participatory processes related to the implementation of the AQA and the National Framework; and
- Advise the National Air Quality Officer on appropriate methods of monitoring progress in respect to the implementation of the AQA and the National Framework.

The national air quality reference group will consist of at least 12 but not more than 15 members appointed by the National Air Quality Officer. Membership of the group should be made up of persons who represent stakeholders, and persons who have experience, expertise or skills necessary to enable the group to carry out its functions. To this end, the National Air Quality Officer will invite nominations for membership of the national air quality reference group from interested and affected business and industry associations, non-governmental organisations, organised labour and community groups.

In response to the invitation, stakeholders should submit nominations and a justification for membership of the national air quality reference group to the Director-General: Department of Environmental Affairs.

It is envisaged that this group will meet four times a year, in regular meetings aligned with the quarterly meetings of the National-Provincial AQO forum (see 4.4.4). During these meetings, the national AQO will provide the reference group with an update on progress in respect of the implementation of the National Framework and other air quality related initiatives. In turn, the reference group will assist the National AQO in designing required participatory processes that take, at least, the following into account.

Provision of up-to-date information on project activities

To keep stakeholders informed about on-going and planned air quality management projects and decision-processes (and related public participation opportunities), all three spheres of government must make relevant information available in a timely manner through, for example, dedicated air quality management websites and other suitable means, such as actively notifying known stakeholders (See information dissemination in Paragraph 5.9.3, page 90). At the national level, the DEA will publish a monthly newsletter, the *National Air Quality Office News*, providing a regular overview of on-going and planned air quality related projects, decision-processes and other initiatives. In addition to websites and newsletters, other media will be considered to reach communities (See Paragraph 5.4.2).

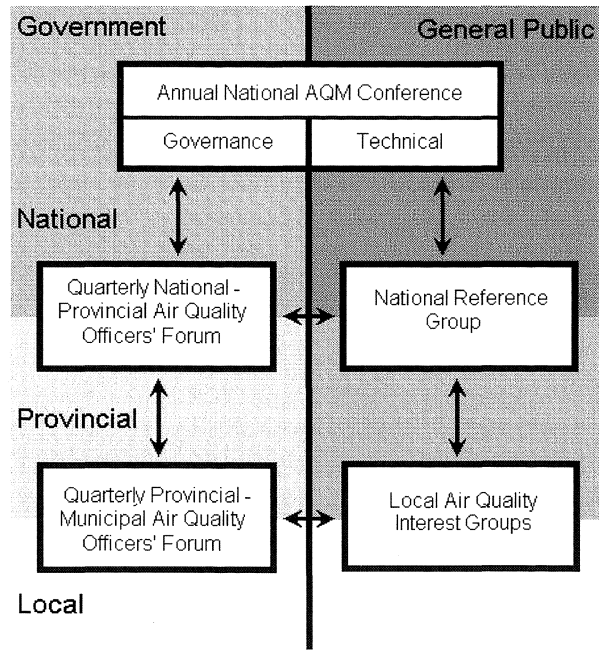


Figure 11: Vertical air quality governance interrelationships

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Effective announcement of public participation opportunities

Public participation opportunities for air quality decision-processes referred to in the AQA must be publicised on the national department websites and in other appropriate media and notifications sent electronically to stakeholders directly using up-to-date databases and electronic mailing lists. Special efforts will be made to ensure that vulnerable and affected communities are informed about relevant decision-processes. Information on the stage in the decision-process at which public participation is planned and the type of public participation activities envisaged will assist stakeholders in planning their participation and assigning necessary time and resources. It will also allow stakeholders to suggest possible adjustments to the envisaged public participation process early in the decision-process.

Ensuring early and balanced participation

Public participation must take place early in the process, when key options are still open. This will ensure that all perspectives are captured and can be properly assessed at the outset. It will also ensure that all stakeholder groups have equal opportunities to convey their views. For major decision-processes, consideration must be given to the organisation of stakeholder workshops and other participatory tools that facilitate in-depth interaction and deliberation at early stages, and which promote face-to-face dialogue.

Responding to stakeholder contributions

Providing feedback and acknowledging written contributions from stakeholders is considered essential to participatory processes and will strengthen the relationship and build trust between government and the public. To address related stakeholder expectations in a practical manner, government must prepare concise response documents that explain the rationale for final decisions or outcomes. Government must also provide explanation on why important comments may not have been addressed. The response document must be made available to the public on request.

Addressing the needs of vulnerable groups

Vulnerable groups and communities have specific needs in order to effectively participate in air quality decision-making. Capacity constraints include lack of technical and human resources as well as lack of financial resources to attend meetings. Government must take cognisance of these constraints when organising meeting locations and times and when setting timelines for public comment.

Professional and skilled process management

Ensuring that public participation processes are managed in a professional manner will enhance the quality of engagement and strengthen the relationship of government with stakeholders. Relevant measures include, for example, neutral facilitation of meetings, making meeting and workshop reports available in a timely manner, and keeping stakeholders informed concerning follow-up activities. The national department will engage, as appropriate, in capacity building activities aimed at strengthening the skills of officials in all spheres of government concerning effective management of stakeholder processes.

