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# AIR QUALITY MANAGEMENT PLAN FOR THE EASTERN CAPE PROVINCE

*DRAFT*  
*July 2013*



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Tourism**



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## **ACRONYMS**

ADM	Amathole District Municipality
AEL	Atmospheric Emission Licence
ANDM	Alfred Nzo District Municipality
APP	Annual Performance Plan
AQM	Air Quality Management
AQMP	Air Quality Management Plan
AQO	Air Quality Officer
BCMM	Buffalo City Metropolitan Municipality
CDC	Coega Development Zone
CDM	Cacadu District Municipality
CHDM	Chris Hani District Municipality
CO	Carbon monoxide
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DEA	Department of Environmental Affairs and Tourism
DM	District Municipality
DMR	Department of Mineral Resources
DoE	Department of Energy
DOH	Department of Health
EIP	Environmental Implementation Plan
ELIDZ	East London Industrial Development Zone
EMP	Environmental Management Plan
EMS	Environmental Management System
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
JGDM	Joe Gqabi District Municipality
LM	Local Municipality
LPG	Liquid Petroleum Gas
MEC	Member of Executive Council
NMBMM	Nelson Mandela Bay Metropolitan Municipality
NEMA	National Environmental management Act (No. 107 of 2008)
NEM: AQA	National Environmental Management: Air Quality Act (No. 39 of 2004)
NMVOC	Non-methane volatile organic compound
NO	Nitrogen oxide
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Oxides of nitrogen (NO <sub>x</sub> = NO + NO <sub>2</sub> )
ORTDM	OR Tambo District Municipality
O <sub>3</sub>	Ozone
SASA	South African Sugar Association
SDC	Swedish Development Corporation
SO <sub>2</sub>	Sulphur dioxide
VOC	Volatile organic compounds

## ***EXECUTIVE SUMMARY***

The Eastern Cape Province embodies South Africa's diversity and comprises a range of climates, landscapes and cultures. It is the second largest province, covering 13.9% of the land area and includes the Nelson Mandela Bay Metropolitan Municipality and the Buffalo City Metropolitan Municipality, six District Municipalities and 37 Local Municipalities. Economic activity occurs along the coastline, which is also the main tourist attraction. Important sectors include renewables and green industries, agriculture, forestry, fishing, timber processing, pharmaceuticals, plastics and chemicals, capital goods and tourism. It is a region poised for rapid development, with already burgeoning industrial and manufacturing centres such as the Coega and East London Industrial Development Zones. This is contrasted by widespread poverty in rural areas as the majority of the Eastern Cape is underdeveloped.

The Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT), the lead agent for environmental management in the province, forms part of the provincial government's intent to spearhead economic growth in the region. The goal being *"Innovation for Sustainable Development"*, with a mission to *"Lead economic development and environmental management in the Eastern Cape"*. It is imperative that environmental issues are recognised and considered in all aspects of decision-making processes to safeguard essential natural resources, such as clean, healthy air.

Section 15(1) of the National Environmental Management: Air Quality Act (Act No.39 of 2004) requires province's responsible for preparing Environmental Implementation Plans or Environmental Management Plans (EMP) to include an AQMP in these plans. An AQMP provides definitive objectives, strategies, plans and procedures for the relevant spheres of government to meet the requirements of the NEM: AQA with respect to air quality management planning and reporting to ensure that air quality is not harmful to health and well-being.

In the Eastern Cape, the Buffalo City Metropolitan Municipality (BCMM) and the Nelson Mandela Bay Metropolitan Municipality (NMBMM) were identified in the 2007 National Framework for Air Quality Management in the Republic of South Africa as areas having poor or potentially poor air quality. The DEDEAT prioritised the development of Air Quality Management Plans for these municipalities ahead of developing the provincial AQMP.

Subsequently, DEDEAT appointed uMoya-NILU Consulting Pty (Ltd) to develop the AQMP for the Province and provide a road map for effective management of air quality.

The project to develop the AQMP for the Eastern Cape AQMP is multi-phased. It consists of a comprehensive description of the current status of air quality which is informed by a number of focused aspects. These include the assessment of ambient monitoring, emission inventories, dispersion modelling, air quality management capacity and the roles and responsibilities for effective and efficient air quality governance. The following assessments contributed to the status quo assessment and the understanding of air quality gaps and issues in the Eastern Cape:

- Output B: Emission Inventory Review
- Output C: Air Quality Monitoring Network Review
- Output D: Review of Air Quality Modelling Activities
- Output E: Review of Government Resources for the Air Quality Management Function
- Output F: Review of Roles and Responsibilities

Air quality management gaps and issues in the Eastern Cape were identified, based on the findings of the focused assessment studies, the baseline assessment and public consultation.

***Air quality gaps and issues:***

- The lack of a comprehensive emission inventory inhibits air quality management and the identification of priority sources and pollutants;
- The lack of quality ambient monitoring data and reliable dispersion modelling inhibits air quality management and the assessment of air quality;
- Industrial emissions are perceived to impact on ambient air quality;
- Waste burning in formal and informal refuse disposal sites is perceived to impact on ambient air quality;
- Emissions from the burning of wood, coal and paraffin used for cooking and heating purposes is perceived to impact on ambient air quality in residential areas;
- Emissions from biomass burning in the forestry and agricultural sectors impacts on ambient air quality;
- Cross-border transport of pollutants from the NMBMM and BCMM potentially impact on the neighbouring Cacadu and Amathole District Municipalities (DMs), respectively;

- The significant number of small brick manufacturers using clamp kiln technology and the complexity of regulating these as Listed Activities presents a management challenge;
- Cumulative effects of increasing emissions in the Coega IDZ and elsewhere in the NMBMM and the negative effects on ambient air quality suggest the potential for a Provincial Priority Area;
- Opportunities for the AQMP to address objectives of the climate change strategy through approaches to emission reduction exist.
- The lack of general air quality awareness among all stakeholders inhibits meaningful engagement and buy-in to air quality management.

***Air quality management tools:***

- Municipal and provincial emission inventories are incomplete;
- Ambient monitoring is undertaken in the NMBMM and BCMM only, and concerns exist about the representativeness of these data;
- Dispersion modelling capabilities exist in the NMBMM and BCMM, but are not optimised for air quality management;
- AQMPs have been developed for the NMBMM and BCMM, but fail to provide the respective municipalities with guidance for implementation.
- The current systems for managing AEL applications in the province needs to be standardised and strengthened.

***Air quality governance:***

- Roles and responsibilities of municipalities and the province for effective and efficient intergovernmental governance are not clearly defined and understood;
- Consistent implementation of the air quality management functions in the province is required through improved coordination of air quality management among municipalities;
- Air quality management capacity and technical competence to perform the function needs to be strengthened in municipalities and the province.
- Buy-in and commitment to promote coherent and coordinated intergovernmental communication in air quality management needs to be improved;
- The lack of technical competence or capacity to conduct the AEL function in DMs needs to be addressed;
- There are no trained and designated compliance and enforcement officers in municipalities, other than NMBMM.

The baseline assessment provided the mechanism to identify air quality issues and gaps in air quality management in the Eastern Cape which informed the development of the AQMP. The AQMP was developed in consultation with stakeholders and included a Logical Framework Assessment workshop with Provincial and Municipal officials to develop a Vision and Mission that is aligned with broader environment and development policy in the Eastern Cape. The Vision and Mission is accompanied by goals and intervention activities with appropriate timeframes, responsibilities and indicators to monitor success.

