



AIR QUALITY MANAGEMENT PLAN FOR THE WESTERN CAPE PROVINCE

Draft Final

Air Quality Management Plan for the Western Cape Province
Draft Final

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Project Team:

Dr. Joy Leaner (Director: Pollution Management)
Kamaseelan Chetty (Deputy-Director: Air Quality Management)
Hans Linde, Robyn Britten, Shawn le Roux, Heinrich Wingrove, Russel Mehl, Shahida Misbach and Rabia Reynolds (Sub-Directorate: Air Quality Management)
Dr. Mark Zunckel, Yegeshni Naicker (uMoyo-Nilu)

Project Technical Committee:

Dr. Joy Leaner (Director: Pollution Management)
Kamaseelan Chetty (Deputy-Director: Air Quality Management)
Hans Linde, Robyn Britten, Russel Mehl, (Sub-Directorate: Air Quality Management)
Dr. Mark Zunckel, Yegeshni Naicker (uMoyo-Nilu)
Ian Gildenhuys
Johan Mei (Dept Agriculture), ?? (Dept Health), Lehan fouche (DEADP GIS), Okkie, Piet, David Oliver, anton Molden (SAPIA), Andrew Mota(,DEA)

For further information, please contact:

Department of Environmental Affairs and Development Planning
Directorate: Pollution Management
Sub-Directorate: Air Quality Management
Private Bag X9086, Cape Town, 8000
Tel: 021 483 2888 Fax: 021 483 3254
Email: kchetty@pgwc.gov.za

Foreword



Every person has the right to clean air. The publication of the National Environmental Management: Air Quality Act, Act No. 39 of 2004, (NEM:AQA), has introduced new challenges with regard to air quality management for all spheres of Government including Industry. The Western Cape Provincial Government has been proactive in accepting these challenges and has since been actively engaged in various programs to manage air quality.

One of these programmes has now culminated in this Air Quality Management Plan for the Western Cape Province. During the process of drafting this plan an extensive public participation process was followed. The inputs received from the various communities, organizations, industries and authorities that have participated in the public consultation process has shaped and informed this plan.

The publication of this Air Quality Management Plan will guide the development of air quality initiatives, with a view to ensure that the air we breathe is in compliance with National Ambient Air Quality Standards. The effective implementation of the Air Quality Management Plan is dependent on all citizens and advocates a participatory approach to air quality governance in the Western Cape.

Anton Bredell

Western Cape Minister: Environmental Affairs and Development Planning

Executive summary

The promulgation of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (“the NEM:AQA”) marked a turning point in the approach to air pollution control and governance in South Africa. The philosophy of Air Quality Management (AQM) was introduced in line with international policy developments and the environmental right, i.e. Section 24 of the Constitution (Act No. 108 of 1996). The focus shifted from source control under the Atmospheric Air Pollution Prevention (APPA) (Act No. 45 of 1965) to management of pollutants in the ambient environment through air quality management planning. In accordance with the requirements of the NEM:AQA, Section 15 (1), the Western Cape’s Department of Environmental Affairs and Development Planning (D:EA&DP) is developing an Air Quality Management Plan (AQMP) for the Western Cape Province.

The development of the AQMP was undertaken in two phases. *Phase One* entailed the establishment of the baseline status of AQM in the Province, as well as the baseline status of ambient air quality. *Phase Two* used the findings of the baseline assessment and the resultant gap analysis to set the Vision, Mission and Goals for the AQMP, followed by the definition of activities to address the identified gaps and to meet the objectives of the AQMP. Stakeholder involvement formed an integral component in both phases. During Phase 1, four (4) public workshops were held in four Districts across the Western Cape, where participants involved provided inputs on the Vision, Mission, Goals and Objectives for the Provincial AQMP. During Phase 2, sector workshops were held to engage specific sectors of interest, viz. industry and business, housing and planning, transport, and agriculture. A further four (4) workshops were held during Phase 2 to communicate the progress made on the development of the AQMP and to provide opportunities for stakeholders to further influence the AQMP and the associated implementation plan.

Air quality management in the Western Cape is addressed by Provincial and Local government. Management at Provincial level has progressed significantly, with a dedicated AQM unit set up in D:EA&DP’s Directorate: Pollution Management, as well as the appointment of an Air Quality Officer (AQO). At the level of the District and Metropolitan Municipality, an AQO has been appointed in the Cape Winelands, Central Karoo and Overberg District Municipalities (DM), as well as the City of Cape Town Metropolitan Municipality. Interim AQO’s are acting in the role in the Eden and West Coast District Municipalities. The Eden DM and the City of Cape Town have approved AQMPs that are in various stages of implementation, while an AQMP has been drafted for the Cape Winelands DM. The Overberg, Central Karoo and West Coast DMs do not yet have AQMPs at this stage.

District and Metropolitan Municipalities will become the Licensing Authorities in their respective jurisdictions when the NEM:AQA is enacted. Chief Air Pollution Control Officer (CAPCO) powers have been delegated to the AQO in the City of Cape Town, which includes the issuing of APPA registration certificates for Scheduled Processes. The City of

Cape Town is therefore capable of absorbing the functions of the Licensing Authority and performing the functions associated with the licensing of Listed Activities. Scheduled Processes are operated in the Cape Winelands DM, Eden DM, Central Karoo DM, Overberg DM and the West Coast DM, so the licensing function will rest with the respective District Municipalities. Capacity is limited in these DMs and training is necessary so that these authorities can perform this function appropriately and with confidence.

The baseline air quality assessment further confirms that air quality in the Western Cape is generally good, except in localised areas where air quality can be poor at times. For example, in urbanised and industrialised areas a combination of industrial emissions and emissions from motor vehicles result in air quality degradation. These areas include the City of Cape Town, Saldanha Bay and Mossel Bay, with ambient concentrations being elevated in the vicinity of all industrial sources. Air quality is compromised in low income residential areas across the Western Cape, where wood and other fuels are used for cooking and heating, unpaved roads are a source of dust and refuse and tyre burning take place. In the agricultural areas, practices such as residue and waste burning and the burning of fire breaks can result in impacts in air quality on considerable scales, while crop spraying can result in more localised effects.

The recommendations in the different aspects of the AQMP are prioritised as follows:

Municipalities:

- AQO's must be appointed at both district and local municipal levels to ensure sound cooperative governance in the implementation of the NEM: AQA across the Province.
- AQMP's must be developed for all DM's to address their own unique context of air quality and management issues.
- Clear responsibilities and functions for air quality management must be designated at the District and Local Municipalities.
- The role of the D:EA&DP needs to be clearly defined and communicated to all Municipalities, and the associated reporting mechanisms need to be established.
- All officials involved with administering the AQM function within municipalities must be capacitated with respect to AQM, AQ monitoring and the AEL function.
- Improved governance is necessary.
- In instances where capacity constraints exist at DM or LM level, opportunities for Service Level Agreements between the District and Local Municipalities or the DM and provincial government should be explored and implemented in the interim.

Motor vehicle emissions:

- The success of the vehicle emissions testing programme in the City of Cape Town is expanded on and implemented by other authorities to address vehicles emissions across the Province.
- Strategies are developed to address vehicle emissions in the broader context, including collaborating on transport-related projects where air quality benefits can be realised.

Residential air pollution:

- Pollution levels in low-income residential areas across the province need to be further investigated and evaluated.
- Lessons from the Khayelitsha Air Pollution Study regarding the control of particulate emissions at sources are applied across the Province.

Ambient monitoring:

- The screening passive campaigns need to be expanded on and repeated at least every second year to facilitate the monitoring of air quality changes, and results are used to identify areas of possible air quality where continuous monitoring should be implemented.
- The current continuous ambient air quality monitoring undertaken by the D:EA&DP be expanded to include potential areas of concern and areas that are identified in the passive monitoring campaign to obtain a long-term record of air quality in the Districts.
- Data from all continuous monitoring in the Province is coordinated to provide a provincial perspective on air quality.
- A Provincial web-site is developed where all information can be accessed by links. This must then feed into the South African Air Quality Information System (SAAQIS).

Emission inventory:

- The D:EA&DP inventory of emissions from fuel burning appliances is expanded to include all point sources in the Western Cape, as well as other key source types.
- A linkage is established between the emission inventories at Province and that at the City of Cape Town.
- Greenhouse gas emission inventory is developed and included in the comprehensive air quality emission inventory.

Town and transport planning:

- Officials, at all levels of government, need to establish and foster sustainable relationships and communication channels to address air quality and town-and-transport planning issues.
- Awareness is developed amongst town and transport planning officials of synergies existing between planning and air quality issues, and the need for input from AQM officials when reviewing plans and development specifications.

Agriculture:

- AQO's participate in agricultural union meetings to promote air quality on their agendas and to identify opportunities to address emissions control issues.
- Greater cooperation to be pursued with agricultural authorities to address shared environmental priorities that are related to air quality in the sector.

Trans-boundary transport:

- Provincial and Municipal AQO's need to evaluate the merits of Priority Area declarations to manage situations of trans-boundary air pollution impacts.

The AQMP developed during Phase 2 aims to address the gaps and needs identified in the baseline assessment. The associated implementation plan sets a logical and holistic course for the rollout of AQM activities in the Western Cape.

The Vision of the AQMP

“Clean and healthy air for all in the Western Cape”

The Mission of the AQMP

“To ensure the effective and consistent implementation of sustainable air quality management practices, by all spheres of government, relevant stakeholders and civil society to progressively achieve and efficiently maintain clean and healthy air in the Western Cape”

Four goals of the AQMP to support the vision and mission each address different aspects of the vision and are underpinned by objectives to achieve them, these are:

I. To ensure effective and consistent Air Quality Management

This goal aims to address the development and maintenance of the varied requirements for systems, skills and capacity in the D:EA&DP for Air Quality Management, and the establishment of the necessary institutional arrangements.

- i. To strengthen and build capacity in Air Quality Management
- ii. To promote cooperation amongst all spheres of government, business, industry and civil society
- iii. To develop institutional mechanisms to implement the AQMP
- iv. To develop, implement and maintain AQM systems
- v. To ensure adequate funding for the implementation of the plan by municipalities

II. To continually engage with stakeholders to raise awareness with respect to air quality

This goal aims to improve awareness of air pollution issues in the Western Cape through awareness raising and education. The wide dissemination of materials, information and training includes stakeholders from communities and industrial sectors.

- i. To develop mechanisms for regular communication with respect to air quality management information
- ii. To develop comprehensive education and communication strategies and programmes
- iii. To promote environmental best practices and cleaner development technologies amongst all stakeholders

III. To ensure effective and consistent compliance monitoring and enforcement

This goal aims to improve and standardise compliance monitoring and enforcement in the Western Cape, and to ensure that ambient air quality standards for the protection of health are attained and continually met.

- i. To improve compliance monitoring and enforcement
- ii. To promote continuous improvement with respect to compliance
- iii. To ensure that health-based air quality standards are attained and continually met

IV. To support climate change protection programmes, including promoting the reduction of Green House Gas emissions

This goal introduces the co-benefits philosophy between AQM and climate change interventions and is to be used to promote activities in the AQMP that also have positive impacts on GHG reduction.

- i. To reduce ozone depleting substances in line with national and international requirements
- ii. To reduce GHG emissions in support of national and international efforts

The goals and accompanying objectives are further defined in a detailed implementation plan, which includes targets and activities. The implementation is outlined in terms of timeframes, responsibilities, sources of funding and estimated costs. Timeframes are described in the short, medium or long term, and responsibilities are described as principal, input or oversight and encompass a broad range of stakeholders, including national, provincial and local environmental authorities, as well as other spheres of government, industry, business, agriculture, non-governmental organisations, and civil society.

Working groups will be the primary mechanism for driving the AQMP implementation, as a means to direct the activities and involve all necessary parties. These are:

1. AQMP Steering Committee

Area of work: Overall project management and representation

The AQMP Steering committee is comprised of the chairpersons of each Working Group and chaired by the Provincial AQO.

2. Air Quality Management Working Group

Area of work: Governance and management

3. Awareness raising Working Group

Area of work: Information management

4. Compliance monitoring and enforcement Working Group

Area of work: Technical/Control and legal

5. Climate Change Working Group

Area of work: Climate change

Monitoring, evaluation and review is included in the AQMP and is outlined in Figure E1 with the respective timeframes.