5.9.1.4 Issues relevant for specific air quality decision-processes

The AQA includes more than 20 sections authorising government to initiate subsidiary decision-processes. In addition, there are public participation requirements in other existing legislation, such as the Promotion of Access to Information Act, Promotion of Administrative Justice Act, the Public Audit Act and the Municipal Systems Act apply. Government is responsible for the implementation of public participation in development of air quality management tools including the standard setting process and air quality management planning (See Chapters 3 and 4 of this document). Participation in the emission licensing process falls under the responsibility of the applicant (See Paragraph 5.5.2 of this document).

5.9.1.5 Raising awareness and engaging the public in air quality decision-processes

Progress towards achieving the goal of clean air in South Africa requires raising awareness and the meaningful involvement of all citizens (See Paragraph 5.4.2 of this document on awareness-raising and Paragraph 5.9.2 of this document on capacity development).

5.9.2 Capacity development***5.9.2.1 Introduction***

Capacity development is a cross-cutting issue that underpins every element of the environmental governance cycle illustrated in Figure 1. Within the AQA, capacity development is not explicitly addressed, however, its consideration and

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inclusion is necessitated by the obligation for the fulfilment of the duties and responsibilities stipulated in the AQA and elaborated upon in Chapters 3 and 4 of this document.

The scarcity of skills in South Africa is a key constraint to service delivery within both government and the country at large. National government has recognised this through the passing of the Skills Development Act (Act No. 97 of 1998), which aims to provide an institutional framework to devise and implement strategies to develop and improve the skills of the South African workforce. The national department has taken up the challenge through the initiation of an internship programme and the development of an internship policy, and by addressing capacity development as an integral part of many of their projects.

Whilst the skills shortage applies generally in South Africa, the shortage is critical in the field of air quality. The limited pool of current air quality specialists, along with the paradigm shift in approach to air quality management, justifies the need for urgent intervention. A multi-pronged approach to capacity development is needed, where tertiary level training at regional centres, complemented by in-service training, and other interventions are considered. In addition, there is the need for capacity development amongst the general public in order to ensure that civil society can fully contribute to the air quality management process in an effective manner. These latter aspects were addressed in Paragraph 5.4.2 of this document.

5.9.2.2 Definition of capacity building

Although capacity development is often seen as simply the provision of extra financial or staff resources, or the provision of extra skills through training and education, capacity development must be seen as the attempt to build an organisation's capacity to fulfil its role efficiently and effectively. The section below therefore describes a diverse range of strategies that can be implemented to allow effective and appropriate air quality work to be carried out at all levels of governance.

5.9.2.3 Strategies for capacity building

Strategies of capacity development can be distinguished based on the proposed outcomes and the approach of stakeholders to the project. They are categorised as follows:

- Applying additional financial and physical resources - addressing a simple lack of resources within a well-managed organisation to stimulate growth;
- Improving the organisational and technical capabilities - addressing lack of technique and proper structure through activities such as technical assistance, training, systems improvement and better working conditions;
- Helping to settle on a clear strategic direction - addressing lack of consistent direction, overextending, inappropriate objectives or lack of political consensus on organisational purpose through inducing policy dialogue for action and capacity development;
- Protecting innovation and providing opportunities for experimentation and learning - addresses lack of a protected learning space through development of social capital and creation of opportunities to experiment and learn;
- Strengthening the bigger organisational system - addresses systemic capacity through emphasising the development of interrelationships and resolving public policy issues collectively – public-private partnerships;
- Helping to shape an enabling environment - addresses the lack of an enabling environment through creating protected pockets of capacity development or trying to improve institutions and broader social and political patterns;
- Creating more performance incentives and pressures - addresses structural incentives that lead to poor performance by redesigning organisations and improving the overall approach to governance and democratisation.

By identifying the type of strategy to be pursued based on the desired outcomes as well as informed by the current context of capacity, the most appropriate path of capacity development can be followed. This allows the outcomes of the programme or project to fulfil the need identified prior to implementation.

Implicit in the list of strategies outlined above, is recognition that capacity development is much more than training and awareness programmes for individuals. It is also about organisational, management, financial and technical systems and procedures. Having noted this broad definition, proposed interventions for improving technical capacity in the field of air quality management are presented in the next section.

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5.9.2.4 Technical capacity development

A variety of interventions is needed to address the skills shortage in air quality management. All are relevant, with some addressing longer term needs, others the immediate needs and others the need for an informed public.

Tertiary level qualifications

Tertiary level programmes present a long term planning measure aimed at securing future capacity in the field of air quality management. They provide an opportunity to enhance research in the field and to add to the national body of knowledge on air quality management. These inputs are necessary to guide the implementation of the AQA into the future.

