Cape Winelands District Municipal Air Quality Management Plan

May 2018

ACRONYMS

ABBREVIATIONS AND DEFINITIONS

AEL	Atmospheric Emission Licence
APPA	Atmospheric Pollution Prevention Act (No. 45 of 1965)
AQMP	Air Quality Management Plan
AQM	Air Quality Management
AQO	Air Quality Officer
AQOF	Air Quality Officer's Forum
CBA	Clay Brick Association
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CWDM	Cape Winelands District Municipality
DAFF	Department of Agriculture, Forestry and Fisheries
D:AQM	Directorate Air Quality Management
DEROs	Desired Emission Reduction Outcomes
DoE	Department of Energy
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DMR	Department of Mineral Resources
DoT	Department of Transport
DTI	Department of Trade and Industry
EIA	Environmental Impact Assessment
EMI	Environmental Management Inspector
GHG	Greenhouse Gas
GN	Government Notice
H_2S	Hydrogen Sulphide
MHS	Cape Winelands District Municipality Division Municipal Health Services
MSA	Municipal Systems Act (No. 32 of 2000)
NAAQS	National Ambient Air Quality Standards
NAEIS	National Atmospheric Emissions Inventory System
NEMA	National Environmental Management Act (No. 107 of 1998)
NEM: AQA	National Environmental Management Air Quality Act (No. 39 of 2004)

N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_X	Nitric Oxides
O_3	Ozone
PAEL	Provisional Atmospheric Emission Licence
PM	Particulate Matter
PM_{10}	Particulate matter with an aerodynamic diameter of 10µm and smaller
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of 2.5µm and smaller
PPP	Public Participation Process
SAAELIP	South African Atmospheric Emission Licensing and Inventory Portal
SAAQIS	South African Air Quality Information System
SEMA	Specific Environmental Management Act
SNAEL	System National Atmospheric Emission Licensing
SO_2	Sulphur Dioxide
VOCs	Volatile Organic Compounds
WC AQMP	2nd Generation Western Cape Air Quality Management Plans
WCG	Western Cape Government
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

The National Environmental Management: Air Quality Act (NEM: AQA) has outlined the responsibility of air quality management between the various spheres of government (i.e. national, provincial, district and local authorities). This includes responsibilities such as:-

- air quality monitoring;
- emissions monitoring;
- development of Air Quality Management Plans (AQMP's);
- collaboration between spheres government;
- issuing atmospheric emissions licenses for all Listed Activities;
- governing controlled emitters; and the
- appointment of dedicated Air Quality Officer to fulfil these functions.

The Cape Winelands District Municipality's (CWDM) 1st AQMP was developed in 2009 in terms of Section 15(1)(b) of NEM: AQA, which stated that "each municipality must include in its Integrated Development Plan (IDP) contemplated in Chapter 5 of the Municipal Systems Act (MSA)". This AQMP was adopted by the CWDM Council and with subsequent inclusion of the AQMP into the CWDM IDP, the CWDM illustrated commitment to actively implement the statutory obligations of the AQA to Air Quality Management as placed on the district. The CWDM showed dedication to pursue the vision of its AQMP and it ensured that the CWDM fulfilled the role and responsibilities placed on the district in terms of implementing the NEM: AQA by the designation and appointment of an AQO.

The purpose of the AQMP 2009 was:-

- to help CWDM to improve and maintain good air quality standards;
- to identify and reduce the negative effects of air pollution on people's health and wellbeing;
- to address the effects of emissions from various sources, including industry, transportation, residential fuel burning and agriculture;
- to give effect to best practice in air quality management; and
- to describe how implementation will be effected.

The plan was a strategic plan with a vision and mission, supported by short and longer-term goals and objectives for the implementation of the defined management measures.

CWDM embarked to evaluate, review and update the CWDM 2009 AQMP, in accordance with the requirements of the National Environmental Management: Air Quality Act (NEM:AQA), to develop the 2nd Generation AQMP for the CWDM.