The *Vision* for the Air Quality Management in the Eastern Cape is:

**Air Quality Management in the Eastern Cape ensures  
clean, safe air for all**

The *Mission* to achieve the *Vision* for Air Quality Management in the Eastern Cape is:

**DEDEAT leads Air Quality Management in the Eastern Cape  
to continually improve air quality while protecting human  
health and securing environmental sustainability**

The six *goals* to achieve the overall objective of the AQMP are:

**Goal 1:** Intergovernmental relationships for Air Quality Management are streamlined and function effectively in the Eastern Cape

*This goal refers to the need for co-operative air quality governance in the province, which entails effective communication and interaction between National, Provincial and Municipal Departments, amongst others.*

**Goal 2:** Air Quality Management is considered in planning in the Eastern Cape and is led by sound scientific research in order to achieve sustainable development

*It is crucial that economic growth and development policies are cognisant of the necessity to safe guard air quality, for present and future generations. This goal emphasises the role of scientific research in planning and decision-making processes and facilitates an understanding of the linkages between air quality management and other disciplines.*

**Goal 3:** Adequate and competent staff in all District and Metropolitan municipalities in the Eastern Cape

*The successful implementation of the Eastern Cape AQMP hinges on municipalities being adequately capacitated to perform the air quality function effectively and efficiently. This goal aims to ensure that sufficient competent staff are deployed in all municipalities.*

**Goal 4:** Adequate and effectively resourced Air Quality Management Systems support decision-making in the Eastern Cape

*This goal refers to the systems and tools required for informed decision-making, these include an emission inventory, dispersion modelling capability, ambient monitoring strategy and a mechanism to address complaints.*

**Goal 5:** Awareness and knowledge of Air Quality is enhanced in the Eastern Cape

*This goal aims to encourage the active engagement of a diverse group of stakeholders, who have a vested interest in improving air quality in the province*

**Goal 6:** Compliance and enforcement initiatives in the Eastern Cape are visible and effective

*The purpose of this goal is to ensure that Provinces and Municipalities, and industries comply with air quality legislation. The visibility of compliance and enforcement initiatives is also considered.*

The timeframes defined for the implementation of the AQMP are:

Immediate	First 3 months of AQMP adoption
Short term	First 12 months of AQMP adoption
Medium term	2 to 3 years of AQMP adoption
Long term	4 to 5 years of AQMP adoption

The AQMP will be included in the next drafting of the Provincial Environmental Implementation Plan. Progressing with implementation of the AQMP will be on-going and the AQMPs effectiveness will be reviewed annually. Implementation of the AQMP will be monitored continually and the efficacy of the interventions will be regularly assessed. The AQMP will be revised every five years.

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## **1. INTRODUCTION**

The Bill of Rights contained in the Constitution protects the civil, political and socio-economic rights of all people in South Africa. The importance of the environment and air quality is highlighted in Section 24 of the Bill of Rights, which states, amongst others, that everyone has the right to an environment that is not harmful to health or well-being.

However, the quality of air is compromised in parts of South Africa (DEA, 2007; DEA, 2009). This is largely a consequence of human activities associated with industrialisation, development and urbanisation, which has led to an increase of air pollution in towns, cities and industrialised areas such as the Vaal Triangle and the Highveld. Air pollution is the presence of one or more contaminants in the atmosphere with the potential to impact negatively on human, animal or plant life. It can originate from both natural and anthropogenic sources. The effects of air pollutants on human and ecological health vary with the type and quantities of pollutant emitted, and the sensitivity of individuals exposed to the pollutants. Examples of air pollutants include dust, ozone (O<sub>3</sub>), carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>) and volatile organic compounds (VOCs).

The Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) is the lead agent for environmental management in the province and therefore for air quality management in the province. The DEDEAT forms part of the provincial government's intent to spearhead economic growth in the region. The goal being "*Innovation for Sustainable Development*", with a mission to "*Lead economic development and environmental management in the Eastern Cape*".

Section 15 (1) of the National Environmental Management: Air Quality Act (Act No.39 of 2004, (NEM: AQA) requires province's responsible for preparing Environmental Implementation Plans (EIP) or Environmental Management Plans (EMP) to include an AQMP in these plans. Section 15 (2) also requires municipalities to develop an AQMP as part of their Integrated Development Plans (IDPs), in terms of Chapter 5 of the Local Government: Municipal Systems Act (Act 32 of 2000). An AQMP provides definitive objectives, strategies, plans and procedures for the relevant spheres of government to meet the requirements of the NEM: AQA with respect to air quality management planning and reporting.

DEDEAT appointed uMoya-NILU Consulting Pty (Ltd) to develop a provincial AQMP that ensures air quality is managed effectively for the benefit of all who call the Eastern Cape home. An AQMP is a strategic document that endeavours to meet the requirements of the National Environmental Management Act

(NEMA) and Section 24 of the Bill of Rights, i.e. air quality that is not harmful to health and well-being. This implies that governance and management efforts are directed towards maintaining or improving toward air quality so that it complies with health based national ambient air quality standards (DEA, 2009 and 2012).

The overall objective of the project is to develop an AQMP which will provide DEDEAT with a road map on how to manage air quality in the short to medium terms. The project to develop the AQMP for the Eastern Cape AQMP is multi-phased. It consists of a comprehensive description of the current status of air quality (uMoya-NILU, 2013a) which is informed by a number of focused aspects. These include the assessment of ambient monitoring, emission inventories, dispersion modelling, air quality management capacity and the roles and responsibilities for effective and efficient air quality governance. The following assessments contributed to the status quo assessment (uMoya-NILU, 2013a) and the understanding of air quality gaps and issues in the Eastern Cape :

Output B – Emission Inventory Review (uMoya-NILU, 2013b)

Output C – Air Quality Monitoring Network Review (uMoya-NILU, 2013c)

Output D – Review of Air Quality Modelling Activities (uMoya-NILU, 2013d)

Output E – Review of Government Resources for the Air Quality Management Function, (uMoya-NILU, and 2013e)

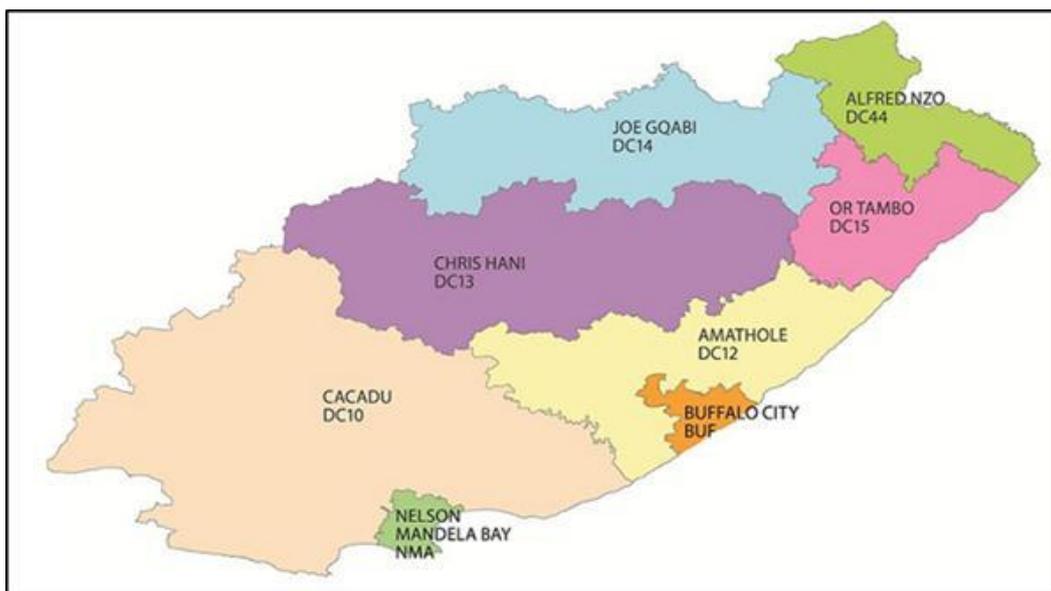
Output F – Review of Roles and Responsibilities (uMoya-NILU, 2013f)

As input to the AQMP for the Eastern Cape, an overview of the Eastern Cape is provided in Chapter 2, the main findings of the air quality status quo assessment are presented in Chapter 3. The AQMP development process is described in Chapter 4. The Overall Objective for the AQMP and the supporting goals are listed in Chapter 5. Chapter 6 includes the Implementation Plan for the AQMP with the monitoring and review process in Chapter 7.

## **2. SUMMARY OF AIR QUALITY IN THE EASTERN CAPE**

### ***Geophysical and socioeconomic context***

The Eastern Cape covers an area of 168 966 km<sup>2</sup> and takes up approximately 13.9% of South Africa's land area with a population of around 6.5 million people. The two largest cities are Port Elizabeth and East London. It is located on South Africa's south-eastern seaboard. It is bordered by the Western Cape Province to the west and Kwazulu-Natal to the east. The northern border is shared with the Northern Cape Province, the Free State and Lesotho. The Eastern Cape includes the Nelson Mandela Bay Metropolitan Municipality and the Buffalo City Metropolitan Municipality, and six District Municipalities (Figure 1) comprising of 37 Local Municipalities.