There is a need to strengthen tertiary institution offerings in the air quality field. There are few national specialists in air quality and they are scattered across a handful of institutions around the country. A coordinated approach to offering a post-graduate qualification (NQF level 7 and/or 8 i.e. the equivalent of Honours and/or Masters degrees), which could be jointly offered at one or more institutions is recommended.

Internships

Internships provide a means to invest in young people and to provide them with relevant experience that will enable them to function effectively in the work place in the future. These programmes are targeted at providing on-the-job training under the guidance of a mentor and they provide a useful bridge between formal tertiary level training and employment. Internships also provide a means to directly transfer the expertise of people with long-standing professional experience to those with only a practical or theoretical training.

In-service short courses

Short courses provide a means of addressing current capacity needs and targeting particular people and skills that are most urgently needed for intervention. Short training courses, generally ranging from one to five days, are the fundamental aspect of capacity development for those who are already in employment. They provide a means for building on existing skills, refreshing or updating skills, for imparting specialist knowledge, and importantly they directly enhance the internal capacity in an organisation. In many cases single day courses can provide sufficient steerage in the process for AQOs to learn about key issues and follow up any specific issues relating to their own local issues through the means of a helpdesk facility (see below).

The most urgent need is for capacity development amongst government officials at all levels tasked with implementing the AQA. To this end, the national department will consider the development of a suite of air quality modules which could be South African Qualifications Authority (SAQA) accredited at NQF level 7 and delivered to relevant government officials in all spheres of government. In this regard, the use of e-learning through the SAAQIS (see Paragraph 5.2.1.10 of this document) will be investigated to provide broad access to the short courses.

A modular structure is proposed, with modules falling into one of the following categories:

- Bridging training module – a single module on air quality science designed to impart basic knowledge to an employee with no previous formal air quality courses;
- Basic training modules – a suite of modules designed to provide basic detail on all aspects of air quality management – both the scientific aspects and also the policy context;
- Specialist training modules – a suite of modules designed to provide advanced training in selected topics;
- Refresher training module/s – a module designed to provide scientific and technological updates on air quality science.

Partnerships

Bilateral partnerships (e.g. municipality-municipality and province-province) are an excellent means of promoting the replication of best practices and lessons learned, and allowing smaller, less capacitated provinces and municipalities to benefit from the experiences of their stronger counterparts. Pilot projects will be initiated by the national AQO and each of the provincial AQOs.

Forums

Quarterly provincial forums between province and municipalities as outlined in Paragraph 4.4.5 of this document must be used as a capacity development platform for provincial and municipal officials. Such forums can promote the sharing of experiences, the dissemination of ideas and the replication of best practice. These forums are important both in building

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a sense of 'community' within the air quality profession, as well as playing a key role in the feeding of information on the effectiveness of the air quality management process upwards from municipal to national levels.

Public awareness campaigns

Capacity development is not confined to individuals working in the air quality field. There will also be awareness-raising amongst the general public using the approaches outlined in Paragraph 5.4.2 of this document. An informed and knowledgeable civil society leads to better decision-making.

Guidance

One of the key strategies for approaching the issue of capacity development is not to rely on there being a dispersed number of individual expert AQOs all trained to carry out their roles independently. Effective use of resources requires that specialist AQOs are used where they are needed most, where there are numerous pollution sources – or other issues leading to poor air quality. Where expert AQOs are not needed, all that is required is sufficient capacity to be able to ensure that good air quality is maintained.

One way to ensure that non-specialist AQOs are capable of making this judgement is by setting out clear and detailed guidance as to how initial screening and scoping analyses should be carried out. When these studies indicate the likelihood of a significant threat to good air quality, the municipal government will then be able to decide the most appropriate means to approach the problem (for example seeking new skilled officers or training up existing staff).

This guidance can also be used to outline key technical aspects of more advanced analyses; however, the basic role is to ensure that initial assessment of local air quality issues is carried out in a reliable and consistent manner which does not necessarily rely on the technical expertise of the officer responsible. By ensuring that this guidance is clear and prescriptive, it can also play an important role in developing the basic skills of untrained AQOs.

Helpdesk

In addition to any formal, printed guidance notes on aspects of air quality governance, the national department wishes to establish a helpdesk facility. The helpdesk, once available, will provide a means by which AQOs at the provincial and municipal spheres can seek expert advice and information relating to the implementation of the AQA from the national department and from the national department approved advisers. Air quality managers should be able to access the helpdesk by telephone and through e-mail.

National AQO communiqués

Based on frequently asked questions in the various intergovernmental air quality governance forums (see Paragraph 4.4 of this document), the National AQO will continue to compile various discussion, briefing and guidance documents aimed at providing guidance on air quality governance issues. The documents are circulated to all government air quality managers.

Table 25: Capacity development implementation targets

Key milestones	Target date
Capacity development programme developed and phases outlined	2013/2014
Progress on capacity development reported in the NAQO report	Annual

5.9.3 Information dissemination

All aspects of implementing the National Framework require the dissemination of information. The main instrument of dissemination of information will be through the SAAQIS. However, the SAAQIS has limitations in this regard in that it does not necessarily provide access to all stakeholders, especially those that do not have the necessary technology or prior exposure to air pollution information. This means that a strategy for reaching these parts of the population must be developed and tools other than the SAAQIS are needed.