To ensure proactive and effective air quality management and planning within the CWDM, the 2nd Generation AQMP was developed upon the strengths and successes of the 2009 AQMP. Ultimately, the planning was to ensure significant sources of air quality impacts, within the CWDM, are controlled with the best air quality management practices implemented to warrant the air quality rendered are not harmful to human health and to ensure minimum adverse impacts on the receptor community and the environment.

Since the CWDM generally can boast with good air quality, it is imperative that the 2nd Generation AQMP for the CWDM continue to protect and manage air quality within the district.

OVERVIEW OF THE CAPE WINELANDS DISTRICT MUNICIPALITY

1.1. GEOGRAPHICAL SETTING

The Cape Winelands District Municipality (CWDM) is a district municipality located in the Boland region as one of five district municipalities located within the Western Cape Province and covers an area of approximately 22 318 square kilometres. The CWDM is landlocked between the coastal districts of the West Coast, Overberg and Eden and City of Cape Town Metropolitan Municipality. The CWDM also shares its eastern border with the Central Karoo District and its northern border with the Northern Cape Province (Namakwa District Municipality).

Cape Winelands District Municipality comprises of five local municipalities, namely:-

- Witzenberg Local Municipality
- Drakenstein Local Municipality
- Stellenbosch Local Municipality
- Breede Valley Local Municipality
- Langeberg Local Municipality

MAP 1.1: The local municipalities located within the district, as well as the hierarchy of the main towns within each local municipality.

MAP 1.2: The location of the CWDM within the Western Cape Province, as well as the location of the five local municipalities located within the Cape Winelands.

1.2. SOCIO-ECONOMIC CONTEXT

In the Western Cape the Cape Winelands has the largest population of all districts (excluding the Cape Metro), which was estimated to be 853 423 in 2017. The CWDM 4th Generation IDP forecast approximately a further 7 per cent (7%) growth of the 2017 base estimate, across the next 5-year planning cycle. The Local Municipalities in the CWDM are also among the 10 largest Local Municipalities in the Province, with the main towns being Stellenbosch, Paarl, Worcester, Ceres, Wellington and Robertson.

The main economic activities within the CWDM are agricultural, commercial services and manufacturing, with smaller contributions from construction. The district is located in one of the most agricultural productive belts in the province with agricultural activities dominated by wine and deciduous fruit production. Hex River, Paarl, Robertson, Worcester and Stellenbosch are considered the main wine producing areas with deciduous fruit mostly grown and processed in Ceres.

1.3. CLIMATE AND WEATHER OVERVIEW

CWDM experiences a Mediterranean, sub-tropical climate with hot and generally dry summers (December to February), and cold and wet winters (June to August). The summer months are characterized by warm, dry days with little wind, with the daily temperature in towns such as Paarl and Stellenbosch can rise up to 38°C during the hottest months between January and March. The winter months may experience heavy rains, strong north-westerly winds and low temperatures, with occasional snow on the surrounding mountains peaks during August and September.

The topography of the region, however results in significant changes in the micro-climate, particularly mean annual precipitation in different areas, ranging from 3 000 mm in the high-lying mountains to less than 100 mm in the north and north eastern parts of the CWDM.

CHAPTER 2

KEY MANAGEMENT PLANS AND POLICIES PERTAINING TO THE MANAGEMENT OF AIR QUALITY

NEM: AQA provides an objectives-based approach to the management of air quality at different governance and operational levels and is the legislative means to ensuring that the rights described above are upheld. Section 16(1) of NEM: AQA provides the framework for the contents of an AQMP to ensure uniform execution thereof throughout South-Africa. A number of plans, frameworks and policies pertaining to air quality management were prepared on various government levels that inform and provide context for the 2nd Generation CWDM AQMP. A synopsis is provided below in respect of the key matters of relevance to air quality management in the CWDM:

2.1. NATIONAL MATTERS OF RELEVANCE TO THE CWDM 2nd GENERATION AQMP

2.1.1. NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT IN SOUTH AFRICA (2007, REVISED 2012)

In terms of Section 7 of the NEM: AQA, the National Department of Environmental Affairs developed the National Framework for Air Quality Management to ensure the efficient and effective implementation of the NEM: AQA throughout the country.