**Figure 1 : Map of district and local municipalities in the Eastern Cape  
(Local Government Handbook, 2012)**

The topography of the Eastern Cape rises gently from sea level in the southeast to the plains of the Great Karoo, and rises dramatically to the Drakensburg-Maluti escarpment of over 3 000 m in the northeast (Figure 2). The escarpment bisects inland areas while the southern parts are defined by a series of rolling hills and river valleys.

The land cover of the Eastern Cape includes urban areas, cultivated areas, plantations, natural areas (Figure 3). The majority of the Eastern Cape is underdeveloped with the population concentrated in the two metropolitan municipalities (SANBI, 2007). The dominant factor in the land cover is the speckling in the north-east, showing fragmented inhabited land intermingled with cultivated land (ECSSEC, 2012a). These areas are low-yield, small-scale farming and the settlement of areas in between farms.

The moderate coastal climate on the southern coast experiences mild summer temperatures and rainfall throughout the year. The southeast coastline experiences the sub-tropical climate with hot humid summers, mild winters and predominantly summer rainfall. The semi-arid climate experienced in the south eastern interior is characterised by long hot summer months and mild winters. Rainfall decreases from the coast moving inland and occurs almost exclusively in the summer. The rise in altitude in the northeastern interior results in mild summer and cold winter temperatures in the escarpment and moderate eastern plateau climatic zones. Rainfall occurs mostly during summer in these zones.

Air Quality Management Plan for the Eastern Cape Province  
 Output H: Air Quality Management Plan



**Figure 2: Topographical map of the Eastern Cape**



**Figure 3: Land cover map of the Eastern Cape**

A dramatic polarisation of wealth has influenced the distribution of infrastructure and services in the province, leaving metropolitan areas and cities far better off than their rural counterparts. The provision of services and demographics in turn influences the vulnerability of communities to air quality impacts. The population in the province increased from 6.1 million in 1996 to 6.3 million in 2001. In 2007, the population increased by 4% to 6.5 million in 2007. In 2011, the estimated population of the Eastern Cape was 6.6 million. Figure 4 shows total population in the province and where people are concentrated (ECSECC, 2012a). Poverty in the Eastern Cape remains widespread and government has undertaken a series of programmes to address poverty (ECSECC, 2012a).

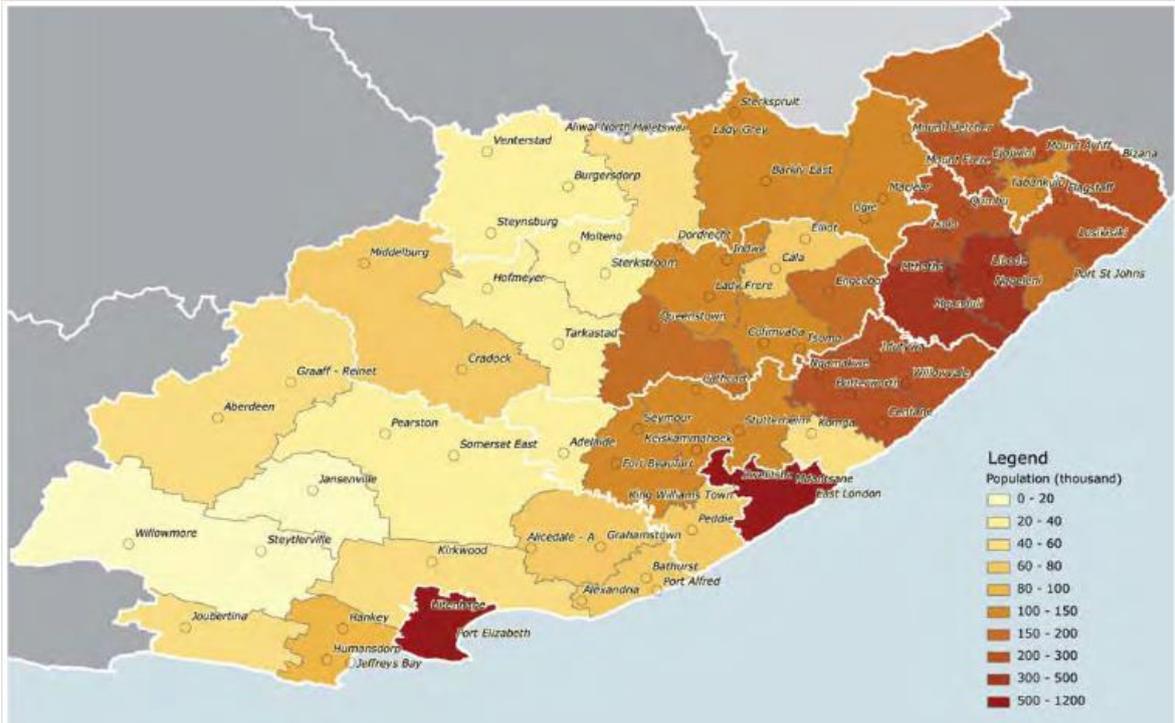
Aviation infrastructure in the Eastern Cape includes two national airports at Port Elizabeth and East London, an airport at Mthatha and 16 air strips in small towns and rural areas owned by municipalities or the private sector (ECD, 2013). Three ports operate in the Eastern Cape, the Ports of Port Elizabeth and East London and the new deep-water Port of Ngqura, linked to the Coega IDZ. The Eastern Cape has an extensive network of 55 088 km of roads servicing the large rural province. Of the roads, only 5 746 km are paved. Some 80% of the networks are district, minor and access roads intended to service rural areas. The rail network consists of 3 360 km of railway and 450 stations, which are used for commuters, mainline passengers and freight. There are two main lines from Port Elizabeth and East London to Gauteng and a series of branch lines.

### ***Sources, ambient air quality and capacity***

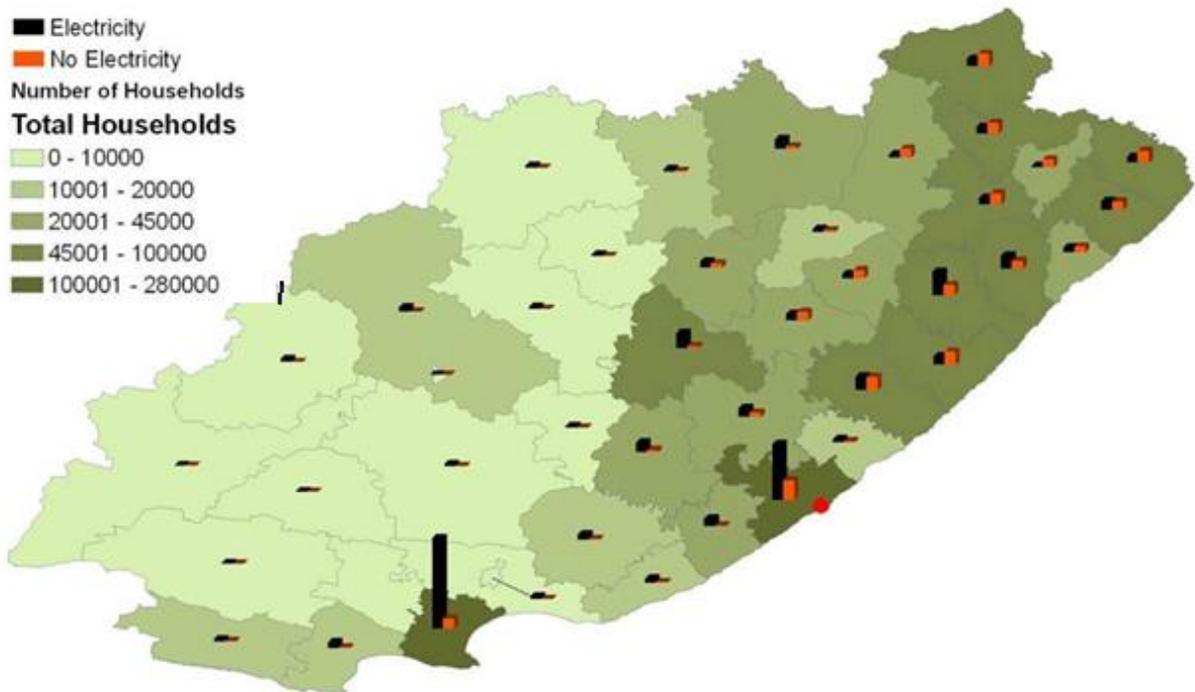
Grid electricity provides 98% of South Africa's commercial electricity requirements, with the same being true of the Eastern Cape. Eskom, the national utility, sells electricity to residential, industrial and commercial consumers. The distribution of electricity use in the Eastern Cape is illustrated in Figure 5.