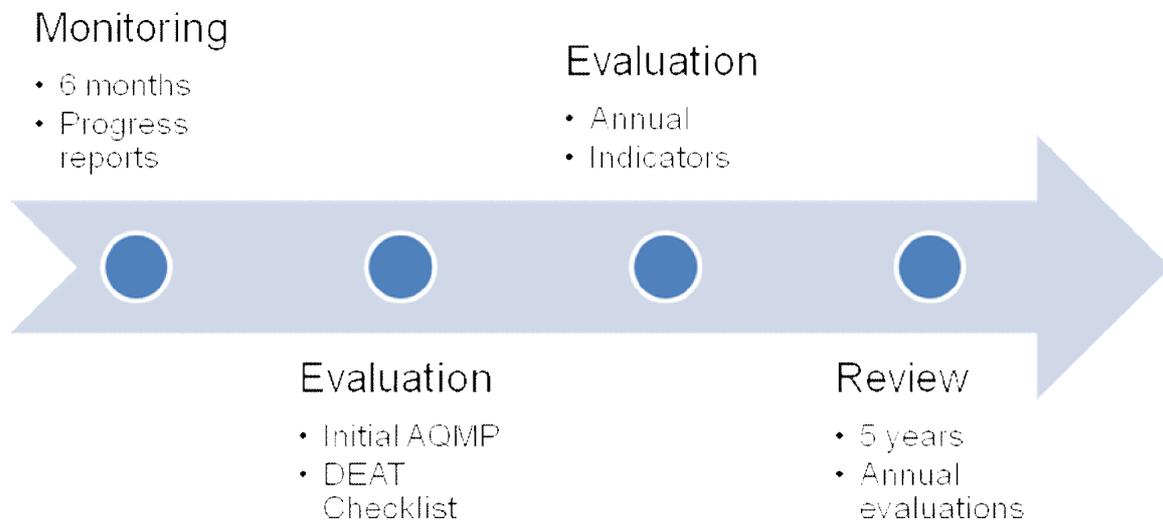


Figure E1: Timeframes for monitoring, evaluation and review of the AQMP

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1. Introduction

1.1. Purpose

The Western Cape Provincial Air Quality Management Plan (AQMP) has been developed to comply with the National Environmental Management: Air Quality Act (Act No. 39 of 2004), (NEM: AQA) and more specifically, to provide guidance on Air Quality Management (AQM) in the Western Cape. Air quality, for this purpose, is defined according to NEM:AQA to include odour and noise, and addresses all sources of air pollution i.e. point, area and mobile sources.

The AQMP addresses the gaps and needs identified in the baseline assessment and is regarded as the master plan for AQM activities. This plan logically and holistically provides organisational direction and drive to communities, government and industry with regard to AQM in the Western Cape.

1.2. Process

A phased approach was adopted with regard to the development of this AQMP. Phase 1 focused on the assessment of the state of air quality and air quality management capacity in the Province. The Baseline Assessment Report of Air Quality Management in the Western Cape was produced at the end of Phase 1. Phase 2, culminated in the compilation of this AQMP and the Implementation Plan that addresses the findings of the Baseline Assessment Report.

Cooperative governance and public participation formed an essential component of the AQMP development process. The project management committee (PMC) was established at the project inception phase to provide management and administrative guidance. The PMC comprised of D:EA&DP and the consultant team. A project technical committee (PTC) was established to provide governance and technical guidance. The PTC had a broader scope and included representatives from other spheres of government, other interested and affected provincial departments and industry.

The public participation process was an integral part of the development of the AQMP. Four workshops were held in four districts across the Western Cape in Phase 1 where participants provided input on the vision, mission, goals and objectives for the AQMP. In Phase 2, sector workshops were held to engage specific sectors viz. business and industry, housing, town and regional planning, transport, and agriculture. A further four workshops were held during Phase 2 to communicate progress on the AQMP development and provide opportunities for stakeholders to further influence the AQMP and the associated implementation plan.

2. Baseline assessment summary

2.1. Institutional Capacity

Air quality management in the Western Cape is addressed by Provincial and Local government. While it has progressed significantly at the Provincial level, further attention is still required at District and Local Municipalities.

A summary of results from an assessment of the institutional capacity in Provincial and Local government in the Western Cape for air quality management is presented in Table 1.

Table 1: Summary of Air Quality Management Capacity in the Western Cape.

D: EA&DP			
Requirement	Status	Comment	
Appointment of Air Quality Officer	Yes	An AQO has been designated and the Department has adequate capacity to perform the function. The AQMP process is underway; three full monitoring stations are operating; and capacity building is ongoing, in conjunction with National and Local authorities.	
Air quality management plan	Drafting		
Capacity	Human resources		Yes
	Equipment		Yes
	Skills		Limited
AEL capacity	Yes		
Cooperative governance	Yes		
Ambient Air Quality Monitoring	Yes		
Cape Winelands District Municipality			
Requirement	Status	Comment	
Appointment of Air Quality Officer	Yes	An AQO has been designated and a comprehensive AQMP has been compiled. The District has some capacity, but ongoing capacity building is necessary to improve the technical skills required for AQMP implementation. National and Provincial authorities are assisting with capacity building in terms of the AEL function.	
Air quality management plan	Awaiting Council approval		
Capacity	Human resources		Planned
	Equipment		No
	Skills		Limited
AEL capacity	No		
Cooperative governance	Limited		
AQM factored into IDP	No		
Ambient Air Quality Monitoring	No		
Central Karoo District Municipality			
Appointment of Air Quality Officer	Yes	An AQO has been designated. However, air quality issues in the DM are relatively small and there are no plans yet to develop a comprehensive AQMP. There are only a few emission sources in the DM so dedicated capacity for the AEL is not considered necessary. Provincial authorities provide guidance.	
Air quality management plan	No		
Capacity	Human resources		No/Limited
	Equipment		No
	Skills		No
AEL capacity	No		

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Cooperative governance		Limited	
AQM factored into IDP		No	
Ambient Air Quality Monitoring		No	
City of Cape Town District Municipality			
Appointment of Air Quality Officer		Yes	An AQO has been designated and the CoCT has adequate capacity to perform the function. A comprehensive AQMP has been developed and is in various stages of implementation. The CoCT operate and maintain an ambient air quality monitoring network comprising 15 stations. The CoCT has been delegated CAPCO responsibilities and their skills development in terms of the AEL function is ongoing.
Air quality management plan		Yes	
Capacity	Human resources	Yes	
	Equipment	Yes	
	Skills	Yes	
AEL capacity		Planned	
Cooperative governance		Limited	
AQM factored into IDP		Yes	
Ambient Air Quality Monitoring		Yes	
Eden District Municipality			
Appointment of Air Quality Officer		Yes	An AQO has been designated and an AQMP has been compiled. The DM has some capacity, but ongoing capacity building is necessary to improve the technical skills required for AQMP implementation. National and Provincial authorities are assisting with capacity building in terms of the AEL function. Plans are underway to establish ambient air quality monitoring.
Air quality management plan		Yes	
Capacity	Human resources	Limited	
	Equipment	No	
	Skills	Limited	
AEL capacity		No	
Cooperative governance		Yes	
AQM factored into IDP		No	
Ambient Air Quality Monitoring		Planned	
Overberg District Municipality			
Appointment of Air Quality Officer		Yes	An AQO has been designated in the DM, but further capacity building is required in order to operate at the required level. Air quality issues in the DM are relatively small. There is an intention to develop an AQMP. National and Provincial authorities are assisting with capacity building in terms of the AEL function.
Air quality management plan		No	
Capacity	Human resources	Limited	
	Equipment	No	
	Skills	No	
AEL capacity		No	
Cooperative governance		Limited	
AQM factored into IDP		No	
Ambient Air Quality Monitoring		No	
West Coast District Municipality			
Appointment of Air Quality Officer		Yes	An interim AQO has been appointed and awaiting approval from Council. The DM is planning to develop a comprehensive AQMP. Capacity exists for AQMP implementation, but technical training is required, particularly in terms of the AEL function. National and Provincial authorities are assisting with capacity building in terms of the AEL function. Industry is
Air quality management plan		No	
Capacity	Human resources	Limited	
	Equipment	No	
	Skills	Limited	
AEL capacity		Limited	
Cooperative governance		Yes	

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AQM factored into IDP	No	conducting ambient air quality monitoring at specified locations as part of APPA certificate.
Ambient Air Quality Monitoring	No	

2.2. Emission Inventories

The D:EA&DP have compiled a relatively comprehensive inventory of fuel burning appliances in the five Districts in the Western Cape. In addition, the City of Cape Town maintains a comprehensive inventory of scheduled and non-scheduled industrial sources in the Metropolitan area. Together, these two inventories provide a reasonably complete indication of emissions from point sources in the Western Cape. The number of registered industrial sources in the Western Cape is listed per Municipality in Table 2. The distribution of the sources is illustrated in , showing the relatively high density of sources in the City of Cape Town.

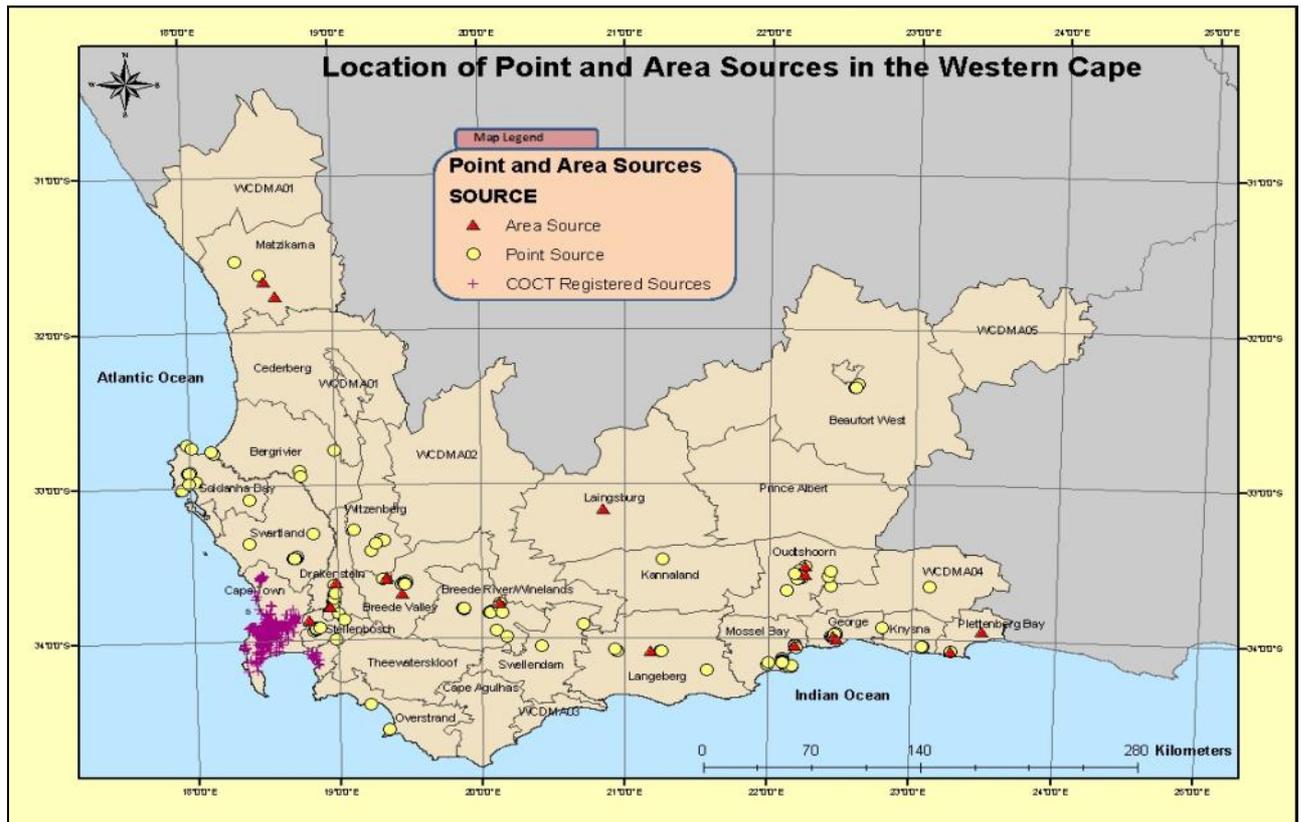
Table 2: Number of registered industrial processes and scheduled processes in the Western Cape.

Municipality	Registered Sources	Scheduled Processes
Cape Winelands DM ¹	57	15
Central Karoo DM ¹	4	3
City of Cape Town ²	1110	159
Eden DM ¹	62	26
Overberg DM ¹	4	1
West Coast DM ¹	29	11
TOTAL	1266	215

1: D:EA&DP database of fuel burning appliances (31 November 2009)

2: CoCT database of industrial fuel usage (28 July 2009)

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2.3. Ambient Air Quality Monitoring

Ambient air quality monitoring in the Western Cape is conducted by a number of organisations and institutions that measure a range of pollutants on a continuous basis. The location of Provincial, Municipal and privately-owned ambient air quality monitoring stations and the South African Weather Service meteorological monitoring stations in the Western Cape are illustrated in Figure 1. A summary of the ambient air quality monitoring activities is listed in Table 3.