The dissemination of information will raise awareness in the population and this awareness will greatly support the achievement of compliance with air quality standards. Dissemination of information is a skill and experts may be employed to inform and/or drive this process. At the same time, on-going public participation processes will identify the best ways of effectively communicating with all stakeholder groups of the population (see also Paragraph 5.9.1.3 of this document). The following approaches to disseminating air quality information will be considered, amongst others:

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- Newspaper articles;
- Booklets/Pamphlets /brochures/leaflets;
- Posters on air pollution in central places such as schools and hospitals;
- Radio, national and local;
- TV;
- Public meetings;
- Bill boards; or
- Website.

Key information will, where appropriate, be made available in more than one South African official language. The dissemination of information can be done through different stakeholders. Possible routes for dissemination may include:

- The formal schooling system;
- Programmes targeting women;
- Programmes targeting health professionals;
- Programmes targeting political bodies and parties;
- Programmes targeting religious organisations;
- Programmes targeting industry; or
- Programmes targeting NGOs.

To be able to conduct successful awareness-raising, information is required at the appropriate technical level and teachers (or facilitators) need to be trained in the subject matter. The SAAQIS will have a dedicated facility for educational and awareness-raising material so that it is readily available for course presentations and awareness-raising campaigns. Based on this, material and courses can be accessed, printed and copied and made available.

5.9.4 National Air Quality Officer's (NAQO) Report

The National Air Quality Officer will report on an annual basis on the progress relating to the implementation of the National Framework (see also Paragraph 5.2.3.3 of this document). The reports will be issued annually and will be based on the previous year's assessment indicators but will also allow the reporting of additional information relating to the implementation of the National Framework. The draft report will be presented by the National Air Quality Officer during the Annual Air Quality Governance Lekgotla, with the final report published by March each year.

This report will include:

- Progress with respect to implementation of the National Framework;
- A list of priority issues collated by air quality officers at a national, provincial and regional level;
- An identification of recommendations that are required to improve the indicator output;
- Recommendations for the development of new indicators or the amendment of existing indicators;
- A commentary by the national department on the recommendations and proposals, and taking appropriate action on these recommendations over the subsequent 12 months.

Table 26: The National Air Quality Officer's Annual Report related implementation targets

Key milestones	Target date
Publication of the National Air Quality Officer's Annual Report	Annually from 2007/8

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6. THE NATIONAL FRAMEWORK REVIEW PROCESS

6.1 Background to the National Framework review process

According to section 7(5) of the AQA, the National Framework “must be reviewed by the Minister at intervals of not more than five years”, section 7(6) of the AQA continues, “Before publishing the National Framework, or any amendments to the framework, the Minister must follow a consultative process in accordance with sections 56 and 57”. (Section 56 and 57 of the AQA outline the consultative and public participation processes to be considered). To ensure that the National Framework is both efficient and effective it is essential that both the air quality and the governance processes are continually assessed.

The 2007 National Framework provided a timetable for the review of the framework (refer to figure 10 of the 2007 National Framework). According to the said timetable, the 2nd generation of the National Framework was supposed to be generated in 2008 following the incorporation of the public comments received in 2008. However, this 2nd generation NF was never generated since it was too soon after the publication of the 2007 National Framework. The 2007 comments were therefore incorporated during 2012 along with new comments received during the 2012 public participation. Thus the 2012 National Framework serves as the 2nd generation National Framework. The amended timetable for the review of the National Framework is therefore suggested in the Figure 12. The NAQO report and recommendations from AQOs and stakeholders will inform the review process. The mid-term review, suggested in the 2007 National Framework will no longer form part of the review process based on the recommendations made and agreed during the public participation process.

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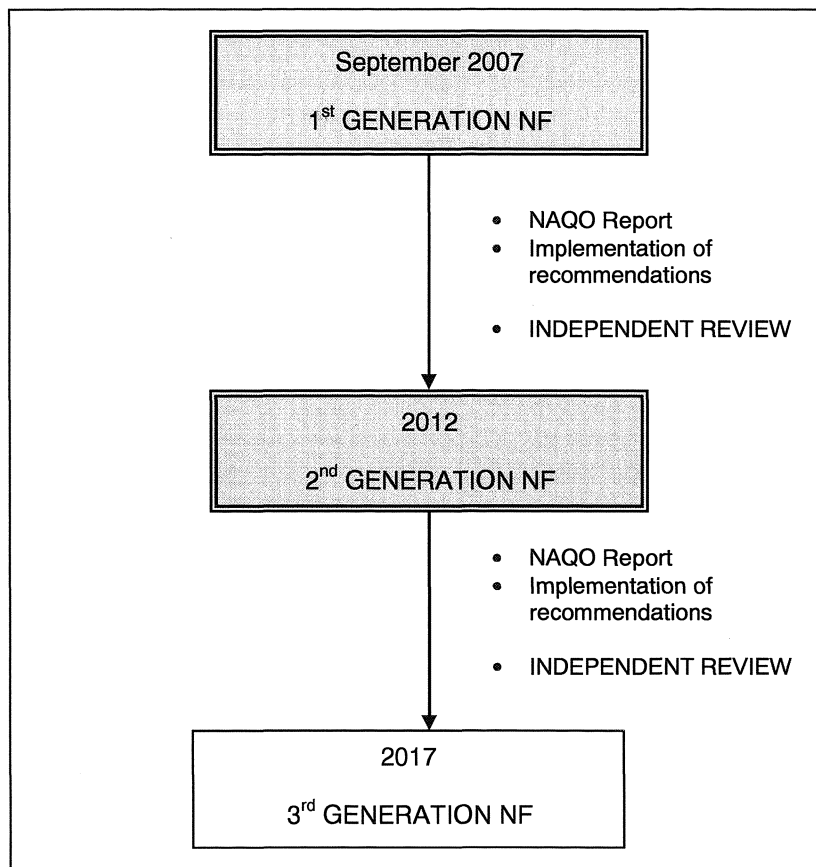