Many rural consumers in the Eastern Cape rely on other means of energy for cooking, heating and lighting. Of these, wood and coal are the two dirty fuels with respect to air pollutants. The number of homes that rely on wood and coal in the respective DMs District Municipalities is shown in Figure 6.

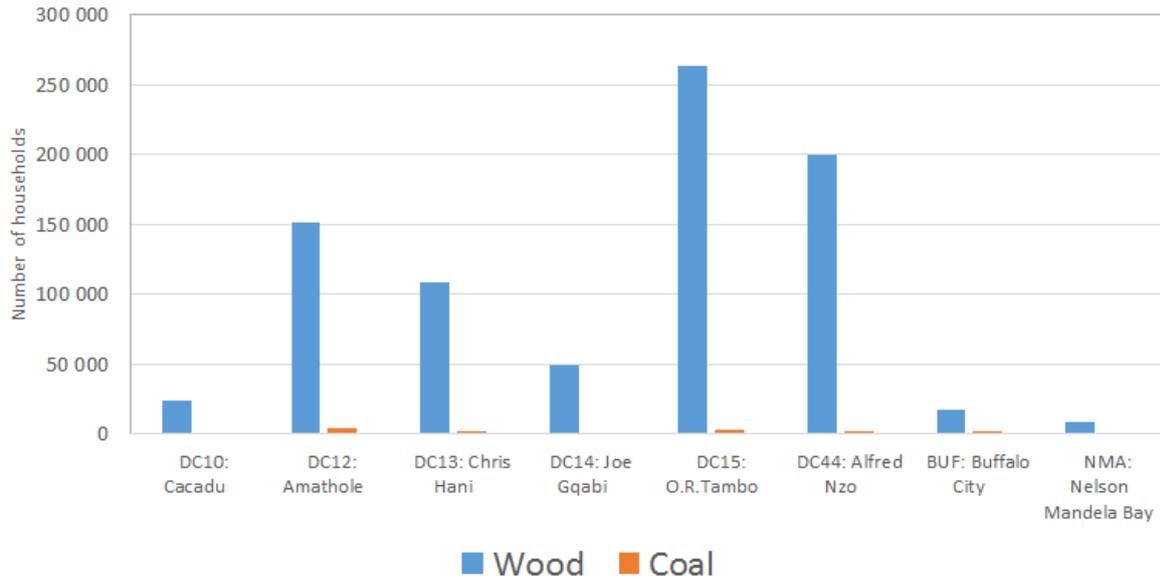
Air Quality Management Plan for the Eastern Cape Province  
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**Figure 4: Map of total population in 2011 (StatsSA, 2011) and (ECSECC, 2012a)**



**Figure 5: Map showing the access to electricity in the East Cape**



**Figure 6: Wood and fuel use in the Eastern Cape (Stats SA, 2011)**

The majority of industrial and manufacturing activities in the Eastern Cape are mostly located in the NMBMM and BCMM, in close proximity to the three ports. Otherwise, a few industrial facilities are located in Cacadu, Chris Hani and Amathole District Municipalities. These facilities include Listed Activities requiring AELs in terms of Section 21 of the AQA and boilers that will require regulating in future. The facilities that operate Listed Activities include, amongst others, those supporting the motor manufacturing industry, those supporting the agricultural industry in food processes, tanneries and the rendering of animal products, brick and tile manufacturing, cement production and bulk fuel storage.

The National Motor Vehicle Emissions Strategy for South Africa (uMoya-NILU, 2012) estimated motor vehicle emissions for the country, based on fuel sales data for 2009 for gasoline, low sulphur and ultra-low sulphur diesel from the Department of Energy (DoE). The emission of  $\text{NO}_x$ ,  $\text{SO}_2$ , CO,  $\text{PM}_{10}$ , benzene, lead and  $\text{CO}_2$  were estimated for four vehicle classes, i.e. motorcycles, passenger cars, light-duty vehicles, and heavy-duty vehicles (including buses). In comparison with other provinces, the Eastern Cape accounts for 7.28 % of total atmospheric emissions from motor vehicles in South Africa per annum. Total emissions from the Eastern Cape are 22 717 ton/year. Of all the air pollutants considered in the study, emissions are the highest for CO, followed by  $\text{NO}_x$  and NMVOC. Emissions of lead are very low due to the phasing out of lead in fuels.

Biomass burning is an important source of atmospheric emissions in the province. Uncontrolled and controlled burning of natural vegetation, agricultural residue and waste burning are the main types of biomass burning that occur in the province. Fires can emit large quantities of particulate matter, ranging from

coarse smut that deposit on surfaces (a nuisance) to fine inhalable particulate matter (PM<sub>10</sub>). Gases emitted from biomass burning include CO, NO<sub>x</sub> and VOCs. Atmospheric emissions from general waste landfill sites occur as landfill gas, which consists mostly of methane and CO<sub>2</sub> and particulates from waste handling and vehicle movement on the landfill site and wind entrained dust. However, in areas where formal waste management systems are lacking, waste is commonly burnt. The pollutants released depend on the type of waste being burnt and may include particulates, CO, NO<sub>x</sub>, VOC and other toxic pollutants, if plastics and other hazardous materials are burnt. Therefore gaseous emissions from landfills sites may manifest as a nuisance as well as a potential health hazard.

There are 117 formal landfills or dumpsites used by municipal authorities in the Eastern Cape (Argus Gibb, 2009). The total quantity of waste disposed of at these sites was estimated in the Integrated General Waste Management Plan (Argus Gibb, 2009) as 1 572 436 tons per annum, with the relative amount for each municipality shown in Table 1.

**Table 1: Estimated quantities of general waste disposed in the Eastern Cape municipalities (Argus Gibb, 2009)**

Municipality	Waste to landfill (tonnes / annum)
Amathole DM including Buffalo City MM	425 344
Cacadu DM	175 147
Chris Hani DM	227 300
Joe Gqabi DM	37 046
O.R. Tambo DM	68 500
Alfred Nzo DM	20 000
Nelson Mandela Bay MM	619 099

Cross boundary pollution occurs when pollutants are released in an area and transported by wind across a political boundary into another area. Examples of cross boundary pollution relevant to the Eastern Cape is the transport of pollutants generated in the NMBMM to parts of the Cacadu DM as well as the transport of pollutants generated in the BCMM to parts of the Amathole DM.

Ambient air quality monitoring in the Eastern Cape is only conducted in the NMBMM and BCMM by the respective municipalities and in the two Industrial Development Zones (IDZ) (Table 2). There are 11 ambient air monitoring stations in total with the largest monitoring network of 5 monitoring stations owned and operated by the NMBMM and 1 monitoring station owned by the East London IDZ. SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub> and meteorology are monitored at all of the stations. In addition, the municipalities monitor CO and O<sub>3</sub>. The BCMM also monitors benzene.

The resultant ambient air quality data indicates that air quality in the two Metropolitan Municipalities is relatively good. No exceedances of ambient air quality standard are recorded in BCMM, and only a few exceedances of the limit value for ozone (O<sub>3</sub>) and nitrous oxide (NO<sub>2</sub>) are recorded in NMBMM.

**Table 2: Number of monitoring station and pollutants monitored in the Eastern Cape**

Monitoring Network	No. of Monitoring Stations	Parameters Monitored						
		SO <sub>2</sub>	NO <sub>x</sub>	CO	O <sub>3</sub>	PM <sub>10</sub>	Benzene	Met
<b>NMBMM</b>	5	†	†	†	†	†		†
<b>CDC</b>	3	†	†			†		†
<b>BCMM</b>	2	†	†	†	†	†		†
<b>EL IDZ</b>	1	†	†			†	†	†
<b>Total</b>	<b>11</b>							

The assessment of government resources to carry out the air quality mandate is an important component of the baseline assessment and air quality management planning process. Capacity refers to the number of people, skills or competence and resources available to manage air quality effectively.

In terms of the AQA, each provincial Member of the Executive Committee (MEC) responsible for the environment has a number of exclusive air quality management powers. In this regard, the MEC must:

- i. 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.
- ii. Prepare a provincial AQMP as a component of the Environmental Implementation Plan.
- iii. Prepare an annual report providing information on progress regarding the implementation of the AQMP and compliance with the provincial implementation plan.
- iv. Process an application for an Atmospheric Emission Licence (AEL) if the applicant is a municipality in the province.
- v. Review the AQMPs received from the municipalities.