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Figure 1: Location of ambient air quality and meteorological monitoring stations in the Western Cape.

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Table 3: Ambient air quality monitoring stations in the Western Cape

Organisation	Station name	Parameters	Date established
D:EA&DP	Paarl	PM ₁₀ , NO ₂ , SO ₂ , O ₃ , VOC, meteorology	April 2008
	Vredenburg	PM ₁₀ , NO ₂ , SO ₂ , O ₃ , VOC, meteorology	May 2008
	Mossel Bay	PM ₁₀ , NO ₂ , SO ₂ , O ₃ , VOC, meteorology	September 2008
City of Cape Town MM	Athlone	NO, NO ₂ , NO _x , SO ₂ , O ₃	1999
	Atlantis	NO _x	Feb 2009
	Bellville South	PM ₁₀ , SO ₂	July 2003
	Bothasig	NO, NO ₂ , NO _x , SO ₂ , H ₂ S, meteorology	1994
	Central Cape Town – City Hall	NO, NO ₂ , NO _x , SO ₂ , CO	January 1984
	Central Cape Town – Molteno Reservoir	O ₃	June 1992
	Drill Hall	PM ₁₀ , VOC	1995 -2007
	Foreshore	PM ₁₀ , VOC	January 2007
	Goodwood	PM ₁₀ , NO, NO ₂ , NO _x , SO ₂ , O ₃ , CO, meteorology	January 1994
	Khayelitsha	PM ₁₀ , NO ₂ , SO ₂ , CO, O ₃	March 1999
	Killarney	PM ₁₀ , NO, NO ₂ , NO _x , SO ₂ , H ₂ S	2001
	Potsdam	H ₂ S, Total Reduced Sulphites	2003
	Somerset West	NO, NO ₂ , NO _x , SO ₂ , PM ₁₀	February 2008
	Table View	NO, NO ₂ , NO _x , SO ₂ , H ₂ S, PM ₁₀	November 1994
	Wallacedene	NO, NO ₂ , NO _x , PM ₁₀ , SO ₂ , O ₃ , CO	March 2006
Chevron	Milnerton	BTEX	
Cape Town International Airport	Northern edge of CTIA property	PM ₁₀ , NO _x , SO ₂ , O ₃ , BTEX	October 2008
South African Weather Service	Cape Point Global Atmospheric Watch Station	CO ₂ ,	January 1993
		CO,	January 1978
		O ₃ , meteorology	January 1983
PetroSA	Mossel Bay: Passive sampling at PetroSA GTL Refinery, Voorbaai tank farm and residential areas	NO ₂ , SO ₂ , Benzene	1992
Mittal Steel	Saldanha Bay	PM ₁₀ , SO ₂ , H ₂ S, meteorology	January 2004
Portnet	Saldanha Bay: Blue Water Bay, Port of Saldanha and surrounding areas	PM ₁₀ , meteorology, dust fallout, dust flux	June 2002 March 2008 October 2006
	Vredenburg	PM ₁₀ , meteorology, dust fallout, dust flux	June 2002 March 2008 October 2006

2.4. Status of Air Quality

The City of Cape Town operates and maintains a comprehensive ambient air quality monitoring network. Continuous ambient monitoring is also conducted by D:EA&DP at three locations. In addition, routine passive sampling is conducted by various industries. Collectively, the data provides a good indication of ambient air quality in the City of Cape Town and in the outlying industrialised areas of the Western Cape.

Ambient air quality in the **Cape Winelands DM** is generally good. However, Wellington, Paarl and parts of Stellenbosch experience elevated levels of air pollution associated with industrial sources, residential wood burning and motor vehicle emissions. Controlled and uncontrolled fires can result in poor air quality on relatively large scales while crop spraying results in local air quality impacts. Smoke and soot from controlled and uncontrolled fires in the Cape Winelands DM may be transported into the West Coast DM by prevailing south-westerly winds. Similarly, air quality in the southern parts of the Cape Winelands DM is also impacted on by the transport of air pollutants from the City of Cape Town by prevailing southerly winds, particularly in winter.

There are relatively few sources of air pollution in the **Central Karoo DM**. As a result ambient air quality is generally good. However, Beaufort West is a major stop for trucks and their emissions impact on air quality in the town. High particulate concentrations are likely to occur in low-income residential areas where wood and other fuels are used cooking and heating. Similarly, brick manufacturing results in elevated particulate concentrations in the vicinity of their operations.

Ambient air quality in the **City of Cape Town** is generally poor as a result of multiple sources of air pollution and inherently poor atmospheric dispersion, particularly in winter. This is most visible as the *Brown Haze*, a term used to describe the brown-coloured smog that occurs over the City, predominantly between April and September. The major contributors to air pollution are motor vehicles, particularly diesel vehicles, followed by industry and residential wood burning. PM₁₀ concentrations are generally high across the City of Cape Town with frequent exceedances of the South African Ambient Air Quality Standard in Khayelitsha and Wallacedene, associated with residential wood burning, refuse burning and dust from unpaved roads, etc. The PM₁₀ standard is also exceeded in Bellville, Bothasig, Table View and in the City centre, associated with industrial and motor vehicle emissions. Ambient SO₂ standards are frequently exceeded at Goodwood, Killarney, and Bellville South, and are associated with industrial emissions.

The biggest air quality management challenges in the City of Cape Town are the reduction of emissions from motor vehicles and the management of emission sources in low-income areas. Implementation of the City of Cape Town's AQMP has resulted in numerous interventions to address these issues. These include a pilot project in Khayelitsha to

address emissions at source and industrial emission abatement measures. Initiatives to improve traffic flow in the City of Cape Town, such as the Integrated Rapid Transit (IRT) system and ongoing upgrades to the highways, should result in associated air quality benefits as traffic congestion is relieved.

The prevailing southerly and south-westerly winds transport air pollutants from the City of Cape Town into the neighbouring West Coast DM and Cape Winelands DM. This trans-boundary effect poses challenges to air quality management in the City of Cape Town and in these DM's.

Ambient air quality in the **Eden DM** is generally good, but there are areas where air quality is poor at times. High benzene concentrations occur in the Voorbaai area of Mossel Bay, associated with fuel storage and handling activities. Elevated ambient concentrations of particulates and NO_x are likely to occur along parts of the N2 and in the coastal towns during the peak holiday season as a result of motor vehicle emissions. Timber processing and brick manufacturing have a local impact on air quality, resulting in increased particulate concentrations. Wood burning in low-income residential areas, coupled with refuse burning and windblown dust from unpaved areas result in high particulate concentrations. Seasonal agricultural burning and crop spraying also have a negative impact on air quality.

There are very few sources of air pollutants in the **Overberg DM**. As a result, the ambient air quality is generally good. However, emissions from industrial boilers are likely to result in local areas of elevated concentrations of air pollutants. Ambient particulate concentrations are likely to be high in low-income residential areas where wood is used as the primary fuel source and activities such as refuse burning occur. Motor vehicle congestion in holiday towns such as Hermanus will result in an increase in ambient concentrations at times. Pesticide spraying of crops results in local areas of poor air quality. Fish-meal processing in Gansbaai may result in odour impacts.

Air quality in the **West Coast DM** is perceived to be generally good. However, poor air quality is experienced at times in parts of the Saldanha Bay and Swartland Local Municipalities where industrial emissions result in elevated ambient concentrations. Dust from bulk ore handling in Saldanha Bay results in the soiling of materials and structures in the vicinity of the Port of Saldanha. Fish-meal processing results in local odour impacts. Wood burning in low-income residential areas, coupled with windblown dust and refuse burning results in poor air quality in these areas. Seasonal agricultural and biomass burning in the West Coast DM impacts on air quality over a larger scale. Under prevailing north-westerly winds, pollutants may be transported from the West Coast DM into Cape Winelands DM. Similarly, under prevailing southerly winds, pollutants may be transported from the City of Cape Town into the southern parts of the West Coast DM.

3. Gaps and Problems

i. Institutional Functions

The Western Cape Provincial Government has a significant role in the implementation of the NEM: AQA, but also has a large oversight role. The oversight role is not always appreciated or well understood by other spheres of government, particularly municipalities, which presents difficulties for effective and consistent air quality management in the Province. The lack of understanding also presents challenges for effective cooperative governance.

All District and Local Municipalities have not fully accepted their responsibility with the implementation of the NEM: AQA. Insufficient commitment and acceptance at political and municipal management level has resulted in inadequate financial and other resource provision. Effective air quality management in these municipalities faces significant challenges, and in turn, consistent air quality management in the Province has been negatively affected.

The roles and responsibilities of District and Local Municipalities are not well understood. This lack of clarity continues to hamper cooperative governance between the two authorities.

ii. Transport emissions

Motor vehicles are sources of CO, NO₂, PM₁₀ and VOC emissions, particularly during periods of idling and acceleration, which is consistent with the stop-start style of driving experienced in urban congested areas. Emissions from motor vehicles have been identified as a major air quality problem in the City of Cape Town, the Central Karoo Town of Beaufort West and also in holiday destination towns especially during the peak season. The control and reduction of vehicle emissions is a Provincial and National challenge that needs to be addressed.

iii. Residential pollution

Poor indoor and ambient air quality occurs in low income and informal settlements throughout the Province as a result of domestic fires and fuel burning, fires from informal trading, refuse burning, dust from unpaved roads and wind blown dust from denuded areas. The burning of wood and paraffin is a common practice and produces SO₂ and PM₁₀, as well as VOCs. The relatively high population densities, together with the low release height of the pollutants, imply that the health risk is greater in these areas. The lack of understanding with regard to the state of air

quality in residential areas, the low level of community awareness and its impacts, its associated remedial measures and alternative cleaner fuel options is a short-coming that needs to be addressed.

iv. Licensing of listed activities

The state of preparedness of the relevant authorities to execute the AEL function varies and presents a challenge. In some areas, the problem is further compounded by the lack of both financial and suitably skilled human resources. Further complexities exist between the licensing function, the EIA and Town Planning authorisation processes which need to be addressed.

v. Ambient air quality data and continuous monitoring

Inadequate data exists to comprehensively assess air quality in the Province. The custodians of datasets are not always willing to share data and in many instances the integrity of the datasets are compromised by broken records and poor data. Without consistent quality assurance and quality control procedures, the integrity of data can not be persevered. The limited, and sometimes nonexistent, in-house skills for maintaining and operating monitoring equipment and monitoring networks presents challenges. The excessive costs of purchasing, commissioning, operating and maintaining ambient air quality monitoring equipment is problematic when competing with social priorities e.g. housing, education and health.

vi. Emissions inventory

The emissions inventories that exist are limited to fuel burning appliances and scheduled processes. Emissions from transport or diffuse sources, such as emissions from residential and agricultural areas are not identified or computed. Greenhouse gases are not included in the two emission inventories prepared and no measures have been implemented to identify sources and report on these emissions. No estimation of the total pollutant load from the various point, area and mobile sources has been computed. The lack of information, the absence of reporting procedures and limited in-stack monitoring by industry are issues that need to be addressed.

vii. Town and transport planning

Town planning and particularly transport planning does not always consider the impact of developments on the air quality of an area. In addition, The potential negative impact of town and transport planning activities on the air quality of an area is not always considered when planning decisions are taken e.g. the siting of developments in areas bordering industries and other sources of pollution magnifies the problem, let alone the positive impact of environmentally conscious planning decisions.

viii. Agriculture

Pesticide use in agriculture, particularly through aerial spraying, results in spray drift, which can distribute organo-chemicals in the vicinity and downwind of the spray area. Burning of crop residue, general waste and tyres to prevent frost damage on farms generates smoke, toxic emissions and contributes significantly to atmospheric particulate loading. Crop spraying without informing citizens of the date, time and possible health impacts needs to be addressed. The common practice of burning crops, waste etc for various purposes needs to be substituted with more environmentally friendly options.

ix. Trans-boundary air pollution

Trans-boundary air pollution is a factor that influences the air quality of municipalities in the Western Cape. The magnitude of the resulting impacts is not well understood or quantified. The management of the trans-boundary movement of emissions is not currently being addressed by municipal or provincial government.

4. Recommendations

The recommendations are listed within each category for priority in implementation.

Institutional

D:EA&DP:

- The air quality management role and oversight function of provincial government needs to be communicated to municipalities and the associated reporting mechanisms need to be imposed.
- Establish working groups to facilitate the implementation of the AQMP, as indicated in Section 9.11. These working groups must be established under the auspices of the AQMP Steering Committee.

Municipalities:

- AQO's must be appointed at both district and local municipal levels to ensure sound cooperative governance in the implementation of the NEM: AQA across the Province.
- AQMP's must be developed for all DM's and LM's to address their own unique context of air quality management issues. The development of the AQMP and the associated implementation costs must be motivated for through the municipal IDPs.