Figure 12: Timetable for the National Framework review process

The process of reviewing the National Framework over the next five years will centre on two key activities (see Figure 12):

- The National Air Quality Officer's Annual Report, including reporting on the National Framework Assessment Indicators and implementation of recommendations from the said report; and
- An Independent Review of the National Framework.

6.2 The National Air Quality Officer's Annual Report

The National Air Quality Officer will report on an annual basis on the progress relating to the implementation of the National Framework (see also 5.2.3.3, and 5.9.4). A set of indicators have been established to guide this review (Appendix 2). These indicators will have three basic functions; to simplify, quantify and communicate key information about both the quality of air in South Africa, and the efficacy of the air quality management process itself.

The assessment indicators will be:

- objective;
- scientifically sound;
- easily understandable and explainable;
- able to develop and illustrate trends over time and differences between geographical areas;
- sensitive to the change that they are intended to measure;
- measurable and capable of being updated regularly; and
- based on readily available data and information.

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6.3 Independent Review of the National Framework

The 5 year review of the National framework must be undertaken to ensure assessment of the implementation of the process. The review will incorporate extensive consultation with various stakeholders including, but not limited to, members of the National-Provincial AQO forum, the Provincial-Municipal AQO forum and the National Reference Group (once established), air quality practitioners and other interested parties including representatives of industry, NGOs and civil society groups.

Following the consultation process, a number of cases will be identified and case studies (including interviews) will be undertaken in order to provide a complete assessment of the key drivers, barriers, opportunities and information gaps in the management and implementation of the National Framework process. A final Independent Review report will be completed and submitted to the national department for comment in time for any potential redrafting of the 2012 National Framework.

The review of the National Framework in 2012 will incorporate:

- all of the beneficial aspects and lessons learned in the current National Framework development and consultation phases;
- all recommendations generated over the previous 5 years in the National Framework Indicator Assessment Reports (in the NAQO report), and the Independent Review;
- an assessment of the review process itself.

As stated in section 7(6) of AQA, before publishing the National Framework, or any amendments to the framework, the Minister must follow a consultative process in accordance with sections 56 and 57 of the AQA. At these consultative stages there is also the opportunity to include a Horizon Scanning exercise to further identify any information gaps and future issues for consideration.

6.4 The future

The review process outlined in the previous section clearly establishes the principle of on-going change within the National Framework. In addition to the identification of improvements and refinements that can be made to the process, the success of the process itself will lead to further needs to change and adapt the National Framework. Firstly, as the National Framework process leads to a more detailed assessment and analysis of air pollution in South Africa the development in air pollution science will potentially highlight new sources or other problems that were previously unseen and need to be taken into account by the National Framework. Secondly, as improvements are made to air quality by reductions in key primary pollutants and the targeting of issues that are relatively easily addressed, the significance of other pollutants (particularly secondary pollutants) will increase and the focus of the National Framework may need to be adjusted accordingly.

6.4.1 Horizon Scanning

In order that new and emerging issues can be identified and remedial actions formulated before they become problematic, it is useful to engage in the process of 'Horizon Scanning'. Horizon Scanning allows proactive rather than reactive development and delivery of preventative and adaptive policies and strategies. Horizon Scanning also provides the opportunity for the National Framework to remain abreast with international air quality management techniques, science and research. Horizon Scanning is a structured procedure for identifying issues and prioritising them according to their importance and relevance. It is based on risk assessment and ranks issues numerically according to their perceived scale, probability, trend, degree of recognition and potential impacts. The outcomes from Horizon Scanning exercises can be categorised as, for example, low probability but high consequence events such as pollution arising from extreme weather conditions, or alternatively high probability and high consequence events such as pollution from increased motor vehicle usage in urban areas.