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

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

2.1.2. REGULATIONS AND / OR GUIDELINES GAZETTED UNDER NEM: AQA

Table 1: GAZETTED REGULATIONS AND GUIDELINES UNDER NEM: AQA

LEGISLATION	COMMENCEMENT DATE
National Ambient Air Quality Standards	24 December 2009 (GN 1210 of GG No. 32816)
List of Activities which Result in Atmospheric Emissions which have or may have a Significant Detrimental Effect on the Environment, including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Heritage	01 April 2010 (GN 248 of GG No. 33064)

National Ambient Air Quality Standard for Particulate Matter with Aerodynamic Diameter less than 2.5 micron metres (PM2.5)	29 June 2012 (GN 486 of GG No. 35463)
National Dust Control Regulations	01 November 2013 (GN 827 of GG No.36974)
Declaration of a small boiler as a controlled emitter and establishment of emission standards	01 November 2013 (GN 831 of GG No. 36973)
Regulations Prescribing the Format of the Atmospheric Impact Report	11 October 2013 (GN 747 of No. 36904)
Amendments to Regulations Prescribing the Format of the Atmospheric Impact Report	02 April 2015 (GN R284 of No. 38633)
National Atmospheric Emission Reporting Regulations	02 April 2015 (GN 283 of GG No. 38633)
Amendments to the List of Activities which Result in Atmospheric Emissions which have or may have a Significant Detrimental Effect on the Environment, including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Heritage	12 June 2015 (GN 551 of GG No. 38863)
Declaration of Small-scale Char And Small-scale Charcoal Plants as Controlled Emitters and Establishment of Emission Standards	18 September 2015 (GN 602 of GG No. 39220)
Regulations Prescribing the Atmospheric Emission Licence Processing Fee	11 March 2016 (GN 250 of GG No. 39805)
Air Quality Offsets Guideline	18 March 2016 (GN 333 of GG No. 39833)
Regulations for the Procedure and Criteria to be followed in the Determination of an Administrative Fine in terms of section 22A of the Act	20 JULY 2017 (GN 698 of GG No 40994)

2.1.3. NATIONAL LEGISLATIVE AND POLICY DEVELOPMENTS: LINKAGES WITH CLIMATE CHANGE

The phenomenon known as “climate change” refers to an ongoing trend of changes in the earth’s general weather conditions as a result of an average rise in the temperature of the earth’s surface often referred to as global warming. South Africa’s climate change response is guided by the principles set out in the Constitution, the Bill of Rights and NEMA.

Given the cross-cutting nature of climate change impacts and responses, the Government recognised that an effective response to climate change required national policy to ensure a coordinated, coherent, efficient and effective response to the global challenge of climate change. Section 10.2.6 of the National Climate Change Response White Paper recognises the important role of provincial and local government in meeting the challenges of climate change. Draft legislation and policies have been

developed to formally address climate change in relation to emissions limits and for tax incentives to reduce carbon emissions; to indirectly ensure the management of air quality in the country.

Table 2: LEGISLATIVE AND POLICY DEVELOPMENTS TO ADDRESS CLIMATE CHANGE

LEGISLATION	DATE PUBLISHED FOR COMMENT / COMMENCEMENT
National Climate Change Response White Paper	19 October 2011
Draft Carbon Tax Bill	02 November 2015
Draft Regulations on the Carbon Offset	20 June 2016

DEA has published draft regulations, in terms of the NEM: AQA that directly addresses both the management of air quality and climate change matters.

Table 3: REGULATORY DEVELOPMENTS IN RESPECT OF CLIMATE CHANGE AND AIR QUALITY MANAGEMENT

LEGISLATION	COMMENCEMENT DATE
Regulations regarding the phasing-out and management of ozone-depleting substances	08 May 2014 (GN 351 of GG No. 37621)
Declaration of Greenhouse Gases as Priority Air Pollutants	08 January 2016 (GN 6 of GG No. 39578)
National Pollution Prevention Plans Regulations	08 January 2016 (GN 5 of GG No. 39578)
National Greenhouse Gas Emission Reporting Regulations	03 April 2017 (GN 275 of GG No 40762)

2.2. PROVINCIAL MATTERS OF RELEVANCE TO THE CWDM 2nd GENERATION AQMP

2.2.1. 2ND GENERATION WESTERN CAPE AIR QUALITY MANAGEMENT PLAN

Vision Statement

"Clean and healthy air for all in the Western Cape"

Mission Statement

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

Air Quality Management Goals:-

Goal 1:Ensure Effective and Consistent Air Quality Management, Linked to Climate Change Response

This goal aims to address the establishment of the necessary institutional arrangements, i.e. the development and maintenance of the varied systems, skills and capacity for effective air quality management.