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- Clear responsibilities and functions for air quality management must be designated at the District and Local Municipalities, based on the requirements of the NEM: AQA and National Framework for AQM.
- The role of the D:EA&DP, including the oversight function, needs to be acknowledged and supported.
- All officials involved with administering the AQM function within municipalities must be capacitated with respect to AQM, AQ monitoring and the AEL function.
- Improve governance between district and local municipalities at operational and top management levels.
- In instances where capacity constraints exist at DM or LM level, opportunities for Service Level Agreements between the District and Local Municipalities or the DM and provincial government should be explored and implemented in the interim.
- District and Local Municipalities should draft air quality management by-laws to ensure better management of air quality within their area of jurisdiction.

Motor vehicle emissions:

- Develop a provincial strategy, inclusive of:
 - a regular vehicle emission testing program in line with licence renewal program;
 - legislation that supports road side vehicle emissions testing;
 - strategies to control vehicle emissions, in line with ambient air quality standards; and
 - Strategies to effectively control VOC emissions.

Residential air pollution:

- Pollution levels in low-income residential areas across the province need to be further investigated and evaluated.
- Lessons from the Khayelitsha Air Pollution Study regarding the control of particulate emissions at sources are applied across the Province, e.g. paving of unsurfaced areas to reduce windblown dust, regulations to control tyre burning and improved service delivery to reduce waste burning.
- Each municipality, within their area of jurisdiction conduct a survey and compile an emission inventory to determine the pollution levels within the poor residential areas and develop a strategy to control same.

Ambient monitoring:

- The screening passive sampling campaigns, as conducted originally by the D:EA&DP, need to be expanded on and repeated at least every second year to facilitate the monitoring of air quality changes.
- The results of the sampling campaigns are used to identify areas of possible air quality exceedances where continuous monitoring should be implemented.

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- The current continuous ambient air quality monitoring undertaken by the D:EA&DP be expanded to include potential areas of concern and areas that are identified in the passive monitoring campaign to obtain a long-term record of air quality in the Districts.
- Efforts should be made to coordinate data from all continuous monitoring in the Province to provide a provincial perspective on air quality.
- A Provincial web-site need to be developed where all information can be accessed by links. This must then feed into the South African Air Quality Information System (SAAQIS).

Emission inventory:

- The initial D:EA&DP inventory of emissions from fuel burning appliances is expanded to include all point sources in the Western Cape, as well as other key source types, i.e. motor vehicles, agricultural sources, residential fuel burning and biogenic emissions..
- In order to better address and understand cumulative effects of emission sources it is recommended that a linkage be established between the emission inventories at Province and that at the City of Cape Town.
- Emission inventory maintenance is necessary to ensure that the data remains current.
- Greenhouse gas emission inventory is developed and included in the comprehensive air quality emission inventory.

Town and transport planning:

- Officials, at all levels of government, need to establish and foster sustainable relationships and communication channels to address air quality and town-and-transport planning issues.
- Awareness must be developed amongst town and transport planning officials of synergies existing between planning and air quality issues, and the need for input from AQM officials when reviewing plans and development specifications.

Agriculture:

- AQO's at their respective jurisdiction participate in agricultural union meetings to promote air quality on their agendas and to identify opportunities to address emissions control issues.
- Greater cooperation to be pursued with agricultural authorities to address shared environmental priorities that are related to air quality in the sector.
- The Department of Agriculture to be called upon to actively consider and promote air quality issues in their day to day work situation.

Trans-boundary transport:

- The role of provincial and district municipalities in this regard needs to be intensified and efforts to reduce the emissions from the contributing sources need to be explored.
- D:EA&DP together with municipalities must examine mechanisms at Provincial level to manage trans-boundary air pollution.
- Provincial and Municipal AQO's need to evaluate the merits of Priority Area declarations to manage situations of trans-boundary air pollution impacts.

5. Vision and Mission

The vision and mission statement for the Western Cape provincial AQMP has been developed through stakeholder interaction and informed by policy developments.

The vision is:

Clean and healthy air for all in the Western Cape

The vision echoes the statements of the iKapa Growth and Development Strategy, recognising the Western Cape as a home for all. Consistent with this foundation for provincial policy, is the inclusion of all inhabitants of the Western Cape in the vision of the AQMP. "Clean Air", is a term that was commonly used by stakeholders during the public participation process. Therefore its incorporation into the vision for the AQMP is symbolic of the public interest. The vision captures the attention and focus of government, communities and other stakeholders in the rollout of the AQMP.

The mission is:

To ensure the effective and consistent implementation of sustainable air quality management practices, by all spheres of government, relevant stakeholders and civil society to progressively achieve and efficiently maintain clean and healthy air in the Western Cape

The mission statement of the AQMP was also influenced by stakeholder participation, where various ideologies of the provincial approach to Air Quality Management were discussed. The mission statement combines the elements of good practice to chart the way forward and guide the implementation of the AQMP. These elements include effectiveness, sustainability, cooperative and participatory governance, compliance and progressive improvement.

6. Goals

Four goals of the AQMP each address different aspects of the vision, these are:

I. To ensure effective and consistent Air Quality Management

This goal aims to address the development and maintenance of the varied requirements for systems, skills and capacity in the D:EA&DP for Air Quality Management, and the establishment of the necessary institutional arrangements.

II. To continually engage with stakeholders to raise awareness with respect to air quality

This goal aims to improve awareness of air pollution issues in the Western Cape through awareness raising and education. The wide dissemination of materials, information and training includes stakeholders from communities and industrial sectors.

III. To ensure effective and consistent compliance monitoring and enforcement

This goal aims to improve and standardise compliance monitoring and enforcement in the Western Cape, and to ensure that ambient air quality standards for the protection of health are attained and continually met.

IV. To support climate change protection programmes, including promoting the reduction of Green House Gas emissions

This goal introduces the co-benefits philosophy between AQM and climate change interventions and is be used to promote activities in the AQMP that also have positive impacts on GHG reduction.

7. Objectives

7.1. GOAL 1: To ensure effective and consistent Air Quality Management

7.1.1. To strengthen and build capacity in Air Quality Management

Capacity building is one of the fundamental aims of policy development in spheres of government. It refers specifically to investments in the human resources that will

develop, implement and enforce air quality policy and legislation. The objective is specifically targeted at the designation of air quality responsibility in various entities and the further development of individuals in their roles.

7.1.2. To promote cooperation amongst all spheres of government, business, industry and civil society

Cooperative governance is a principle of environmental management and seeks to make the best use of scarce resources through maximising available personnel, data and experience across institutions. The objective seeks to build relationships between the different role-players in AQM, including the emitters and receptors, to address common air quality issues, and promote the uptake of air quality concerns by other departments.

7.1.3. To develop institutional mechanisms to implement the AQMP

Pathways need to be introduced, or explored, to enable transparent and collaborative governance and will facilitate AQMP implementation. The objective focuses on the organisational structures necessary for AQMP implementation and outlines their elements and area of intervention.

7.1.4. To develop, implement and maintain AQM systems

An AQM system is regarded as the fundamental unit towards the management of air quality in an area, incorporating the necessary technical elements that provide information on the status of air quality. The system is typically an emission inventory, ambient air quality monitoring, and optionally dispersion modelling. The provincial AQM system incorporates elements of emission inventory and monitoring capacity development, together with a supporting information system.

7.1.5. To ensure adequate funding for the implementation of the plan by municipalities

Municipalities are given key responsibilities within AQM governance and their cooperation and support is integral to the successful implementation of the provincial AQMP. Therefore, this objective seeks to assist municipalities in defining an approach to secure financial resources for the planning and implementation of air quality functions.

7.2. GOAL 2: To continually engage with stakeholders to raise awareness with respect to air quality

7.2.1. To develop mechanisms for regular communication with respect to air quality management information

Communication channels are needed to be developed for D:EA&DP to communicate air quality information and developments to stakeholders regularly, including online and hard copy distribution. The objective focuses on materials which need to be developed for this purpose, as well as the provincial state of air

reporting mechanism, and a website where the public can be engaged on air quality issues.

7.2.2. To develop comprehensive education and communication strategies and programmes

Environmental education refers to the on-going input of D:EA&DP into the development of environmental management in communities, industries and other stakeholders in the Western Cape, with the AQMP focusing particularly on air quality. The plan also addresses the differing needs of stakeholders by developing programmes that target each group specifically. The need for intervention in tertiary level skills development in the AQM-related fields is also recognised and addressed.

7.2.3. To promote environmental best practices and cleaner development technologies amongst all stakeholders

Energy efficiency is addressed specifically in this objective and allows an opportunity for the AQMP to include cross-cutting issues. AQM personnel are to work collaboratively with other stakeholders to promote energy efficiency objectives and incorporate these into developments.

7.3. GOAL 3: To ensure effective and consistent compliance monitoring and enforcement

7.3.1. To improve compliance monitoring and enforcement

Compliance monitoring and enforcement processes are an essential component of the air quality governance cycle. Regulations and enforcement mechanisms are necessary to ensure compliance. Various mechanisms are included in the AQMP to address compliance monitoring and enforcement issues, covering punitive measures for non-compliance, by-law and regulation development, regulation implementation plans, and enforcement arrangements for the interim.

7.3.2. To promote continuous improvement with respect to compliance

Voluntary compliance and development is an integral part of progressive realisation of acceptable air quality. The early adoption by industries of best practice methods and world-class standards, as well as programmes of research and development, will significantly add to the successful implementation of the AQMP.

7.3.3. To ensure that health-based air quality standards are attained and continually met

The attainment of air quality standards and progressive realisation and maintenance of acceptable air quality is the cornerstone of the AQM approach. The management of activities that impact on air quality is relative to pollutant standards. These activities include controls, approaches and developments related to transport, residential fuel burning, industrial operations, and agricultural operations as source sectors. Noise is also raised as an air quality issue for control in this objective.

7.4. GOAL 4: To support climate change protection programmes including promoting the reduction of Green House Gas emissions

7.4.1. To reduce ozone depleting substances in line with national and international requirements

Ozone-depleting substances contribute significantly to the greenhouse effect as their global warming potential is high, therefore efforts to reduce their concentrations reduce climate change impacts. This objective also aims to foster the co-benefits approach in addressing air quality together with climate change goals with indirect improvements in air quality.

7.4.2. To reduce GHG emissions in support of national and international efforts

The co-benefits philosophy for AQM and climate change has been promoted in the AQMP as the opportunities for addressing the issues cooperatively are numerous. Various tools are planned in the AQMP, including a GHG inventory, carbon footprint assessment, and GHG reduction programme. Carbon trading is addressed and collaborative work for many areas is proposed in the AQMP, particularly with solid waste departments.

8. Implementation Plan

8.1. Stakeholder roles and responsibilities

The responsibilities of the provincial environmental departments regarding AQM are listed in the AQA and are further elaborated upon in the National Framework. The mandatory responsibilities of the D:EA&DP are:

- Designation of an AQO to coordinate air quality related matters in the province;
- Preparation of an AQMP to be included in the EIP;
- Preparation of an annual report providing information on AQMP implementation and compliance;
- Processing of AEL applications as delegated or where the applicant is a Western Cape municipality; and
- Receipt of municipal AQMPs.

Further responsibilities which may be implemented as needed are:

- Identification of pollutants and subsequent development of standards, or stricter standards;
- Declaration of provincial priority areas;

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- Preparation of provincial priority area AQMPs in consultation with the affected municipalities;
- Prescription of regulations needed for implementation of the priority area AQMP;
- Publication and maintenance of provincial list of activities that impact negatively on air quality;
- Establishment of minimum emission standards for the provincial listed activities, and stricter standards for national listed activities;
- Declaration of appliances or activities as Controlled Emitters;
- Declaration of substances or mixture of substances as Controlled Fuels;
- Declaration of substances as provincial priority air pollutant;
- Prescription of measures to control noise, offensive odours and dust in the Western Cape; and
- Establishment of public recognition programmes to highlight achievements in air pollution prevention by parties in the province.

The roles and responsibilities of D:EA&DP as presented have been used as an input into the development of the AQMP and accompanying implementation plan. Roles and responsibilities of other spheres of government are further described in the NEM: AQA and National Framework for AQM. The roles and responsibilities of other stakeholders in the province are clearly outlined, and education and awareness roles are suggested, as well as the adoption of good environmental practices. Several platforms for inter-governmental, as well as other stakeholder, cooperation and collaboration exist in the Western Cape. Examples of these groups are listed in Table 4. The available mechanisms can be maximised to assist in the implementation of the AQMP.