The consultation workshops during Independent Review stage will include Horizon Scanning by relevant stakeholders including air quality practitioners and other stakeholders such as industry and the general public. All of the air quality issues that have been identified during the development of the 1st and 2nd Generation National Frameworks but have not been prioritised for action can be readdressed and reconsidered for inclusion in the next generation of the National Framework. Additionally, new and emerging issues can be logged and discussed at any stage by AQOs, air quality practitioners and members of the public through appropriate Air Quality Forums e.g. training events, awareness-raising events, municipal/provincial meetings etc. AQOs at municipal, provincial and national levels are responsible for

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maintaining an evolving list of priority and emerging issues. This list can be published annually in the annual National Framework Indicators Assessment Report (in the NAQO report).

6.4.2 Potential Issues for Future Development

Possible future issues and research priorities identified to date include but are not limited to:

- Consideration of new or emerging pollutants, their impact on health and the establishment of health-based objectives;
- Consideration of existing, new and/or emerging pollutants, their impact on the environment and ecosystems and the establishment of appropriate objectives;
- Development of proactive management of future potentially problematic sources (e.g. new fuels);
- Consideration of policies and strategies to address both climate change and air pollutant emissions to deliver co-benefit solutions;
- Investigation of trans-boundary air pollution sources and their impacts on South Africa;
- Development of strategies to deal with ambient concentrations of heavy metals and POPs, their impact and the establishment of suitable objectives;
- Development of strategies for tackling nuisance pollutants such as odours and dust and the establishment of guidelines and objectives for effective management;
- Valuation of the cost of air pollution : using cost benefit analysis techniques to assess the economic impact of air pollution in South Africa;
- Consideration of an offset policy for air pollution;
- Development of an air quality index

7. REPEAL OF THE 2007 NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT IN THE REPUBLIC OF SOUTH AFRICA

The 2007 National Framework for Air Quality Management in the Republic of South Africa published in Government Notice No. 1138 in Government Gazette No. 30284 of 11 September 2007 is hereby repealed.

8. SHORT TITLE AND COMMENCEMENT

This Framework is called the National Framework for Air Quality Management in the Republic of South Africa, 2012.

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APPENDIX 1: DEA'S AIR AND ATMOSPHERIC QUALITY PUBLICATIONS

A. THE GENERAL INFORMATION SERIES			
TARGET AUDIENCE: The General Public, specifically senior school learners and undergraduates			
No.	Title	Description	Scheduled publication date / status
A.1	<i>The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) and the Air Quality Act Companion - South Africa's new air quality management legislation and an insight into the thinking that informed the legislation.</i>	The Act and an explanation of new and/or novel provisions of the Act.	2007/8
A.2	<i>Air and Air Quality - A source Book of Ideas, Information and Activities related to air and air pollution</i>	An information booklet published in May 2003 that was developed by the department, Share-net, EJNF, WWF, Rhodes University and teachers in KZN to support teachers in the Senior Phase (Grade 7 - 9)	Available
A.3	<i>Montreal protocol - The ozone depletion story and the measures taken towards the protection of the ozone layer in South Africa</i>	A general introductory information booklet.	Available
A.4	<i>Why we need to Manage Air Quality - An introduction to the health, environmental and economic impacts of air pollution</i>	This booklet will deal with, among others: (i) early history of air pollution problems; (ii) hazardous effects of air pollutants on the human body; (iii) air pollution and entry into the human body; (iv) health effects of selected pollutants; (v) health effects of toxic air pollutants; (vi) links between pollution and health; (vii) environmental effects of air pollution; and (viii) the economic impact of poor air quality.	Available
A.5	<i>An introduction to Air Quality Management</i>	This booklet will deal with, among others: (i) developing an air quality management program – traditional approaches to air quality management (point source emission controls), new approaches to air quality management (ambient standards, management of priority pollutants); (ii) strategies (air quality management, emission standards, emission taxes, cost-benefit strategies, non-degradation strategy, emission density strategy; (iii) overview of major components of an AQM System (Laws and Regulations, Setting Air Quality Goals, Pollutant Sources, Emission Inventory, Monitoring, Modelling, Data Analysis and Interpretation for Decision Makers, Public Access to Information, Control Strategy Planning and development, Pollution Prevention, Compliance and Enforcement, Public Participation and Environmental Justice.	Available
A.6	<i>An Introduction to the Types and Sources of Air Pollutants</i>	This booklet will deal with, among others: (i) Mobile Sources of Air Pollutants (Type/Nature of Sources, Pollutants Emitted, South Africa's Specific Sources and "Hot Spots"); (ii) Stationary Sources; (iii) Biogenic Sources; (iv) Fugitive Sources; (v) Area Sources.	Available
A.7	<i>Climate Change and International Agreements</i>	This booklet aims to provide the reader with an introduction to the basics of climate change theory as well as the policies, legislation and international agreements that have been formulated to respond to these impacts.	Available
A.8	<i>An Introduction to Air pollution sources, dispersion and effects</i>	This booklet will provided an introduction to topics like: (i) Air pollution meteorology and dispersion; (ii) Plume behaviour; (iii) Effects of topography on wind flow; and (iv) Effects of stack height and emission on dispersion.	TBC