The MEC also has a number of discretionary powers, which include amongst others the establishment of provincial emission standards, provincial ambient air quality standards, the declaration of provincial priority areas and the subsequent management of such areas.

Provincial environmental departments are the provincial Lead Agents for environmental management, and therefore air quality management in the provinces. Provinces must therefore provide, where necessary, provincial norms

and standards to ensure coordinated, integrated and cohesive air quality governance in the province. The DEDEAT is represented in six regions in the Eastern Cape, supporting the local functions and playing an oversight role. Activities include strategy and policy development and supporting implementation at a local level. At the head office in King Williams Town, there is a research component focusing on both air quality and climate change issues.

Municipalities also have governance responsibilities and exclusive air quality management powers. In this regard, municipalities must:

- i. Designate a municipal AQO from its administration.
- ii. Develop an AQMP for inclusion in its Integrated Development Plan (IDP) in accordance with Chapter 5 of the Municipal Systems Act.
- iii. Prepare an annual report including progress regarding the implementation of the AQMP and compliance with the plan.

District and Metropolitan Municipalities must implement an atmospheric emission licensing system, and perform the functions of the licensing authority (Chapter 5 of the AQA). The DEDEAT assists all of the district municipalities with their AEL function. The current status regarding the mandated requirements of AQA in the province is summarised in Table 3.

**Table 3: Summary of the current institutional capacity for air quality management in the Eastern Cape Province**

<b>Region</b>	<b>AQO</b>	<b>AQMP</b>	<b>AEL Function</b>	<b>Annual reporting</b>
<b>DEDEAT</b>	Designated	Development in process	Fully functional	Yes
<b>NMBMM</b>	Designated	Developed in 2011	Fully functional	Yes
<b>BCMM</b>	Designated	Developed in 2012	With assistance from DEDEAT	Yes
<b>CHDM</b>	Designated	No	With assistance from DEDEAT	Yes
<b>ADM</b>	Designated	Development in process	With assistance from DEDEAT	Yes
<b>ANDM</b>	Appointment in process	No	With assistance from DEDEAT	Yes
<b>CDM</b>	Designated	No	With assistance from DEDEAT	Yes
<b>JGDM</b>	Designated	No	With assistance from DEDEAT	Yes
<b>ORTDM</b>	Designated	No	With assistance from DEDEAT	Yes

### **3. AIR QUALITY GAPS AND ISSUES**

The air quality management gaps and issues in the Eastern Cape are listed here, based on the findings of the focused assessment studies, the status quo assessment and public consultation.

#### **3.1 Air quality gaps and issues**

- The lack of a comprehensive emission inventory inhibits air quality management and the identification of priority sources and pollutants;
- The lack of ambient monitoring data and reliable dispersion modelling inhibits air quality management and the assessment of air quality;
- Industrial emissions are perceived to impact on ambient air quality;
- Waste burning on formal and informal refuse disposal sites is perceived to impact on ambient air quality
- Emissions from the burning of wood, coal and paraffin for cooking and heating impacts on ambient air quality in residential areas;
- Emissions from biomass burning in the forestry and agricultural sectors impacts on ambient air quality;
- Cross-border transport of pollutants from NMBMM and BCMM potentially impacts on the neighbouring Cacadu and Amathole DMs, respectively;
- The significant number of small brick manufacturers using clamp kiln technology and the complexity of regulating these as Listed Activities presents a management challenge;
- Cumulative effects of increasing emissions in the Coega IDZ and elsewhere in the NMBMM Municipality and the negative effects on ambient air quality suggest the potential for a Provincial Priority Area;
- Opportunities for the AQMP to address objectives of the climate change strategy through approaches to emission reduction exist.
- The lack of general air quality awareness among all stakeholders inhibits meaningful engagement and buy-in to air quality management.

#### **3.2 Air quality management tools**

- Municipal and provincial emission inventories are incomplete;
- Ambient monitoring is undertaken in the NMBMM and BCMM only, and concerns exist about the representativeness of these data;
- Dispersion modelling capabilities exist in the NMBMM and BCMM, but are not optimised for air quality management;
- AQMPs have been developed for the NMBMM and BCMM, but fail to provide the municipalities with guidance for implementation.
- The current systems for managing AEL applications in the province needs to be standardised and strengthened.

### **3.3 Air quality governance**

- Roles and responsibilities of municipalities and the province for effective and efficient intergovernmental governance are not clearly defined and understood;
- Consistent implementation of the air quality management functions in the province is required through improved coordination of air quality management among municipalities;
- Air quality management capacity and technical competence to perform the function needs to be strengthened in municipalities and the province.
- Buy-in and commitment to advantages of coherent and coordinated intergovernmental communication in air quality management needs to be improved;
- The lack of technical competence or capacity to conduct the AEL function in District Municipalities needs to be addressed;
- There are no trained and designated compliance and enforcement officers in municipalities, other than in the NMBMM.

## **4. AQMP FOR THE EASTERN CAPE**

### **4.1 AQMP development process**

The baseline assessment provided the mechanism to identify gaps and issues in air quality management in the Eastern Cape. These, in turn, informed the development of the AQMP. The AQMP was developed in consultation with stakeholders and includes:

- A Logical Framework Assessment workshop with Provincial and Municipal officials to develop:
  - An Overall Objective for the AQMP that is aligned with overarching environment and development policy in the Eastern Cape;
  - Goals and intervention activities to realise the overall objective, each with appropriate timeframes, responsibilities and indicators to monitor success;
- Drafting the AQMP, including discussion with Provincial Management;
- Publication of the draft AQMP;
- Presentation of the draft AQMP at public meetings in Port Elizabeth, Mthatha and East London;
- Finalising the AQMP for presentation to Executive Committee (Exco) for approval and inclusion in the Eastern Cape EIP.

### **4.2 Vision, mission and goals of the AQMP**

The *Vision* for the Air Quality Management in the Eastern Cape is:

**Air Quality Management in the Eastern Cape ensures  
clean, safe air for all**

The *Mission* to achieve the *Vision* for Air Quality Management in the Eastern Cape is:

**DEDEAT leads Air Quality Management in the Eastern Cape to continually improve air quality while protecting human health and securing environmental sustainability**

Six *Goals* are defined to achieve the *Mission*, which focus on addressing current short comings in air quality governance, in planning and research, in air quality management competence, in knowledge and resources, as well as in compliance monitoring and enforcement. The six Goals are:

**Goal 1**

Intergovernmental relationships for Air Quality Management are streamlined and function effectively in the Eastern Cape

**Goal 2**

Air Quality Management is considered in planning in the Eastern Cape and is led by sound scientific research in order to achieve sustainable development

**Goal 3**

Adequate and competent staff are incumbent in all District and Metropolitan municipalities in the Eastern Cape

**Goal 4**

Adequate and effectively resourced Air Quality Management Systems support decision making in the Eastern Cape

**Goal 5**

Awareness and knowledge of air quality is enhanced in the Eastern Cape

**Goal 6**

Compliance and enforcement initiatives in the Eastern Cape are visible and effective

The timeframes defined for the implementation of the AQMP are:

Immediate	First 3 months of AQMP adoption
Short term	First 12 months of AQMP adoption
Medium Term	2 to 3 years of AQMP adoption
Long term	4 to 5 years of AQMP adoption

#### **4.4 Implementation responsibility**

The responsibility for implementation of the Eastern Cape AQMP ultimately lies with the DEDEAT. Implementation is achieved through cooperative governance between a number of stakeholders, including DEDEAT and District and Metropolitan municipalities, amongst others. The responsibilities for implementation are classified as Mandatory or Participatory. The stakeholders with implementation responsibilities and their associated acronyms used in the AQMP Implementation Plan in Section 4.5 are listed below:

District and Metropolitan municipalities:

- Nelson Mandela Bay Metropolitan Municipality (NMBMM)
- Buffalo City Metropolitan Municipality (BCMM)
- Cacadu District Municipality (CDM)
- Amatole District Municipality (ADM)
- Alfred Nzo District Municipality (ANDM)
- Joe Gqabi District Municipality (JGDM)
- Chris Hani District Municipality (CHDM)
- OR Tambo District Municipality (ORTDM)

Provincial authority:

- Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)
- Department of Health (DOH)

National authority:

- Department of Environmental Affairs (DEA)

Other:

- Coega Development Corporation (CDC)
- South African Sugar Association (SASA)
- Industry (listed activities)

#### **4.5 AQMP Implementation plan**

The Implementation Plan for the Eastern Cape AQMP is presented in the following tables. For each of the six Goals, appropriate Objectives are set. In turn, Activities necessary to achieve each Objective are assigned, together with the responsible stakeholder and the timeframes required to achieve the objective. Indicators necessary to assess progress with implementation are assigned to each Objective.