Table 4: Membership and role of air quality groups operating in the Western Cape

Group	Membership	AQMP role
MINTEC Working Group 2	National and Provincial AQO's	To communicate progress on AQMP implementation and obtain feedback for refinement of AQMP interventions from national government
Air Quality Governance Lekgotla	National, Provincial and Local government officials	To aid in capacity development of provincial government and communicate progress on AQMP implementation to all spheres of government
Provincial/Municipal AQO's Forum	Provincial and Municipal AQO's	To aid in the broader capacity development objectives of provincial government, communicate progress on AQMP implementation and refine interventions with local government

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Group	Membership	AQMP role
Saldanha Bay Environmental Forum – Air Quality Working Group	West Coast district and Saldanha Bay municipal officials, industries in Saldanha Bay	To communicate AQMP interventions and progress to non-governmental stakeholders, to refine interventions for the Saldanha Bay LM and West Coast DM
Port of Saldanha Environmental Management Committee	Port of Saldanha, National Ports Authority, Saldanha Bay residents, Project consultants, West Coast DM	To communicate AQMP interventions and progress to non-governmental stakeholders, to refine interventions for the Saldanha Bay LM and West Coast DM specific to port operations
Bellville South Environmental Forum	Bellville South residents, Bellville South industries, City of Cape Town officials	To communicate AQMP interventions and progress to non-governmental stakeholders
Eden Environmental Forum Air Quality Working Group	Eden DM, LM in Eden, industries in Eden	To disseminate information regarding air quality and also to get quarterly report backs regarding compliance
Dana Bay Conservancy Group	Dana Bay residents and officials from various departments	Participate in the public participation process focus on developments in Dana Bay that have an effect on nature and the environment.
Vlees Bay Conservancy Group	Vlees Bay residents and officials from various departments	Participate in the public participation process focus on developments in Dana Bay that have an effect on nature and the environment.

8.1.1. AQMP Working Groups

The establishment of working groups to facilitate the implementation of the AQMP will be of cardinal importance for the future. Working groups will centre their work on the goals and objectives and related activities as stated in the implementation plan. Working groups will be established as the primary mechanism for driving the AQMP implementation, as a means to direct the activities and involve all necessary parties. An AQMP steering committee will be responsible for the management of the working groups and will provide overarching guidance and accountability for the AQMP implementation.

Four focused working groups are initially proposed and each group is aimed at achieving a specific goal of the AQMP. The working groups may be extended or form sub groups to suit

the need for the effective implementation of the AQMP. Under the guidance of the AQMP steering committee chaired by the Provincial AQO a working group for each goal will be established. Working group members will be comprised of specialists in their respective fields, interested and affected parties, officials from various authorities and disciplines. Officials from D:EA&DP, other government departments, municipalities, industry, civil society, tertiary educational institutions, that may be deemed necessary. Consequently, their composition and area of work may vary significantly. Working groups will be monitored through half-yearly progress meetings, where all working groups will gather and report back on progress in the implementation of the AQMPs interventions to an Air Quality Management Plan Steering Committee. The chairman of the working group will be tasked to ensure that the issues in the AQMP are addressed pertaining to the WC.

The following working groups will be established:

AQMP Steering Committee

Area of work: Overall project management and representation

The AQMP Steering committee is comprised of the chairpersons of each Working Group and chaired by the Provincial AQO.

Air Quality Management and Climate Change Working Group

Area of work: Governance and management

Awareness raising Working Group

Area of work: Information management

Compliance monitoring and enforcement Working Group

Area of work: Technical/Control and legal

8.2. Implementation plan

Timeframes: Short-term (1-2 years); Medium-term (3-5 years); Long-term (>5 years)

Cost rating - key:

Cost bin 1: Additional cost <R250 000		Cost bin 5: R3 million < Additional cost < R5 million	
Cost bin 2: R250 000 < Additional cost < R500 000		Cost bin 6: Legislative requirement (required by law or the constitution, not additional cost to entity because of AQMP, but part of entity's functions as stipulated by law and funded from each entity's budget)	
Cost bin 3: R500 000 < Additional cost < R1 million		Cost bin 7: Running cost (Already part of entity's responsibility, can be incorporated into running costs)	
Cost bin 4: R1 million < Additional cost < R3 million		Cost bin 8: No cost (reason)	

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT					
OBJECTIVE 1: To strengthen and build capacity in air quality management					
TARGETS	ACTIVITIES	TIMEFRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
To increase human resources in air quality management within government and industry	• Appoint an AQO in District and Metropolitan Municipalities	Immediate /Short-term	CKDM, CWDM ODM, WCDM, EDM, CoCT	CKDM, ODM, CWDM, WCDM, EDM, CoCT	Legislative requirement
	• Appoint an AQO in Local Municipalities	Short-term	Local municipalities	Local municipalities	Legislative requirement
	• Appoint an Emission Control Officer in industries with listed activities	Short-term	Industries with listed activities	Industries with listed activities	Legislative requirement
To develop and maintain an adequate skills base	• Train staff wrt Air Quality Management, Monitoring and Atmospheric Emission Licensing	Short-term and continuous	DEA, D:EA&DP	D:EA&DP	R16 000 (2x training sessions per annum at R 8 000 per session)
	• Train staff wrt Air Quality Management, Monitoring and environmental auditing and reporting wrt air quality	Short-term and continuous	Industries with listed activities	Industries with listed activities	
Advocate responsibilities wrt NEM:AQA through local government structures	• Consult with Councillors and Municipal Managers to secure air quality designations and promote management structures and activities	Short-term and continuous	CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Running costs

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT					
OBJECTIVE 2: To promote cooperation amongst all spheres of government, business, industry and civil society					
TARGETS	ACTIVITIES	TIMEFRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
Establishment of Platforms for industry and industry sectors to share information on air quality management	<ul style="list-style-type: none"> Establish industrial and environmental fora 	Short	D:EA&DP, CKDM, CoCT, CWDM, EDM, ODM, WCWM Local municipalities Industry sector associations Civil society	D:EA&DP, CKDM, CoCT, CWDM, ODM, WCWM Local municipalities Industry sector associations	R 5000
Co-operative air quality management among all spheres of government in the Western Cape	<ul style="list-style-type: none"> Establish and maintain inter-governmental forums comprising DoA, DoT 	Short	D:EA&DP	D:EA&DP	Running costs
	<ul style="list-style-type: none"> Routine input on air quality management to municipal Council 	Short	CKDM, CoCT, CWDM, EDM, ODM, WCWM	CKDM, CoCT, CWDM, EDM, ODM, WCWM	Running costs

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT					
OBJECTIVE 3: To develop institutional mechanisms to implement the Air Quality Management Plan					
TARGETS	ACTIVITIES	TIMEFRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
An air quality component within Provincial Government	<ul style="list-style-type: none"> Continued operation of the air quality component 	On-going	D:EA&DP	D:EA&DP	Legislative requirement
An air quality component in District and Metropolitan Municipalities	<ul style="list-style-type: none"> Motivate for the establishment and operation of an air quality management component 	On-going	CKDM, CWDM, EDM, ODM, WCDM, CoCT	CKDM, CWDM, EDM, ODM, WCDM, CoCT	Legislative requirement
Establishment of Specific Air Quality Management Working Groups	<ul style="list-style-type: none"> Establish the required working groups Monitor progress with regard to the implementation of pollution control measures 	Short	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	Running costs
	<ul style="list-style-type: none"> Create a platform for health practitioners to share information on air quality health impacts Establish a relationship between health statistics and ambient air quality Establish a database of health impacts Conduct risk assessment surveys wrt the impact of air quality on human health for areas identified in the Western Cape 	Medium	D:EA&DP Health sector professionals , Universities	D:EA&DP, DEA CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities, Health sector professionals , Universities	Less than R 5 million
	<ul style="list-style-type: none"> Establish the relationship between regional scale ozone and its precursors Develop and implement an integrated plan to manage 	Medium	D:EA&DP	D:EA&DP	Less than R 1 million

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT					
OBJECTIVE 3: To develop institutional mechanisms to implement the Air Quality Management Plan					
TARGETS	ACTIVITIES	TIMEFRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
	precursors to reduce regional scale ozone	Medium	D:EA&DP	D:EA&DP DoT, Sapia, DoA CKDM, CoCT, CWDM, EDM, ODM, WCDM	
	<ul style="list-style-type: none"> Conduct spatial and temporal trend analysis on air pollutants 	Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	Less than R 1 million
	<ul style="list-style-type: none"> To review and set provincial ambient air quality standards 	Medium	D:EA&DP	D:EA&DP	Less than R1 million
	<ul style="list-style-type: none"> Quantify the trans-boundary exchange of pollutants in the Western Cape Identify suitable mechanisms to address trans-boundary air pollution, e.g. Provincial Priority Area declaration and AQMP development 	Medium Medium	D:EA&DP D:EA&DP	D:EA&DP D:EA&DP	Less than R1 million (costs part of above study on contribution of different pollutant sources)

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT					
OBJECTIVE 4: To develop, implement and maintain air quality management systems					
TARGETS	ACTIVITIES	TIMEFRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
A comprehensive emission inventory for the Western Cape	<ul style="list-style-type: none"> Develop an emissions inventory reporting format and/or tools 	Short	D:EA&DP	D:EA&DP	Running costs
	<ul style="list-style-type: none"> Compile and maintain a comprehensive emission inventory of all point sources 	Short	D:EA&DP	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry	Running costs
	<ul style="list-style-type: none"> Compile and maintain a comprehensive emission inventory of all mobile, line and area sources 	Medium	D:EA&DP	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Running costs
Comprehensive networks for ambient air quality monitoring in the Western Cape	<ul style="list-style-type: none"> Determine the status of current air quality monitoring systems in the Western Cape 	Short	D:EA&DP, CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement
	<ul style="list-style-type: none"> Establish an accredited Provincial air quality monitoring component 	Medium	D:EA&DP	D:EA&DP	Running cost
	<ul style="list-style-type: none"> Establish a provincial network for monitoring and modeling of GHG's 	Medium - Long	D:EA&DP	D:EA&DP	Running cost
	<ul style="list-style-type: none"> Establish, operate and maintain at least one accredited air quality monitoring station in each district, measuring CO, SO₂, NO_x, O₃, PM₁₀ and meteorological parameters 	Medium - Long	D:EA&DP CKDM, CWDM, EDM, ODM, WCDM, CoCT Local municipalities	D:EA&DP CKDM, CWDM, EDM, ODM, WCDM Local municipalities	Capital cost: less than R1.5 million per station (once off)
	<ul style="list-style-type: none"> Conduct periodic passive sampling to augment the continuous monitoring, including VOCs 	Short and continuous	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	Less than R500 000

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT					
OBJECTIVE 4: To develop, implement and maintain air quality management systems					
TARGETS	ACTIVITIES	TIMEFRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
	<ul style="list-style-type: none"> Develop air quality monitoring systems within industry as required by the AEL 	Short	Industry	Industry	Legislative requirement
An air quality management information system for the Western Cape	<ul style="list-style-type: none"> Develop and maintain a provincial on-line ambient air quality information system with links to the SAAQIS 	Short and continuous	D:EA&DP	D:EA&DP	Running Cost
	<ul style="list-style-type: none"> Evaluate and improve air quality complaints management system 	Medium	D:EA&DP, CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Running cost
	<ul style="list-style-type: none"> Establish a legislative requirement to report monitoring information to the system 	Medium	D:EA&DP	D:EA&DP	Legislative requirement

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT					
OBJECTIVE 5: To ensure adequate funding for the implementation of the plan by municipalities					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
Adequate funds to develop AQMP's	<ul style="list-style-type: none"> • Include air quality management plan as a sector plan in IDPs 	Short	CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement
	<ul style="list-style-type: none"> • Apply for and secure funding to develop and implement AQMPs 	Short	CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement

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GOAL 2: TO CONTINUALLY ENGAGE WITH ALL STAKEHOLDERS TO RAISE AWARENESS W.R.T AIR QUALITY					
OBJECTIVE 1: To develop mechanisms for regular communication w.r.t air quality management information					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
Air quality education and awareness material	<ul style="list-style-type: none"> Produce material on domestic air pollution sources and their impacts 	Short	D:EA&DP	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Less than R 500 000 per annum
	<ul style="list-style-type: none"> Produce material on benefits of alternate heating options, such as cleaner methods for domestic wood and coal burning 	Short	D:EA&DP DoEnergy	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Less than R 500 000 per annum (part of previous activity related to production of material)
	<ul style="list-style-type: none"> Produce material on alternative transport modes and vehicle maintenance 	Short	D:EA&DP DoT	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Less than R 500 000 per annum (part of previous activity related to production of material)
	<ul style="list-style-type: none"> Produce material on health risks posed by exhaust fumes 	Short	D:EA&DP	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Less than R 500 000 per annum (part of previous activity related to production of material)
	<ul style="list-style-type: none"> Develop environmental guidelines for the use of fire in horticultural and agricultural practices 	Short	D:EA&DP DoA CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP	Less than R 500 000 per annum (part of previous activity related to production of material)