- Strengthen and build capacity in air quality management and compliance and enforcement
- Promote cooperation amongst all spheres of government, business, industry and civil society
- Develop institutional mechanisms to improve air quality and climate change response
- Develop, implement and maintain air quality management systems
- Ensure adequate funding for the implementation of air quality management by municipalities

Goal 2: Continually Engage With Stakeholders to Raise Awareness With Respect To Air Quality Management and Climate Change Response

- Develop comprehensive education and communication mechanisms, strategies and programmes with respect to air quality management and climate change response

Goal 3: Ensure Effective and Consistent Compliance Monitoring and Enforcement

- Improve air quality compliance monitoring and enforcement
- Promote continuous improvement in respect of industry air quality compliance
- Develop and implement air quality regulatory processes

Goal 4: Support Air Quality and Climate Change Response Programmes, Including Promoting and Facilitating the Reduction of Greenhouse Gas Emissions

- Reduce ozone depleting substances and greenhouse gas emissions, in line with national and international requirements

2.2.2. CLIMATE CHANGE

Western Cape Government had the following policy developments, initiatives and reports to assess and address climate change, ultimately contributes to managing air quality within the province.

Table 4: WESTERN CAPE GOVERNMENT LEGISLATIVE AND POLICIES TO ADDRESS CLIMATE CHANGE

POLICY DEVELOPMENTS	DESCRIPTION
2014 Western Cape Climate Change Response Strategy	In line with the National Climate Change Response Policy, the Strategy takes a two-pronged approach to addressing climate change through: ○ *Mitigation*: Contribute to national and global efforts to significantly reduce GHG emissions and build a low carbon economy ○ *Adaptation*: reduce climate vulnerability and develop the adaptive capacity
2014 Western Cape Climate Change Response Implementation Framework	Framework outlines each focus area to identify impact potential or benefit for priority programmes and to discuss the opportunities for and barriers to the implementation of priority programmes, as identified in the Change Response Strategy.
2012 Western Cape Energy Consumption and CO_2 Emissions Database Reports	Provide an overarching energy consumption and CO2e emissions inventory. The database disaggregates the information by sector, as well as at district and local government levels. It provides a 2009 baseline for the tracking of energy consumption and CO2e emissions reductions over time. It includes a report for the Western Cape, as well as district summary reports.
SmartAgri	The Smart Agriculture for Climate Resilience (SmartAgri) project was a collaborative project between the Western Cape Department of Agriculture and the Western Cape Department of Environmental Affairs & Development Planning, and the University of Cape Town's African Climate and Development Initiative. SmartAgri has provided a road map for actionable and prioritised initiatives that will take the agricultural sector road towards greater resilience in the face of climate challenges.

2.3. LOCAL MUNICIPAL AIR QUALITY MANAGEMENT PLANS OF RELEVANCE TO THE CWDM 2nd GENERATION AQMP

All five Local Municipalities within the CWDM have had their AQMP's formulated and adopted by their respective Councils.

2.3.1. DRAKENSTEIN MUNICIPAL AQMP

Vision Statement:-

"Clean and healthy air for all in the Drakenstein Municipality"

Mission:-

The mission is to ensure the effective and consistent implementation of sustainable air quality management practices by the local municipality. Stakeholders and civil society must work together to progressively achieve and efficiently maintain clean and healthy air in the Drakenstein Municipality.

Air Quality Management Goals:-

- **Goal 1**: Maintain areas where existing levels of air pollution are below the legal limits (i.e. in areas where air quality is already acceptable.
- **Goal 2**: Develop clear air quality management objectives and strategies for improving ambient air quality within the Drakenstein Municipality.