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**Goal 1: Intergovernmental relationships for AQM are streamlined and function effectively in the Eastern Cape**

Objectives	Activities	Mandatory Responsibility	Participatory Responsibility	Timeframes	Indicators
1.1 Intergovernmental relationships for AQM between Province and the National Department function effectively	1.1.1 Participate at the NAQO Working Group 2 meetings	DEDEAT		Quarterly and on-going	Attendance and participation at Working Group 2 meetings
	1.1.2 Participate at the annual Governance Lekgotla	DEDEAT		Annually and on-going	Attendance and participation at the annual Governance Lekgotla
	1.1.3 Prepare and submit annual report to the NAQO	DEDEAT	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	Annually and on-going	Annual report submitted and published on the SAAQIS
1.2 Intergovernmental relationships for AQM between Provincial Departments function effectively and air quality is considered in joint decision making	1.2.1 Communicate the objectives of the AQMP across provincial structures, with an emphasis on co-operative governance	DEDEAT		Short term and on-going	Objectives of the AQMP are understood across provincial structures
	1.2.2 Participate in Departmental planning meetings and comment on Provincial planning documents	DEDEAT		Short term and on-going	Meetings attended and air quality related comments are given on provincial planning documents
1.3 Intergovernmental relationships for AQM between Province, District and Metropolitan	1.3.1 Participate in quarterly Provincial AQO meetings	DEDEAT, NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM		Short term and on-going	Attendance and participation at Provincial AQO meetings

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory Responsibility</b>	<b>Participatory Responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
Municipalities function effectively	1.3.2 Participate in the annual Governance Lekgotla	DEDEAT, NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM		Annually and on-going	Attendance and participation at the annual Governance Lekgotla
	1.3.3 Prepare and submit air quality report to the Provincial AQO	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM		Quarterly and on-going	Air quality report submitted
	1.3.4 Collaborate with District and Metropolitan municipalities to fulfil the AEL function	DEDEAT, NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM		Short-medium term	District and Metropolitan Municipalities operate independently as the AELA
	1.3.5 Contribute to the development and review of AQMPs in District and Metropolitan municipalities	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Medium-long term	DEDEAT attend and participate in the AQMP stakeholder process
	1.3.6 Provide assistance to District and Metropolitan municipalities with QA/QC of ambient monitoring stations	DEDEAT		Short-medium term and on-going	District and Metropolitan Municipalities have appropriate QA/QC procedures in place
	1.3.7 Provide training to District and Metropolitan municipalities to operate the NAEIS optimally	DEDEAT	DEA	Short term and on-going	District and Metropolitan Municipalities have the competence to operate the NAEIS optimally
	1.3.8 Provide dispersion	DEDEAT		Medium term	District and

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory Responsibility</b>	<b>Participatory Responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
	modelling support to District and Metropolitan municipalities				Metropolitan Municipalities access dispersion modelling support from DEDEAT
	1.3.9 Participate in District and Metropolitan Municipal AQO forum meetings	DEDEAT,NMBMM, BCMM,CDM,CHDM, ADM,ANDM,JGDM and ORTDM		Short term and on-going	Attendance and participation at AQO forum meetings
1.4 Intergovernmental relationships for AQM between Municipal Departments function effectively	1.4.1 Communicate the objectives of the AQMP across the District and Metropolitan municipal structures, with an emphasis on co-operative governance	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Immediate and on-going	The objectives of the AQMP are communicated across District and Metropolitan municipal structures
	1.4.2 Participate in Departmental planning meetings and comment on District and Metropolitan Municipal planning documents	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short term and on-going	Meetings attended and air quality related comments inform on District and Metropolitan municipal planning documents

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**Goal 2: Air Quality Management is considered in planning in the Eastern Cape and is led by sound scientific research in order to support sustainable development**

Objectives	Activities	Mandatory responsibility	Participatory responsibility	Timeframes	Indicators
2.1 Cumulative effects of development at the Coega IDZ are researched and appropriate management mechanisms are developed and implemented	2.1.1 Develop and maintain a comprehensive emission inventory for the Coega IDZ, for current and prospective industrial projects	NMBMM	DEDEAT, CDC	Short term	A comprehensive and accurate emissions inventory exists and is maintained
	2.1.2 Establish an appropriate dispersion model for the NMBMM including the Coega IDZ using local meteorological, land use and topographical data	DEDEAT,NMBM	CDC	Short term	An appropriate dispersion model is established
	2.1.3 Perform dispersion modelling to assess the cumulative effects of the systematic increase in emissions resulting from projects in the Coega IDZ and other sources in the NMBMM	DEDEAT,NBMM	CDC	Short-medium term	Current and future cumulative effects are understood
	2.1.4 Ensure that air quality assessments for future projects utilise the Coega IDZ emission inventory to assess current and future cumulative effects	NMBMM and DEDEAT	CDC	Medium term and on-going	The emissions inventory is used in air quality assessments
	2.1.5 Ensure the inclusion of the Coega IDZ in the revised AQMP for the	NMBMM	DEDEAT	Medium term	The Coega IDZ is included in the revised NMBMM

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Objectives	Activities	Mandatory responsibility	Participatory responsibility	Timeframes	Indicators
	NMBMM				AQMP
2.2 The socioeconomic and air quality impacts of small scale brick manufacturing are researched and appropriate management mechanisms developed and implemented	2.2.1 Undertake a socio-economic study of small brick manufacturers at pilot sites in BCMM, CHDM, JGDM and ORTDM	DEDEAT	DEA, BCMM, CHDM, JGDM and ORTDM, SDC, DMR	Short term	Research report
	2.2.2 Determine appropriate guidelines to address socio-economic and air quality impacts for small scale brick manufacturers	DEDEAT	DEA, BCMM, CHDM, JGDM and ORTDM, DMR	Short-medium term	Guideline document
2.3 The impact of air pollution on human health in the province is researched with consideration of the rural nature of the Eastern Cape and the contributing effect of high levels of poverty and urbanisation	2.3.1 Develop terms of reference for a comprehensive air pollution health and vulnerability study for the Eastern Cape	DEDEAT	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM and DOH	Medium term	Terms of reference developed
	2.3.2 Conduct an air pollution health and vulnerability study in the Eastern Cape	DEDEAT	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM and DOH	Long term	The effects of air pollution on human health in the Eastern Cape are understood

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
2.4 Open burning is not practiced on landfill sites in the Eastern Cape	2.4.1 Discuss negative impacts of open burning of waste on air quality and human health with landfill site managers	NMBMM, BCMM, CDM, HDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short -medium term	The negative effects of waste burning are well understood by landfill waste managers
	2.4.2 Enforce by-law to reduce the incidence of open burning of waste	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short term and on-going	By-law is enforced
2.5 Emissions from residential fuel burning are reduced through the encouragement of alternative energy options	2.5.1 Improve current understanding of emissions from residential fuel burning in the Eastern Cape	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	Long term	Emissions from residential fuel burning are quantified
	2.5.2 Encourage the use of clean energy options	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	Long term	A decrease in the use of fossil fuels
2.6 Emissions from controlled and uncontrolled burning are reduced	2.6.1 Develop a burning code of practice that addresses the impact of forestry burning on air quality	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM and Eastern Cape Fire Protection Services and the Eastern Cape Forestry Association	Short-medium term	A burning protocol is developed

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
	2.6.2 Develop a burning code of practice that addresses the impacts of agricultural burning, including sugarcane burning, on air quality.	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM and Eastern Cape Fires protection services and SASA	Medium term	A burning protocol is developed
	2.6.3 Develop a burning code of practice that addresses the impacts of land management activities such as road reserve management and veld management in District Management Areas.	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM and Eastern Cape Fires Protection Services	Medium term	A burning protocol is developed
2.7 The opportunities for synergies between the control of air pollutant emissions and greenhouse reduction/latent energy utilisation in industry in the Eastern Cape is researched and implemented	2.7.1 Identify all industries whose activities produce more than 0.1 Mt of greenhouse gas emissions per annum	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short term	List of targeted industries