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GOAL 2: TO CONTINUALLY ENGAGE WITH ALL STAKEHOLDERS TO RAISE AWARENESS W.R.T AIR QUALITY					
OBJECTIVE 1: To develop mechanisms for regular communication w.r.t air quality management information					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
	<ul style="list-style-type: none"> Establish on-line air quality newsletters 	Short	D:EA&DP	D:EA&DP	Running cost (part of IPWIS)
Western Cape State of Air Report	<ul style="list-style-type: none"> Compile Annual State of Air Report for the Province 	Short, with annual revision	D:EA&DP	D:EA&DP	Less than R 500 000
Air quality education programmes for educational institutions	<ul style="list-style-type: none"> Review current curriculum material and advise on the inclusion of air quality issues 	Short	D:EA&DP DoE	D:EA&DP	Less than R 500 000 per annum
	<ul style="list-style-type: none"> Develop and distribute air quality educational tool kit 	Medium	DoE, D:EA&DP, Educational institutions CKDM, CoCT, CWDM, EDM, ODM, WCDM	DoE, D:EA&DP, Educational institutions CKDM, CoCT, CWDM, EDM, ODM, WCDM	Less than R 5000
	<ul style="list-style-type: none"> Road-shows promoting relevant occupational opportunities at tertiary institutions 	Medium	D:EA&DP DoE	D:EA&DP DoE	Less than R 5000
	<ul style="list-style-type: none"> Offer internships and bursaries in air quality -related fields 	Short	Industry D:EA&DP	Industry D:EA&DP	Running costs
Air quality education programmes for industries	<ul style="list-style-type: none"> Develop industrial sector- specific awareness programmes 	Medium	D:EA&DP Industry sector associations	D:EA&DP Industry sector associations	Less than R 250 000
Community education programmes	<ul style="list-style-type: none"> Review existing and develop new air quality community education programmes 	Short	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Running costs
	<ul style="list-style-type: none"> Implement active community education campaigns/programmes 	Short - medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Running costs

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GOAL 2: TO CONTINUALLY ENGAGE WITH STAKEHOLDERS TO RAISE AWARENESS W.R.T AIR QUALITY					
OBJECTIVE 2: To promote environmental best practices and cleaner development technologies amongst all stakeholders					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
Energy efficiency principles adopted in planning, building design and construction	<ul style="list-style-type: none"> Develop and implement an appropriate education campaign on the air quality benefits of energy efficient and environmentally sensitive design 	Medium	Green Building Association D:EA&DP	D:EA&DP Green Building Association	(Support other programmes and initiatives)
	<ul style="list-style-type: none"> Develop & implement minimum standards for energy efficiency for all new houses, major renovations, and redevelopments 	Medium	DoHousing, DoEnergy Industry	DoHousing, DoEnergy (never consulted in PPP)	(Support other programmes and initiatives)

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GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT					
OBJECTIVE 1: To improve compliance monitoring and enforcement					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
By-laws for AQM governance	<ul style="list-style-type: none"> Develop by-laws to regulate activities impacting on air quality 	Short – Medium	CKDM, CWDM, EDM, ODM, WCDM Local municipalities	CKDM, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement
Mechanism to communicate non-compliance	<ul style="list-style-type: none"> Develop and communicate punitive measures for non-compliance Report information on non-compliance to stakeholders 	Medium	D:EA&DP CKDM, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CWDM, EDM, ODM, WCDM Local municipalities	Running costs (Support other programmes and initiatives)
Reduced number of illegal industrial operations	Develop a plan of action to identify illegal operators	Short	D:EA&DP	D:EA&DP	Legislative requirement
	Issue compliance notices	Short	CKDM, CWDM, EDM, ODM, WCDM, CoCT and DEA	CKDM, CWDM, EDM, ODM, WCDM, CoCT and DEA	Running costs (Support other programmes and initiatives)
Service level agreements between province, district and local municipalities	<ul style="list-style-type: none"> Establish interim arrangements between Province and District for AQM where needed 	Short	D:EA&DP CKDM, CWDM, EDM, ODM, WCDM	D:EA&DP	Legislative requirement
	<ul style="list-style-type: none"> Establish interim arrangements between District and Local municipalities for AQM where needed 	Short	CKDM, CWDM, EDM, ODM, WCDM Local municipalities	CKDM, CWDM, EDM, ODM, WCDM	Legislative requirement

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GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT					
OBJECTIVE 2: To promote continuous improvement wrt compliance					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
Voluntary compliance by industry	<ul style="list-style-type: none"> Facilitate the development of incentives and other measures that promote self regulation 	Short and continuous	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM	Legislative requirement

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GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT					
OBJECTIVE 3: To ensure that health-based air quality standards are attained and continually met					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
Reduced emissions of PM ₁₀ , NO ₂ , CO, VOCs and SO ₂ related to transport	<ul style="list-style-type: none"> Establish and operate diesel vehicle emission testing programmes for testing at roadsides and weigh bridges 	Medium	D:EA&DP, DoT CKDM, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP, DoT CKDM, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement (capital costs less than R 250 000, running cost R 250 000 per annum)
	<ul style="list-style-type: none"> Develop a methodology for petrol vehicle emission testing 	Medium	D:EA&DP, DoT	D:EA&DP, DoT CKDM, CWDM, EDM, ODM, WCDM, CoCT Local municipalities	Less than R 1.5 million
	<ul style="list-style-type: none"> Establish and operate petrol and diesel vehicle emission testing programmes at vehicle test stations 	Medium	CKDM, CWDM, EDM, ODM, WCDM, CoCT Local municipalities, DoT	D:EA&DP CKDM, CWDM, EDM, ODM, WCDM, CoCT Local municipalities	Less than R 1.5 million
	<ul style="list-style-type: none"> Develop emission testing programmes for other forms of transport e.g. air and water 	Medium - Long	D:EA&DP, DoT	D:EA&DP, DoT	Less than R 1.5 million
	<ul style="list-style-type: none"> Develop eco-driving programme for vehicle drivers 	Medium	D:EA&DP DoT	D:EA&DP DoT	(Support other programmes and initiatives)
	<ul style="list-style-type: none"> Initiate the development and implementation of eco-transport programmes for rail, air, and ocean transport 	Medium	D:EA&DP DoT	D:EA&DP, DoT CKDM, CoCT, CWDM, EDM, ODM, WCDM and local munis	(Support other programmes and initiatives)
	<ul style="list-style-type: none"> Collaborate with national initiatives for vehicle emission control for all forms of transport 	Short – Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM, and local munis Ports of Cape Town and	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM, and local munis Ports of Cape	(Support other programmes and initiatives)

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GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT					
OBJECTIVE 3: To ensure that health-based air quality standards are attained and continually met					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
			Saldanha Bay, CTIA, Metrorail	Town and Saldanha Bay, CTIA, Metrorail	
Reduced PM ₁₀ emissions related to residential fuel burning	<ul style="list-style-type: none"> Introduce incentives for alternative forms of heating and cooking in informal areas 	Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Donor Funding	Less than R1 million
Reduced SO ₂ , PM ₁₀ , VOC's, NO ₂ , Green House Gas and odorous emissions from industrial operations	<ul style="list-style-type: none"> Encourage industries to adopt environmental best practice and best practical environmental options 	Short – Medium	D:EA&DP	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement
	<ul style="list-style-type: none"> Determine the contribution of industries to the provincial pollution load 	Medium	D:EA&DP	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Running costs
	<ul style="list-style-type: none"> Develop and implement appropriate action plans to address significant industrial sources of SO_x, NO_x, PM₁₀ VOC's etc. 	Short – Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Industry Local municipalities	Legislative requirement
Reduced PM ₁₀ and green house gas emissions from agricultural operations	<ul style="list-style-type: none"> Encourage farmers to adopt better environmental practices 	Short – Medium	D:EA&DP DoA	D:EA&DP DoA CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	(Support other programmes and initiatives)
	<ul style="list-style-type: none"> Develop and implement a programme to control agricultural activities that impact air quality 	Short – Medium	D:EA&DP DoA	D:EA&DP DoA CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Less than R 500 000
	<ul style="list-style-type: none"> Facilitate the introduction of fire protection agencies (FPAs) in agricultural areas 	Short – Medium	D:EA&DP DoA	D:EA&DP DoA	(Support other programmes and initiatives)

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GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT					
OBJECTIVE 3: To ensure that health-based air quality standards are attained and continually met					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
			CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	initiatives)
	<ul style="list-style-type: none"> Establish a register for agricultural pesticide use 	Short – medium	D:EA&DP DoA	D:EA&DP DoA, DoHealth, Donors	Running costs Agriculture/DOHealth
Reduced noise from residential, industrial and agricultural operations	<ul style="list-style-type: none"> Develop and implement a programme for noise measurement and monitoring 	Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry Agricultural unions	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry	Legislative requirement
	<ul style="list-style-type: none"> Review existing noise standards and establish new standards where needed 	Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement
	<ul style="list-style-type: none"> Development and introduction of noise control measures 	Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Legislative requirement

GOAL 4: TO SUPPORT CLIMATE CHANGE PROTECTION PROGRAMMES BY ACTIVELY PROMOTING THE REDUCTION OF GREEN HOUSE GAS EMISSIONS					
OBJECTIVE 1: To reduce ozone depleting substances and GHG's in line with national and international requirements					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
Reduction of Ozone depleting substances, and GHG in support of national and international protocols	<ul style="list-style-type: none"> Measure, monitor and compile an inventory of ozone depleting substances and GHG's 	Short – Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry, DEA	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry, DEA	Running costs (Support other programmes and initiatives)

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GOAL 4: TO SUPPORT CLIMATE CHANGE PROTECTION PROGRAMMES BY ACTIVELY PROMOTING THE REDUCTION OF GREEN HOUSE GAS EMISSIONS					
OBJECTIVE 1: To reduce ozone depleting substances and GHG's in line with national and international requirements					
TARGETS	ACTIVITIES	TIME-FRAME	RESPONSIBILITY	SOURCE OF FUNDING	COST RATING
	<ul style="list-style-type: none"> Validate inventory of ozone depleting substances and GHG's across the province 	Medium	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	Running costs (Support other programmes and initiatives)
	<ul style="list-style-type: none"> Develop and implement regulations to phase out the production of ozone depleting substances 	Medium	D:EA&DP, DEA	D:EA&DP, DEA	Running costs (Support other programmes and initiatives)
	<ul style="list-style-type: none"> Develop a reduction programme on ozone depleting substances and GHG 	Short and continuous	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities, Industry	Running costs (Support other programmes and initiatives)
	<ul style="list-style-type: none"> Explore climate change co-benefits in air quality management 	Short and continuous	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities Industry	(Support other programmes and initiatives)
	<ul style="list-style-type: none"> Develop incentives for industry to reduce carbon foot print 	Long – term	D:EA&DP DEA DoF and Treasury	D:EA&DP DEA DoF and Treasury	(Support other programmes and initiatives)
	<ul style="list-style-type: none"> Promote awareness of carbon trading 	Short	D:EA&DP CKDM, CoCT, CWDM, EDM, ODM, WCDM Local municipalities	D:EA&DP	(Support other programmes and initiatives)

9. Monitoring, evaluation and review

9.1. Monitoring

Monitoring the progress of AQMP implementation is a key factor in maintaining momentum for the rollout of interventions and provides a means to update key stakeholders. Working groups are the preferred mechanism for monitoring, as they are primary means for initiation of implementation. The outcomes of the meetings will be taken forward into the annual evaluation exercise.

Responsibility	D:EA&DP, Working Groups
Method	Progress meeting/Level of completion of interventions
Timeframe	6 months

9.2. Evaluation

AQMP evaluation is divided into two sections, which comprises an internal evaluation of the final AQMP, and an on-going evaluation, which addresses implementation outcomes.

The initial evaluation is addressed through internal methods where review of the first edition AQMP will be undertaken within the project team and members of the technical committee. The aforementioned component is regarded as a limited peer review mechanism, as technical committee members have technical and management background in AQM and are able to refine the content of the AQMP. A comprehensive evaluation checklist is provided in DEAT's AQMP Manual (2008), which deals with all aspects of the AQMP that require assessment. The checklist includes details on the general document and process, as well as specific information on the performance of interventions.

On-going evaluation is an essential element of AQMP implementation as it allows for a thorough assessment of the AQMP, including the shortcomings and strengths evident in implementation. Evaluation is an internal mechanism to measure the performance of the AQMP implementation. Annual evaluation of the AQMP is suggested as a minimum timeframe and is ideally incorporated into the annual performance review mechanisms existing at D:EA&DP. Indicators are an easily interpreted and meaningful method of communicating progress on implementation. These have been developed for the targets specified in the AQMP implementation plan (Table 5). These are ideally incorporated into the annual reports necessary to be submitted by the provincial AQO to DEA, as indicated in Section 17 of the NEM: AQA.