2.3.2. STELLENBOSCH MUNICIPALITY AQMP

Vision Statement:-

"Air quality in the Stellenbosch Municipality is clean and healthy"

Mission:-

Air quality in the Stellenbosch Municipality is co-operatively managed for the benefit of present and future generations according to the principles of sustainable development to safeguard health and quality of life, promoting economic and social development.

Air Quality Management Goals:-

- **Goal 1**: Air quality governance meets requirements to effectively implement the AQMP.
- **Goal 2**: Systems and tools are established to effectively implement the AQMP.
- **Goal 3:** Air quality management is transparent and participatory.

2.3.3. WITZENBERG MUNICIPALITY AQMP

Vision Statement:-

"To be the local municipality with the cleanest air in the Cape Winelands District which will contribute to the well-being of all our communities."

Mission:-

To implement sustainable air quality management practises throughout the municipality to progressively achieve air quality goals.

Air Quality Management Goals:-

- **Goal 1:** Effective Air Quality Management.
- **Goal 2:** Promote communication in relation to Air Quality Management.
- **Goal 3** Compliance monitoring and enforcement.

2.3.4. LANGEBERG MUNICIPALITY AQMP

Vision Statement:-

"To be a Municipality where the constitutional right of all residents, to a high level of air quality, is continuously upheld, to benefit economic and social development and promote the health of all its residents."

Mission:-

To implement sustainable air quality management practices throughout the Langeberg Municipal area to progressively achieve and maintain air quality goals**.**

Air Quality Management Goals:-

- **Goal 1**: To ensure effective and consistent air quality management by including all spheres of Government and other relevant stakeholders.
- **Goal 2**: To continually engage with all stakeholders to raise awareness with respect to air quality, in order that the Air Quality Management Plan can be successfully implemented.
- **Goal 3**: To ensure effective and consistent compliance, monitoring and enforcement and to keep industry abreast with new developments.
- **Goal 4**: To support climate change protection programmes, including promoting the reduction of greenhouse gas emissions.

2.3.5. BREEDE VALLEY MUNICIPALITY AQMP

Vision Statement:-

"Ensure the constitutional right of all inhabitants to live in a clean and healthy air environment is maintained on a continuous basis".

Mission:-

Implementing and progressively achieving the goals as set out in the AQMP, thereby ensuring that all current and future generations and the environment's air quality is safeguarded utilising principles of sustainable methods to ensure a healthy quality of life as well as promoting social and economic development.

Air Quality Management Goals:-

- **Goal 1**: Meeting Air Quality Regulations to implement the AQMP – refers to the regulatory framework and the institutional capacity required in Breede Valley Municipality to perform the Air Quality function.
- **Goal 2**: Reduces atmospheric emissions of potentially harmful pollutants - manage the activities that impacts on air quality by reducing emissions that may have detrimental effect on humans and the environment.
- **Goal 3**: Establish systems and tools to implement the AQMP – refers to the systems, tools and skills sets available to the institution as essential requirements, which forms the cornerstone effective implementation of the Air Quality Management Plan.

2.4. DISTRICT MUNICIPAL MATTERS OF RELEVANCE TO THE CWDM 2ND GENERATION AQMP

Several district plans and frameworks, with an integral or secondary link to air quality management, gave strategic direction to the 2nd Generation AQMP, by interlinking departments within the CWDM with the air quality management objectives of the 2nd Generation AQMP.

Table 5: CWDM DISCUSSION DOCUMENTS LINKED TO AIR QUALITY MANAGEMENT

POLICY /FRAMEWORK	DESCRIPTION
4th Generation Integrated Development Plan for the CWDM **2017/18 – 2021/22**	The IDP is a planning and strategic framework to help municipalities fulfil their development needs. The CWDM established its development plan for the short, medium and long term through the IDP process.
Strategic Environmental Assessment for the management of Ecosystem Services within the CWDM **2007**	The CWDM Strategic Environmental Assessment (SEA) provide a decision-aiding tool for the management of ecological resources within the District. This is a strategy and implementation plan for the CWDM to sustain the ecosystem services on which the development of quality human settlements and the diversification of the economy depend.
CWDM Spatial Development Framework SDF) **2011** **1st Draft CWSDF Discussion Document** **2018**	The CWDM SDF is the strategic framework guiding spatial distribution of current and desirable land uses within a municipality in order to give effect to the vision, goals and objectives of the CWDM. This framework aims to promote sustainable functional and integrated human settlements, maximise resource efficiency, and enhance regional identity and unique character of a place.