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
	2.7.2 Include in all relevant AEL applications, a condition to investigate the opportunity for co-generation and or energy efficient projects	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short term and on-going	AELs include requirement to research co-generation and or energy efficient projects
2.8 Development and economic planning decisions in the Eastern Cape are informed by sound air quality research	2.8.1 Use established dispersion modelling capability and emission inventories to model the cumulative impacts for the status quo and future development scenarios for identified major urban areas.	DEDEAT	NMBMM, BCMM, ELIDZ and CDC	Medium term	Current and future cumulative impacts are identified
	2.8.2 Communicate the results of the cumulative impact assessment study to appropriate planning groups to inform decisions that are influenced by the carrying capacity of the air shed.	DEDEAT	NMBMM, BCMM, ELIDZ and CDC	Medium-long term	Planning decisions are informed by the cumulative impact study
2.9 The cross boundary effects of air pollution in the Eastern Cape are researched and understood	2.9.1 Assess the cross-boundary effects of emissions in BCMM on air quality in the ADM	DEDEAT, BCMM and ADM	Industry	Medium-long term	Research study has been conducted
	2.9.2 Assess the cross-boundary effects of emissions in NMBMM on the CDM	DEDEAT, NMBMM and CDM	CDC and Industry	Medium-long term	Research study has been conducted
	2.9.3 Establish background particulate concentrations resulting	DEDEAT		Medium-long term	Research study has been conducted

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Objectives	Activities	Mandatory responsibility	Participatory responsibility	Timeframes	Indicators
	<p>from long-range transport to the Eastern Cape</p> <p>2.9.4 Assess the NMBMM as a potential Provincial Priority Area, based on the systematic industrial development in the Coega IDZ and the impact on air quality beyond the municipal boundaries</p>	<p>DEDEAT, NMBMM and CDC</p>	<p>Industry</p>	<p>Medium-long term</p>	<p>Research study has been conducted</p>

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**Goal 3: Adequate and competent staff in all District and Metropolitan municipalities in the Eastern Cape**

Objectives	Activities	Mandatory responsibility	Participatory responsibility	Timeframes	Indicators
3.1. District and Metropolitan Municipal structures provide adequately for the Air Quality Management function	3.1.1 Motivate with District and Metropolitan Municipal Management for a dedicated Air Quality Management function	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Immediate	A dedicated Air quality Management function exists in District and Metropolitan municipalities
	3.1.2 Revise District and Metropolitan Municipal organograms to provide posts for a dedicated Air Quality Management Function	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short-medium term	District and Metropolitan Municipal organograms accommodates dedicated posts
	3.1.3 Compile job descriptions for air quality posts in the District and Metropolitan Municipal organogram	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short-medium term	Job descriptions are compiled
3.2 Sufficient air quality personnel are available in the District and Metropolitan Municipalities to perform the Air Quality Management Function	3.2.1 Conduct a capacity gap analysis to determine air quality vacancies on the organogram	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short-medium term	A capacity gap analysis is conducted
	3.2.2 Engage with District and Metropolitan Municipal HR to advertise and recruit personnel to fill vacant air quality posts	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short-medium term	Vacant posts are filled
3.3 District and Metropolitan	3.3.1 Establish the level and depth of technical	DEDEAT,NMBMM, BCMM,CDM,CHDM,		Short term	The level and depth of technical support

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Objectives	Activities	Mandatory responsibility	Participatory responsibility	Timeframes	Indicators
Municipal air quality personnel are appropriately skilled to perform the Air Quality Management Function	support the Province currently provides to District and Metropolitan Municipalities	ADM,ANDM,JGDM and ORTDM			the Province provides to District and Metropolitan Municipalities is established
	3.3.2 Assess Air Quality Management competency of incumbent and new staff and technical development needs	DEDEAT,NMBMM, BCMM, CDM, CHDM, ADM, ANDM,JGDM and ORTDM		Short term	The Air Quality Management competency of incumbent and new staff as well as technical development needs are identified
	3.3.3 Include identified Air Quality Management training needs in individual career development plans to establish Provincial focal points in a) ambient monitoring, b) dispersion modelling, c) emission inventories, and d) air quality management research	DEDEAT,NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM		Short -medium term	Career development plans address air quality management training needs
	3.3.4 Identify appropriate technical training courses and related mechanisms for incumbent and new staff	DEDEAT,NMBMM, BCMM,CDM,CHDM, ADM,ANDM,JGDM and ORTDM		Short-medium term	Technical training courses and related mechanisms are identified
	3.3.5 Undertake training as per career development plan	DEDEAT,NMBMM, BCMM,CDM,CHDM, ADM,ANDM,JGDM and ORTDM		Medium-Long term and on-going	Training completed as per career development plan

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
	3.3.6 Continually enrich Air Quality Management knowledge and understanding through on-the-job application, reading, participation in Provincial AQM forum, and attendance at annual Governance Lekgotla	DEDEAT,NMBMM, BCMM,CDM,CHDM, ADM,ANDM,JGDM and ORTDM		Short term and on-going	New knowledge is shared at air quality officers forums and the annual Governance Lekgotla, through presentations or publication
3.4 EMI's in the province are experienced and have the necessary skills to fulfil their function	3.4.1 Train designated officers as EMIs and develop experience through hands on compliance monitoring and enforcement	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM		Medium term	EMIs are appropriately trained and conduct compliance monitoring and enforcement
	3.4.2 Incumbent EMI develop experience through hands on compliance monitoring and enforcement	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM		Short term and on-going	EMIs are appropriately trained and conduct compliance monitoring and enforcement

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**Goal 4: Adequate and effectively resourced Air Quality Management Systems support decision making in the Eastern Cape**

Objectives	Activities	Mandatory responsibility	Participatory responsibility	Timeframes	Indicators
4.1 Emission inventory information in the Eastern Cape is current, complete and accurate and enables informed decision making in Air Quality Management	4.1.1 Nominate a provincial officer for advanced training on the NAEIS to fulfil the role of NAEIS focal point	DEDEAT		Short term	Provincial officer designated as NAEIS focal point
	4.1.2 District and Metropolitan Municipalities are trained in the use of the NAEIS	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short-medium term	District and Metropolitan Municipal officials have been trained
	4.1.3 Industry (listed activities) are trained in the use of the NAEIS	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short term	NAIES training workshop for industry has been conducted
	4.1.4 Industries (listed activities) submit air pollutant and GHG emission information to the NAEIS	Industry	DEDEAT,NMBMM, BCMM,CDM,CHDM, ADM,ANDM,JGDM and ORTDM	Short-medium term	All listed activity data is captured in the NAEIS

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
	4.1.5 District and Metropolitan Municipalities audit industrial (listed activity) emission data	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short-medium term	All listed activity data has been audited
	4.1.6 District and Metropolitan Municipalities submit emissions data for controlled emitters to the NAEIS	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Medium term	Controlled emitter emissions data is captured in the NAEIS
	4.1.6 District and Metropolitan Municipalities submit emissions data for waste management to the NAEIS	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Medium term	Waste management emissions data is captured in the NAEIS
	4.1.6 District and Metropolitan Municipalities submit emissions data for residential fuel burning to the NAEIS	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Medium term	Residential fuel burning emissions data is captured in the NAEIS
	4.1.7 District and Metropolitan Municipalities submit emissions data for transportation to the NAEIS	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short term	Transportation emissions data is captured in the NAEIS

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
4.2 Ambient air quality monitoring in the Eastern Cape provides accurate and reliable information that enables informed decision making in Air Quality Management	4.2.1 Develop an ambient air quality monitoring strategy for the Eastern Cape that optimises and builds on existing real-time monitoring initiatives	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short term	An appropriate ambient air quality monitoring strategy is developed
	4.2.2 Rollout monitoring strategy to establish ambient air quality baseline and identify areas of potential concern	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short-medium term	Ambient monitoring strategy is systematically rolled out
	4.2.3 Implement norms and standards for quality control and quality assurance at real-time ambient monitoring stations in the Eastern Cape	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short term	Routine audit confirms that norms and standards are in place resulting in a 90% data capture
	4.2.4 Report quality controlled and assured data from the real-time ambient monitoring stations to the SAAQIS	DEDEAT, NMBMM, BCMM CDM, CHDM, A DM, ANDM, JGDM and ORTDM		Short term and on-going	Quality controlled and assured data from the real-time ambient monitoring stations are reported to the SAAQIS