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Table 5: Indicators for evaluation of the AQMP

GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT		
TARGET	ACTIVITY	INDICATOR
Increased human resources in air quality management	<ul style="list-style-type: none"> • Appoint an AQO in District and Metropolitan Municipalities. 	i. Number of AQO appointments made at District and Metropolitan Municipalities.
	<ul style="list-style-type: none"> • Appoint an AQO in Local Municipalities 	i. Number of AQO appointments made in Local Municipalities.
	<ul style="list-style-type: none"> • Appoint an Emission Control Officer in industries with listed activities 	i. Number of Emission Control Officer appointments made at industries with listed activities
An adequate and sustained air quality skills base	<ul style="list-style-type: none"> • Train and/or recruit staff wrt Air Quality Management, Monitoring and Atmospheric Emission Licensing 	i. Number of vacancies ii. Number of staff trained in AQM iii. Number of staff trained in specialised areas of AQM
Responsibilities wrt NEM:AQA advocated through Local Government structures	<ul style="list-style-type: none"> • Consult with Councillors and Municipal Managers to secure air quality designations and promote management structures and activities 	i. Number of Municipalities where air quality designations have been made following D:EA&DP intervention ii. Number of Municipalities where AQM functions have been initiated/improved following D:EA&DP intervention
Platforms for industry and industry sectors to share information on air quality management	<ul style="list-style-type: none"> • Establish air quality components in industrial and environmental fora 	i. Number of Provincial, Local and District industrial fora with air quality considerations established/restructured
Cooperative air quality management among all spheres of Government in the Western Cape	<ul style="list-style-type: none"> • Establish and maintain inter-Governmental forums 	i. Inter-Governmental fora established ii. Regular meetings of inter-Governmental fora held
	<ul style="list-style-type: none"> • Routine input on air quality management to Council 	i. Air quality is a regular agenda item for Council meetings

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT		
TARGET	ACTIVITY	INDICATOR
Integration of town and transport planning issues with AQM	<ul style="list-style-type: none"> Regular meetings between AQM and planning officials to provide on-going engagement of planning departments on air quality issues 	<ol style="list-style-type: none"> Regular meetings occur between AQM and planning officials
Greater cooperation with agricultural authorities to address shared environmental priorities	<ul style="list-style-type: none"> Regular attendance of DoA meetings by D:EA&DP 	<ol style="list-style-type: none"> Number of DoA meetings with D:EA&DP attendance Number of DoA meetings with environmental issues on agenda
An established air quality component in Provincial Government	<ul style="list-style-type: none"> Ongoing motivation to ensure approval of the air quality component in Provincial Government 	<ol style="list-style-type: none"> AQM component established and funded in Provincial Government
Established air quality component in District and Metropolitan Municipalities	<ul style="list-style-type: none"> Ongoing motivation and ensure approval of the air quality component in District and Metropolitan Municipalities 	<ol style="list-style-type: none"> Number of District Municipalities with AQM component
Established Provincial air quality working groups	<ul style="list-style-type: none"> Monitor progress made with regard to the implementation of pollution control measures 	<ol style="list-style-type: none"> Develop mechanism to track progress on pollution control measures Number of pollution control measures implemented
	<ul style="list-style-type: none"> Create a platform for health practitioners to share information on air quality health impacts Establish a relationship between health statistics and ambient air quality Establish a database of health impacts Conduct health study for identified areas of Western Cape 	<ol style="list-style-type: none"> Health statistics database established Health study commissioned Progress in conducting health study Relationship between air pollution and health established
	<ul style="list-style-type: none"> Determine the contribution of industrial sources to ambient air quality Determine the contribution of domestic fuel burning to ambient air quality Determine the contribution of transport emissions to ambient air quality Determine the contribution of other sources (agricultural, fires, biogenic) to ambient air quality 	<ol style="list-style-type: none"> Commission source apportionment studies Progress in source apportionment Understanding of relative contribution by source

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT		
TARGET	ACTIVITY	INDICATOR
	<ul style="list-style-type: none"> • Establish the relationship between regional scale ozone and its precursors • Develop and implement an integrated plan to manage precursors to reduce regional scale ozone 	<ul style="list-style-type: none"> i. Ozone study commissioned ii. Progress in conducting ozone study iii. Integrated ozone management plan developed
	<ul style="list-style-type: none"> • Conduct spatial and temporal trend analysis on air pollutants 	<ul style="list-style-type: none"> i. Trend analysis exercises conducted
	<ul style="list-style-type: none"> • To review and set Provincial ambient air quality standards 	<ul style="list-style-type: none"> i. Provincial ambient air quality standards established / revised
	<ul style="list-style-type: none"> • Quantify the trans-boundary exchange of pollutants in the Western Cape • Identify suitable mechanisms to address trans-boundary air pollution, e.g. Provincial Priority Area declaration and AQMP development 	<ul style="list-style-type: none"> i. Trans-boundary relationship established for Western Cape ii. Mechanisms determined for addressing trans-boundary pollution issues
A comprehensive emission inventory for the Western Cape	<ul style="list-style-type: none"> • Develop an emissions inventory reporting format and/or tools 	<ul style="list-style-type: none"> i. Standard inventory template for use by Province and Local, District and Metropolitan Municipalities
	<ul style="list-style-type: none"> • Compile and maintain a comprehensive emission inventory of all point sources 	<ul style="list-style-type: none"> i. Provincial emission inventory for point sources ii. Number of updates carried out on emission inventory
	<ul style="list-style-type: none"> • Compile and maintain a comprehensive emission inventory of all mobile, line and area sources 	<ul style="list-style-type: none"> i. Emission inventory for mobile sources ii. Emission inventory for line sources iii. Emission inventory for area sources v. Updates carried out on emission inventory
Comprehensive networks for ambient air quality monitoring in the Western Cape	<ul style="list-style-type: none"> • Determine the status of current air quality monitoring systems in the Western Cape 	<ul style="list-style-type: none"> i. Monitoring system status established
	<ul style="list-style-type: none"> • Establish an accredited Provincial air quality monitoring component 	<ul style="list-style-type: none"> i. Monitoring component established ii. Annual compliance with QA/QC procedures

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GOAL 1: TO ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT		
TARGET	ACTIVITY	INDICATOR
	<ul style="list-style-type: none"> • Establish, operate and maintain at least one accredited air quality monitoring station in each District, measuring CO, SO₂, NO_x, O₃, PM₁₀ and meteorological parameters 	i. Number of monitoring stations operated per District
	<ul style="list-style-type: none"> • Conduct periodic passive sampling to augment the continuous monitoring, including VOCs 	i. Number of passive sampling campaigns conducted
	<ul style="list-style-type: none"> • Develop air quality monitoring systems within industries as required by the AEL 	i. Number of industrial monitoring systems in operation
An air quality management information system for the Western Cape	<ul style="list-style-type: none"> • Develop and maintain a Provincial on-line ambient air quality information system with links to the SAAQIS 	<ul style="list-style-type: none"> i. On-line component for monitoring network established ii. Level of availability of system for the year iii. AQ information system for use by Province and Municipalities established
	<ul style="list-style-type: none"> • Evaluate and improve air quality complaints management system 	i. Standard system for handling complaints developed
	<ul style="list-style-type: none"> • Establish a legislative requirement to report monitoring information to the system 	i. Regulation to enforce reporting
Adequate funds to develop AQMP's	<ul style="list-style-type: none"> • Include air quality as a section in IDPs 	<ul style="list-style-type: none"> i. Number of IDPs reviewed by D:EA&DP ii. Number of IDPs with air quality sections
	<ul style="list-style-type: none"> • Secure sources of funding to develop AQMP's 	i. Number of District Municipalities with funding for AQMP's
Adequate funds to implement short-term obligations	<ul style="list-style-type: none"> • Ensure AEL fees are ring-fenced at District and Metropolitan Municipal level for AQM 	i. Number of Municipalities with demarcated AQM funding from AEL fees
	<ul style="list-style-type: none"> • Develop an AQM fund at District and Metropolitan Municipal level for AQM implementation 	i. Number of Municipalities with AQM fund established

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GOAL 2: TO CONTINUALLY ENGAGE WITH ALL STAKEHOLDERS TO RAISE AWARENESS W.R.T AIR QUALITY		
TARGET	ACTIVITY	INDICATOR
Air quality education and awareness material, e.g. pamphlets, media, road shows	<ul style="list-style-type: none"> • Produce material on domestic air pollution sources and their impacts 	i. Appropriate material developed
	<ul style="list-style-type: none"> • Produce material on benefits of alternate heating options, such as cleaner methods for domestic wood and coal burning 	ii. Evaluation of effectiveness and impact of awareness material
	<ul style="list-style-type: none"> • Produce material on alternative transport modes and vehicle maintenance 	
	<ul style="list-style-type: none"> • Produce material on health risks posed by exhaust fumes 	
	<ul style="list-style-type: none"> • Develop environmental guidelines for the use of fire in horticultural and agricultural practices 	i. Environmental guidelines developed ii. Number of horticultural and agricultural stakeholders that have adopted environmental guidelines
Provincial State of Air Report	<ul style="list-style-type: none"> • Compile Annual State of Air Report for the Province 	i. Annual report developed and delivered within timeframes ii. Quarterly reports produced by District Municipalities and made available through website
A website where all air quality information is available to the public	<ul style="list-style-type: none"> • Establish link between air quality information system and web page to ensure routine air quality information updates 	i. Website available ii. Number of website updates quarterly iii. Number of website visits and responses
	<ul style="list-style-type: none"> • Establish on-line air quality newsletters 	i. Number of website visits
Air quality education programmes for educational institutions	<ul style="list-style-type: none"> • Review current school curriculum materials and advise on the inclusion of air quality issues 	i. Education programme developed
	<ul style="list-style-type: none"> • Develop and distribute air quality educational tool kit 	ii. Number of institutions that adopted the programme
	<ul style="list-style-type: none"> • Road-shows promoting relevant occupational opportunities at tertiary institutions 	i. Number of schools visited by road show
	<ul style="list-style-type: none"> • Offer internships and bursaries in air quality-related fields 	i. The number of occupation qualifications achieved

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GOAL 2: TO CONTINUALLY ENGAGE WITH ALL STAKEHOLDERS TO RAISE AWARENESS W.R.T AIR QUALITY		
TARGET	ACTIVITY	INDICATOR
Air quality education programmes for industries	<ul style="list-style-type: none"> Develop industry sector- specific programmes 	i. Education programme ii. Number of industries that have adopted education programme
Community education programmes	<ul style="list-style-type: none"> Review existing air quality community education programmes 	i. Revised education programme
	<ul style="list-style-type: none"> Develop and implement revised community education programmes 	ii. Number of communities where the programme has been run
	<ul style="list-style-type: none"> Develop and implement a community campaign on management of residential burning and smoke-causing activities 	iii. Evaluation of impact
Energy efficiency principles adopted in planning, building design and construction	<ul style="list-style-type: none"> Develop and implement an appropriate education campaign on energy efficiency and environmentally sensitive design considering recommendations in Spatial Development Frameworks 	i. Awareness programme developed ii. Number of awareness events held
	<ul style="list-style-type: none"> Develop & implement minimum standards for energy efficiency for all new houses, major renovations, and redevelopments 	i. Minimum standards for energy efficiency ii. Number of houses adopted the standards

GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT		
TARGET	ACTIVITY	INDICATOR
By-laws and regulations for AQM governance	<ul style="list-style-type: none"> Develop by-laws and regulations for activities impacting on air quality 	i. Number of by-laws/ regulations developed ii. Number of by-laws adopted and implemented
Mechanism to communicate implications of non-compliance	<ul style="list-style-type: none"> Develop and communicate punitive measures for non-compliance 	i. Punitive measures for non-compliance developed ii. Number of non-compliance events publicised
	<ul style="list-style-type: none"> Report information on non-compliance to stakeholders 	
Reduced number of illegal industrial operations	<ul style="list-style-type: none"> Develop plan of action to identify illegal operators Issue compliance notices 	i. Number of illegal operations ii. Number of compliance notices issued to operators
Institutional capacity to implement requirements of Tyre Regulation and waste	<ul style="list-style-type: none"> Develop and implement programme for the Waste Tyre Regulation 2009 	i. Implementation of regulation