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B. THE SPECIALIST INFORMATION SERIES			
TARGET AUDIENCE: Under- and post-graduate students and practising professionals			
No.	Title	Description	Scheduled publication date / status
B.1	<i>Types and Sources of Air Pollutants</i>	This booklet will deal with, among others: (i) expressions of gaseous compounds; (ii) averaging times; (iii) gaseous compounds of carbon (carbon monoxide); (iv) gaseous compounds of sulphur (sulphur dioxide, sulphur trioxide, sulphides, sulphuric acid); (v) gaseous compounds of nitrogen (nitric oxide, nitrogen dioxide, nitrous oxide, PAN); (vi) volatile organic compounds (alkanes, alkenes (olefins), aromatic hydrocarbons, oxygenated hydrocarbons, terpenes; (vii) ozone; (viii) aerosols; and (ix) trace metals (lead, mercury, cadmium, arsenic).	Available
B.2	<i>Air Pollution Meteorology</i>	This booklet will deal with, among others: (i) Vertical Dispersion (Lapse Rates, Determination of Atmospheric Stability, Variations in Environmental Lapse Rate, Indicators of Stability; (ii) Horizontal Dispersion (Global Scale, Synoptic Scale, Local Scale, Vertical Profile of Wind); and (iii) Air Pollution Climatology.	Available
B.3	<i>Atmospheric Modelling</i>	This booklet will deal with, among others: (i) Needs/Purpose of Modelling; (ii) Data Requirements; (iii) Limitations and Assumptions; (iv) Application Areas of Air Pollution Models (Regulatory Purposes, Policy Support, Public Information, Scientific Research); (v) Air Pollution Model; (vi) Meteorological Models; (vii) Air Pollution Models used for the Different Scales of Atmospheric Processes; (viii) Quality Assurance of Air Pollution Models, Model Validation and Evaluation; and (ix) Trends in Air Pollution Modelling.	Available
B.4	<i>Air Pollution control approaches</i>	This booklet will deal with, among others: (i) Theory of pollution control approaches in industry; (ii) Control approaches for transportation; and (iii) Control approaches for residential emissions.	Available
B.5	<i>Impacts of air pollution</i>	This booklet will deal with, among others: (i) Effects of air pollution on human health; and (ii) Effects of air pollution on ecological systems.	Available
B.6	<i>Air Pollution Dispersion and Topographical Effects</i>	This booklet will deal with how the atmosphere behaves with a view to creating an understanding of the movement of pollutants and hence the determination of concentrations at particular locations, including: (i) The vertical movement of pollutants and atmospheric stability; (ii) the horizontal movement of pollutants and wind speed and direction; (iii) chemical transformation of pollutants in the atmosphere and solar radiation and moisture; and (iv) removal of pollutants from the atmosphere and precipitation.	Available
B.7	<i>The State of the Air Report 2006</i>	A comprehensive document detail current air quality knowledge in South Africa. A document that will effectively be used as the base-line for measuring the impact of interventions made in terms of the AQA.	Available
B.8	<i>Multilateral Environmental Agreements and the AQA</i>	An introduction to the possible use of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) in addressing South Africa's commitments in respect of atmospheric quality related international agreements.	TBC

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C. THE GOVERNANCE INFORMATION SERIES		
TARGET AUDIENCE: Government air quality managers		
No.	Title	Scheduled publication date / status
C.1	<i>Regulating the Trans-boundary Movement of Ozone-Depleting Substances - Training and Resource Materials for Customs Officials (A file containing: (i) South Africa: Customs Handbook (Training Manual) - Ozone Depleting Substances; (ii) Illegal Trade in Ozone Depleting Substances (OzonAction); (iii) Controlling the ODS Trade (EIA); (iv) Unfinished Business (EIA); (v) Lost in Transit (EIA)).</i>	Available
C.2	<i>Air Quality Management in identified Priority Areas - An Implementation Manual for Air Quality Officers</i>	Available
C.3	<i>Air Quality Management Planning and Reporting - An Implementation Manual for Air Quality Officers</i>	Available
C.4	<i>Atmospheric Emission Licensing - An Implementation Manual for Air Quality Officers</i>	Available
C.5	<i>Air Quality Monitoring - An Implementation Manual for Air Quality Officers</i>	2013/14
C.6	<i>Air quality compliance and enforcement - An Implementation Manual for Air Quality Officers</i>	TBC
C.7	<i>Regulating Controlled Emitters - An Implementation Manual for Air Quality Officers</i>	TBC
C.8	<i>Regulating Controlled Fuels - An Implementation Manual for Air Quality Officers</i>	TBC
C.9	<i>The Air Quality Officers Handbook</i>	TBC
C.10	<i>Urban Air Quality Management Strategies - Best Practice and case studies</i>	TBC
C.11	<i>Mitigating pollution from residential fossil-fuel combustion - Best Practice and case studies</i>	TBC
C.12	<i>South Durban Basin Multi-point Plan Case Study Report</i>	
C.13	<i>The 2007 National Framework for Air Quality Management in South Africa</i>	