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
	4.2.5 Present ambient data from the passive monitoring campaigns in the annual AQO report.	DEDEAT, NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM		Medium term and going	Ambient data from passive monitoring is presented in the annual AQA report
	4.2.6 Train District and Metropolitan municipal personnel to conduct ambient monitoring	DEDEAT	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	Medium term	District and Metropolitan Municipal personnel have been trained
	4.2.7 Hand over responsibility for ambient monitoring to the respective District and Metropolitan municipalities	DEDEAT	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	Medium-long term	Responsibility for passive sampling is handed over to the respective District and Metropolitan municipalities
4.3 Ambient air quality modelling in the Eastern Cape supports informed decision making in Air Quality Management	4.3.1 Nominate a provincial officer for advanced training in dispersion modelling to fulfil the role of modelling focal point	DEDEAT		Medium term	A provincial officer is nominated
	4.3.2 Establish a Provincial dispersion modelling capability, including computers, models and meteorological and emission data	DEDEAT		Medium term	The provincial dispersion modelling focal point is trained and the modelling capability exists

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<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
	4.3.3 Provide a dispersion modelling service to municipalities and to inform planning and air quality management	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Long term and on-going	A dispersion modelling service is provided to municipalities
4.4 Air quality complaints in the Eastern Cape are dealt with efficiently and effectively	4.4.1 Stakeholders are aware of the procedure to report air quality related complaints	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short term	Complaints procedure is publicized
	4.4.2 Air quality complaints are recorded and investigation is assigned to the appropriate investigating authority as per current procedure	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short term	Complaints registers are current and investigations are tracked
	4.4.3 Refer of all environmental non-compliances to EMIs for enforcement	NMBMM, BCMM, CDM, CHDM, ADM, ANDM, JGDM and ORTDM	DEDEAT	Short term	Non compliances are assigned to EMIs

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**Goal 5: Awareness and knowledge of air quality is enhanced in the Eastern Cape**

<b>Objectives</b>	<b>Activities</b>	<b>Mandatory responsibility</b>	<b>Participatory Responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
5.1 Stakeholders are fully informed of Air Quality Management needs and activities in the Eastern Cape	5.1.1 Present the AQMP for the Eastern Cape to Provincial senior management at appropriate opportunity	DEDEAT		Immediate	The AQMP is presented to Provincial senior management
	5.1.2 Include the requirements of the AQMP in the APP for the Eastern Cape	DEDEAT		Immediate and Annually	AQMP requirements included in the provincial APP and Annual Operational Plans
	5.1.3 Inform EC Senior Management of progress with the implementation of the AQMP through progress reports	DEDEAT		Short term and Annually	Progress reports are submitted
	5.1.4 Present the AQMP for the Eastern Cape Province to Municipal Management at appropriate opportunity, highlighting the areas for co-operative	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	Immediate	AQMP is presented to Municipal Management

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Objectives	Activities	Mandatory responsibility	Participatory Responsibility	Timeframes	Indicators
	governance				
	5.1.5 Inform District and Metropolitan Municipal Management of the progress with implementation of the AQMP for the Eastern Cape through progress reports	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short term and on-going	Progress reports are submitted
	5.1.6 Inform the broader stakeholder community of the AQMP and progress with the implementation at the District and Metropolitan Municipal AQ Forum	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short term and on-going	Stakeholder community is informed of AQMP progress at annual stakeholder meeting
5.2 Stakeholders in the Eastern Cape have a good understanding of Air	5.2.1 Identify stakeholder groups that will benefit by	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	Short-medium term	Stakeholder groups are identified

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Objectives	Activities	Mandatory responsibility	Participatory Responsibility	Timeframes	Indicators
Quality	improving their knowledge and understanding of Air Quality Management				
	5.2.2 Identify the most appropriate mechanism for transferring knowledge, e.g. pamphlets, newspaper articles, workshops, preferred language, etc.	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	Short term	Knowledge transfer mechanism is identified
	5.2.3 Prepare the material accordingly	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short-medium term	Material is prepared
	5.2.4 Arrange knowledge sharing opportunities	DEDEAT	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	Short-medium term	Knowledge sharing opportunities are arranged
	5.2.5 Disseminate information and conduct knowledge sharing sessions	DEDEAT	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	Short-medium term	Air quality knowledge is disseminated appropriately

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**Goal 6: Compliance and enforcement initiatives in the Eastern Cape are visible and effective**

<b>Objectives</b>	<b>Activities</b>	<b>Mandated responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
6.1 Province and municipalities comply with legislation	6.1.1 The Provincial AQMP is included in the Eastern Cape's EIP	DEDEAT		Short term	Eastern Cape EIP includes the AQMP
	6.1.1 Include AQMPs in the IDP's of all District and Metropolitan municipalities	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Medium-long term	All municipality IDPs contain AQMPs
	6.1.3 Designate an AQO in all District and Metropolitan Municipalities	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short-medium term	All municipalities designate an AQO
	6.1.4 Submit annual air quality report to the NAQO	DEDEAT	NMBMM,BCMM,CDM,CHDM, ADM,ANDM,JGDM and ORTDM	Annually	The annual air quality report is submitted
	6.1.5 Submit routine air quality reports to the Provincial AQO	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short term and on-going	Routine air quality reports are submitted
	6.1.6 Apply norms and standards for ambient monitoring	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM		Short term and on-going	Ambient monitoring stations are audited
	6.1.7 Conduct compliance inspections on all premises that are holders of AELs	NMBMM,BCMM,CDM, CHDM,ADM,ANDM, JGDM and ORTDM		Short term and on-going	Compliance inspections are conducted
6.2 All listed activities comply with	6.2.1 Identify listed activities without AELs	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM	DEDEAT	Short term	Listed activities are identified

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<b>Objectives</b>	<b>Activities</b>	<b>Mandated responsibility</b>	<b>Participatory responsibility</b>	<b>Timeframes</b>	<b>Indicators</b>
AEL requirements	6.2.2 Institute a campaign to efficiently receive and process AEL application from unlicensed facilities	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM		Short - medium term	AELs are issued to all listed activities
	6.2.3 Develop a mechanism to track compliance with condition of AELs	NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM		Short -medium term	Compliance tracking mechanism is operated
6.3 Compliance and enforcement is visible in the Province	6.3.2 Publish enforcement actions in the media to enhance the visibility of EMI activity in the Eastern Cape	DEDEAT, NMBMM,BCMM,CDM,C HDM,ADM,ANDM, JGDM and ORTDM		Short term and on-going	Enforcement actions are published

## **5. MONITORING, EVALUATION AND REVIEW**

### **5.1 Monitoring**

The monitoring component of the AQMP is an on-going process to assess the success of the implementation of all aspects of the plan. It ensures that the drive to implement interventions is maintained and it also provides a means of updating stakeholders on progress.

Monitoring should be performed by the DEDEAT and Metropolitan and District municipalities through regular personnel performance appraisals.

### **5.2 Evaluation**

Evaluation is an internal mechanism to measure the success of the AQMP implementation. On-going evaluation allows for a thorough assessment of the AQMP, including the shortcomings and strengths evident in implementation. AQMP evaluation is divided into two sections, an internal evaluation of the final AQMP and an on-going evaluation, which addresses implementation outcomes.

The first evaluation should be addressed internally by DEDEAT and the municipalities. It is recommended that the comprehensive evaluation checklist that is provided in DEA's AQMP Manual (DEAT, 2008) is used. The checklist includes details on the general document and process, as well as specific information on the performance of interventions.

Annual evaluation of the AQMP is suggested using indicators. Indicators are easily interpreted and offer a meaningful method of communicating progress on implementation. These may be incorporated into the annual reporting. The annual evaluation also coincides with the Provincial EIP review and re-drafting.

### **5.3 Review**

AQMP review comprises an internal and external review, and addresses further developments in the science and management of air quality. A review period of five years is recommended in the Manual for Air Quality Management (DEAT, 2007) with the participation of stakeholders.

The process of a five-year review may be initiated through an internal review mechanism and incorporates the annual evaluation exercise. This allows for an effective assessment of the performance of the AQMP and examines the successes and failures of implementation.

An evaluation of the current organisational and air quality status is necessary to complete the evaluation portion of the review. Following the comprehensive evaluation, goals and objectives may be amended as needed and activities updated. The internal revision should be communicated to stakeholders through a public participation process, followed by a further iteration and publication.

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