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GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT		
TARGET	ACTIVITY	INDICATOR
burning by-law	<ul style="list-style-type: none"> • Develop enforcement activities to achieve compliance with the ban on residential waste burning 	<ul style="list-style-type: none"> i. Number of incidences of residential waste burning
Service level agreements between Province, District and Local Municipalities	<ul style="list-style-type: none"> • Establish interim arrangements between Province and District for AQM where needed 	<ul style="list-style-type: none"> i. Number of SLA established between Province and District Municipalities
	<ul style="list-style-type: none"> • Establish interim arrangements between District and Local Municipalities for AQM where needed 	<ul style="list-style-type: none"> i. Number of SLA established between District and Local Municipalities
Voluntary compliance in industry	<ul style="list-style-type: none"> • Develop incentives and other promotional means 	<ul style="list-style-type: none"> i. Mechanism developed to promote compliance ii. Number of industries utilising incentive mechanisms
Reduced emissions of NO ₂ , CO, VOCs and SO ₂ related to transport	<ul style="list-style-type: none"> • Establish and operate diesel vehicle emission testing programmes for testing at roadsides and weigh bridges 	<ul style="list-style-type: none"> i. Number of diesel vehicle emission testing sites ii. Number of non-compliances
	<ul style="list-style-type: none"> • Develop a methodology for petrol vehicle emission testing 	<ul style="list-style-type: none"> i. Methodology developed
	<ul style="list-style-type: none"> • Establish and operate petrol and diesel vehicle emission testing programmes at vehicle test stations 	<ul style="list-style-type: none"> i. Number of diesel and petrol vehicle emission testing sites ii. Number of non-compliances
	<ul style="list-style-type: none"> • Develop emission control programme for other forms of transport 	<ul style="list-style-type: none"> i. Programme for shipping, rail, etc is established
	<ul style="list-style-type: none"> • Develop eco driving programme for vehicle drivers 	<ul style="list-style-type: none"> i. Driver adoption of eco-driving programme
	<ul style="list-style-type: none"> • Develop and implement eco transport programme for other transport sectors 	<ul style="list-style-type: none"> i. Sector adoption and use of eco-transport programme
	<ul style="list-style-type: none"> • Collaborate with national initiatives for vehicle emission control, alternative freight transport modes, and other relevant transport initiatives 	<ul style="list-style-type: none"> i. Number of collaborative projects initiated/participated in

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GOAL 3: TO ENSURE EFFECTIVE AND CONSISTENT COMPLIANCE MONITORING AND ENFORCEMENT		
TARGET	ACTIVITY	INDICATOR
Reduced PM ₁₀ emissions related to residential fuel burning	<ul style="list-style-type: none"> • Introduce incentives for the alternative forms of heating and cooking in informal areas 	<ul style="list-style-type: none"> i. Incentive programme developed ii. Number of homes adopted incentive programme
	<ul style="list-style-type: none"> • Banning of residential waste burning, where not already prohibited 	<ul style="list-style-type: none"> i. Ban on residential waste burning passed ii. Number of waste burning incidences
Reduced SO ₂ , PM ₁₀ , VOC's, NO ₂ and odour emissions related to industrial operations	<ul style="list-style-type: none"> • Encourage industries to adopt best practice and best available environmental options 	<ul style="list-style-type: none"> i. Number of industries adopting best practice for AQM
	<ul style="list-style-type: none"> • Determine the contribution of industries to the Provincial pollution load 	<ul style="list-style-type: none"> i. Industry source apportionment completed
	<ul style="list-style-type: none"> • Develop and implement appropriate action plans to address significant industrial sources of SO_x, NO_x, PM₁₀, VOC's etc. 	<ul style="list-style-type: none"> i. Number of industrial action plans developed and implemented
Reduced PM ₁₀ emissions related to agricultural operations	<ul style="list-style-type: none"> • Encourage farmers to adopt better environmental practices through awareness and education activities 	<ul style="list-style-type: none"> i. Number of farmers adopting better environmental practices
	<ul style="list-style-type: none"> • Develop and implement a programme to control agricultural activities that impact on air quality 	<ul style="list-style-type: none"> i. Agricultural activity control programme developed ii. Number of farms adopting the programme
	<ul style="list-style-type: none"> • Facilitate the introduction of fire protection agencies (FPAs) in agricultural areas 	<ul style="list-style-type: none"> i. Number of farms registered with FPAs
	<ul style="list-style-type: none"> • Establish a register for agricultural pesticide use 	<ul style="list-style-type: none"> i. Agricultural pesticide use register established
Reduced noise from residential, industrial and agricultural operations	<ul style="list-style-type: none"> • Develop and implement a programme for noise measurement and monitoring 	<ul style="list-style-type: none"> i. Programme developed
	<ul style="list-style-type: none"> • Review existing noise standards and establish new standards where needed 	<ul style="list-style-type: none"> i. Noise standards revised
	<ul style="list-style-type: none"> • Development and introduction of noise control measures 	<ul style="list-style-type: none"> i. Evaluation of effectiveness of control measures ii. Number of noise complaints

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GOAL 4: TO SUPPORT CLIMATE CHANGE PROTECTION PROGRAMMES INCLUDING PROMOTING THE REDUCTION OF GHG EMISSIONS		
TARGET	ACTIVITY	INDICATOR
Reduced ozone depleting substances manufacture and use	<ul style="list-style-type: none"> • Measure, monitor and compile an inventory of ozone depleting substances for the Western Cape 	i. Emission inventory compiled ii. Last update of inventory
	<ul style="list-style-type: none"> • Validate inventory of ozone depleting substances in the Western Cape 	i. Inventory validation complete
	<ul style="list-style-type: none"> • Develop and implement regulations to phase out the production and use of ozone depleting substances 	i. Regulation developed and implemented ii. Percentage of ozone depleting substances in use
	<ul style="list-style-type: none"> • To comply with international protocols and promote best practice 	i. Number of non-compliances
All stakeholders adopt best practise in addressing climate change	<ul style="list-style-type: none"> • Collaboratively develop a GHG emission inventory for the Western Cape 	i. Western Cape GHG emission inventory
	<ul style="list-style-type: none"> • Investigate the opportunities for development of a Western Cape carbon footprint tool 	i. Carbon footprint and reduction tool kit developed ii. Number of entities that have utilised the carbon footprint tool
	<ul style="list-style-type: none"> • Consideration of carbon footprint added to procurement policies 	i. Number of entities that have adopted revised procurement policy
	<ul style="list-style-type: none"> • Promote determination of municipal carbon footprint and reduction activities 	i. Number of Municipalities with carbon reduction initiatives
	<ul style="list-style-type: none"> • Collaborate on initiatives to develop a GHG reduction programme for the Western Cape 	i. Number of entities that have adopted a carbon reduction programme ii. Effectiveness of reduction measures
	<ul style="list-style-type: none"> • Explore climate change co-benefits in air quality management 	i. Number of Municipal AQMP's that that include co-benefits ii. Number of interventions with co-benefits
Reduction in industrial contribution to GHG emissions	<ul style="list-style-type: none"> • Develop incentives for industry to reduce carbon foot print 	i. Incentives developed ii. Number of industries utilising incentives
Well-utilised carbon trading system in the Western Cape	<ul style="list-style-type: none"> • Promote awareness of carbon trading 	i. Appropriate methods developed to promote system ii. Number of successful transactions concluded
	<ul style="list-style-type: none"> • Investigate and promote the utilisation of existing climate change policy mechanisms (e.g. CDM) 	
Residential landfill emissions included in Air Quality Management	<ul style="list-style-type: none"> • Collaborate with climate change initiatives in solid waste management Departments 	i. Number of collaborative projects worked on/initiated

9.3. Review

AQMP review comprises an internal and external review of the AQMP, and addresses further developments in the science as well as management of air quality.

With regards to the formal review of the AQMP and the implementation, a review period of every *five years* is suggested in the DEAT Manual, as well as by participating stakeholders. The definition of the review period is subject to funding and political cycles, as well as implementation outcomes. Therefore, an element of elasticity is necessary.

The process of five-yearly review is anticipated to be initiated through an internal review mechanism and incorporate the annual evaluation exercise, effectively assessing the five-year performance of the AQMP and examining the successes and failures of implementation. An evaluation of the current organisational and air quality setting is necessary to complete the evaluation portion of the review. Following the comprehensive evaluation, goals and objectives are amended as needed and activities updated. The internal revision is communicated to stakeholders through a limited public participation process, followed by a further iteration and publication.

Responsibility	D:EA&DP, technical committee, stakeholders
Method	Compilation of annual evaluations
Timeframe	5 year

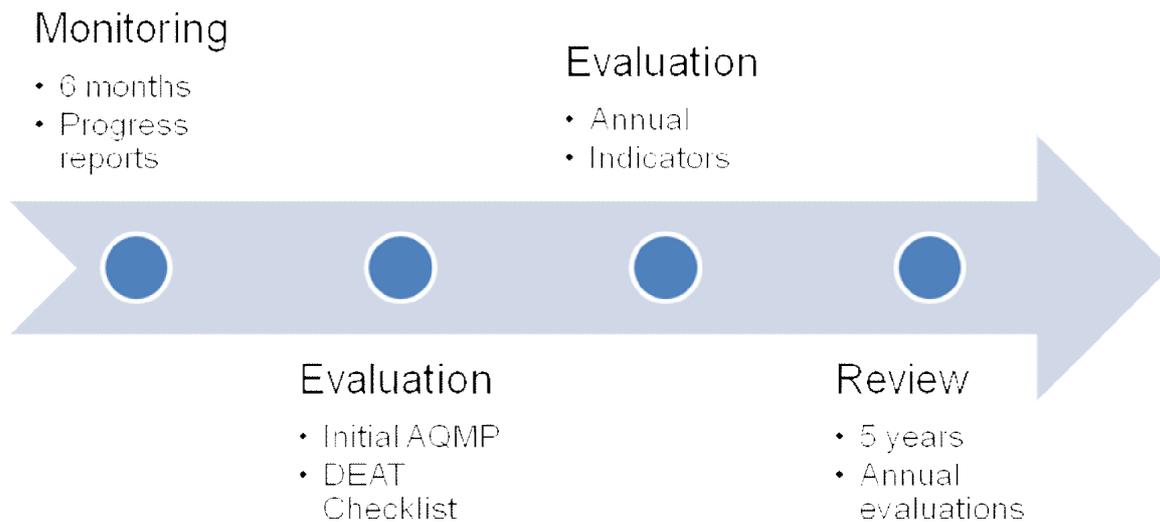


Figure 2: Timeframes for monitoring, evaluation and review of the AQMP

Appendix 1 – Acronyms

AEL	Atmospheric Emission Licence
AQM	Air Quality Management
AQMP	Air Quality Management Plan
AQO	Air Quality Officer
CKDM	Central Karoo District Municipality
CoCT	City of Cape Town
CPUT	Cape Peninsula University of Technology
CTIA	Cape Town International Airport
CWDM	Cape Winelands District Municipality
D:EA&DP	Department of Environmental Affairs and Development Planning
DEA	Department of Environmental Affairs
DoA	Department of Agriculture
DoE	Department of Education
DoEnergy	Department of Energy
DoHealth	Department of Health
DoHousing	Department of Housing
DoT	Department of Transport
DST	Department of Science and Technology
EDM	Eden District Municipality
FPA	Fire Protection Agency
GHG	Greenhouse gas
IDP	Integrated Development Plan
National WG 2	National Working Group 2
ODM	Overberg District Municipality
SAPIA	South African Petroleum Industry Association
SAPS	South African Police Services
SAWS	South African Weather Service
UWC	University of the Western Cape
WCDCM	West Coast District Municipality

Appendix 2 – Ambient Air Quality Standards

Proposed national ambient air quality standards (DEAT, 2009)

Sulphur dioxide			
Averaging period	Limit value ($\mu\text{g}/\text{m}^3$)	Frequency of exceedance	Compliance date
1 hour	350	88	Immediate
24 hours	125	4	Immediate
1 year	50	0	Immediate
Nitrogen dioxide			
Averaging period	Limit value ($\mu\text{g}/\text{m}^3$)	Frequency of exceedance	Compliance date
1 hour	200	88	Immediate
1 year	40	0	Immediate
Particulate Matter (PM₁₀)			
Averaging period	Limit value ($\mu\text{g}/\text{m}^3$)	Frequency of exceedance	Compliance date
24 hours	75	4	Immediate
1 year	40	0	Immediate
Ozone			
Averaging period	Limit value ($\mu\text{g}/\text{m}^3$)	Frequency of exceedance	Compliance date
8 hour (running)	120	11	Immediate
Benzene			
Averaging period	Limit value ($\mu\text{g}/\text{m}^3$)	Frequency of exceedance	Compliance date
1 year	5	0	Immediate
Lead			
Averaging period	Limit value ($\mu\text{g}/\text{m}^3$)	Frequency of exceedance	Compliance date
1 year	0.5	0	Immediate
Carbon monoxide			
Averaging period	Limit value (mg/m^3)	Frequency of exceedance	Compliance date
1 hour	30	88	Immediate
8 hour (calculated on 1 hourly averages)	10	11	Immediate