D. THE CLEANER PRODUCTION SERIES		
TARGET AUDIENCE: Government Air Quality Managers and EIA assessors, Emission Control Officers, industrial process engineers and factory managers		
No.	Title	Scheduled publication date
D.1	<i>Air Pollution Control and Brickworks - Best Practice and Best Available Technology</i>	2013/14
D.2	<i>Air Pollution Control and small industrial boilers - Best Practice and Best Available Technology</i>	TBC
D.3	<i>Air Pollution Control and...odour</i>	
D.4	<i>Air Pollution Control and...</i>	
D.5	<i>Air Pollution Control and ...</i>	

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APPENDIX 2: INDICATORS TO BE INCLUDED IN THE NATIONAL AQO'S ANNUAL REPORT

No.	Indicator	Baseline, July 2007	2012 Target	2012 Achievement	2017 Target
1.	Problem Identification and Prioritisation				
1.1	Number of pollutants with associated ambient air quality standards	7	8	8	9
1.2	Initial set of Listed Activities identified with associated minimum emission standards	0	1	1	1
1.3	Number of National Priority Areas declared	1	2	3	3
1.4	Number of Provincial Air Quality Areas declared	0	2	0	1
1.5	Number of metros and district municipalities with air quality that does not conform to ambient air quality standards	28	0	21	15
1.6	Number of Controlled Emitters declared	0	2	1	3
1.7	Number of Controlled Fuels declared	0	2	0	0
2.	Strategy development				
2.1	Number of National Priority Area Air Quality Management Plans under implementation	0	2	2	3
2.2	Number of Provincial Priority Area Air Quality Management Plans under implementation	0	2	0	1
	Number of Provinces with Air Quality Management Plans in place	0	9	4	9
	Number of Metropolitan Municipalities with Air Quality Management Plans in place	0	8	6	9
2.3	Number of District Municipalities with Air Quality Management Plans in place	5	28	10	44
2.4	Strategy for addressing air pollution in dense, low-income settlements published	0	1	1	1
	Integrated Strategy for the control of vehicle emissions	0	0	0	1
3.	Standard-setting				
3.2	Identify additional pollutants requiring ambient air quality standards.	0	4	1	1
3.3	Number of pollutants with associated ambient air quality standards	7	8	8	9
3.4	Initial set of Listed Activities identified with associated minimum emission standards	0	1	1	1
3.5	Number of Controlled Emitters and associated standards declared	0	2	1	3
3.6	Number of Controlled Fuels and associated standards or prohibitions declared	0	2	0	0
4.	Awareness-raising				
4.1	Number of air quality related publications available	4	10	14	20
5.	Air Quality Impact Management				
5.1	Number of National Priority Area Air Quality Management Plans under implementation	0	2	2	3
5.2	Number of Provincial Priority Area Air Quality Management Plans under implementation	0	2	0	1
5.3	Number of Cleaner Production best practise guidelines published	0	2	1	3
5.4	Regulation in respect of the prescribed form for Atmospheric Impact Report (section 30 of the AQA)	0	1	1	1
6.	Atmospheric Emission Licensing				
6.1	Atmospheric Emission Licensing manual published	0	1	1	1
6.4	Atmospheric Emission License Processing Fee Calculator published	0	1	1	1
6.7	Annual progress reports on the National Licensing Authorities' Support Programme	0	0	1	5

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No.	Indicator	Baseline, July 2007	2012 Target	2012 Achievement	2017 Target
7.	Compliance Monitoring				
7.1	Number of government ambient air quality monitoring stations	37	50	94	100
7.2	Number of EMIs trained in air quality compliance monitoring	0	200	260	300
7.3	Number of Atmospheric Emission License holders submitting annual emission reports	0	-	-	-
8.	Enforcement				
8.1	Number of EMIs designated	900	1200		
8.2	Model air pollution control by-laws	0	1	1	1
	Number of district and metropolitan municipalities with air pollution by-laws	0	0	3	10
9.	Information management (the SAAQIS)				
9.1	SAAQIS Phase I – ambient air quality module and associated work packages	0	1	1	1
9.2	SAAQIS Phase II system completed	0	0	0	1
	Format required for the internet-based national atmospheric emissions inventory reporting established by the National Air Quality Officer	0	0	0	1
9.3	National atmospheric emissions inventory inclusion in the SAAQIS Phase II completed	0	0	0	1
9.15	Database of Listed Activities available in the SAAQIS	0	1	1	1
9.16	All current policy and legislation available in the SAAQIS	0	1	1	1
9.17	Air quality scientific literature resource library	0	1	1	1
9.18	Norms and standards for air quality monitoring	0	1	1	1
9.19	All current available AQMPs	0	1	1	1
9.20	Support centre/help desk	0	1	1	1
9.21	DEA air quality publications and guideline documents	0	1	1	1
9.24	Key stakeholder database	0	1	1	1