The CWDM recognises climate change as a threat to the environment, its residents, and to future development. The strong causal linkage between air quality management and climate change, require co-operative working relationship to achieve air quality and climate change targets in an integrated manner.

Table 6: POLICIES TO ADDRESS CLIMATE CHANGE WITHIN CWDM

POLICY /FRAMEWORK	DESCRIPTION
Cape Winelands District Municipality Discussion Document - Framework for a Draft Climate Change Response Adaptation Strategy 2014	Document was developed in-house with to give strategic direction to departments in a coordinated manner within the CWDM in responding to challenges posed by the climate change phenomenon.
Cape Winelands District Municipality Climate Change Adaption Summary Report 2018	The Climate Change Adaption Summary Report was developed through the Local Government Climate Change Support (LGCCS) program in partnership with the Western Cape Climate Change Municipal Support Programme. Through this program key climate change vulnerability indicators for the CWDM were identified. These indicators demonstrate areas that maybe at high risk of climate change impacts.

CHAPTER 3

REVIEW OF THE CAPE WINELANDS DISTRICT MUNICIPAL AIR QUALITY MANAGEMENT PLAN 2009

The CWDM developed and implemented an AQMP in 2009. The plan was a strategic document that assists the Municipality to set and achieve air quality management goals in a structured, co-ordinated and measured manner. The AQMP 20009 took into account the roles and responsibilities of the district in respect of air quality management, as outlined in the National Framework for Air Quality Management in South Africa.

The CWDM developed and adopted the CWDM AQMP in 2009, with the following:

VISION:

To be a district within which the constitutional right of all inhabitants to clean and healthy air is maintained in a sustainable manner without compromising economic and social development for the benefit of present and future generations.

MISSION:

To implement sustainable air quality management practices throughout the district to progressively achieve air quality goals.

The CWDM embarked on a project to assess, evaluate and review the CWDM AQMP 2009 in accordance with the requirements of the NEM: AQA, and involved the following steps, namely:

- assess progress made in air quality management in the CWDM;
- establish whether the identified goals and targets have been effectively implemented;
- establish whether the goals and targets were still valid; and
- identify air quality management gaps and risks from the assessment that could be translated into new goals and objectives, where required.

Air quality management gaps and issues identified according to the gap and problem analysis, and short and longer term goals with realistic, implementable and appropriate intervention strategies to ensure that the desired outcome will be achieved through the implementation of the AQMP.

The intervention strategies include:

- Action plans with activities; and
- Timeframes for implementation and indicators to monitor implementation and, the efficacy on the interventions.

3.1. ASSESSMENT OF THE CWDM AQMP2009 GOALS

Section 15(1) of NEM: AQA requires that each national department or province responsible for preparing an environmental implementation or management plan in terms of Chapter 3 of the National Environmental Management Act (NEMA), must include an Air Quality Management Plan. Furthermore, Section 15(2) of NEM:AQA states that “each municipality must include in its Integrated Development Plan contemplated in Chapter 5 of the Municipal Systems Act, an Air Quality Management Plan”.

The CWDM developed and adopted the CWDM AQMP in 2009, with the following goals: -

- **Goal 1: Effective Air Quality Management**
- **Goal 2: Promote communication in relation to Air Quality Management**
- **Goal 3: Compliance monitoring and enforcement**

To ensure effectiveness, the AQMP2009 that identified goals and objectives was reviewed to assess successful implementation, have been implementation successful and whether they were still valid under current conditions and for the future.

3.1.1. GOAL 1 - EFFECTIVE AIR QUALITY MANAGEMENT

OBJECTIVE 1.1: ENSURE EFFECTIVE AND CONSISTENT AIR QUALITY MANAGEMENT		
TARGET	**ACTIVITY**	**ASSESSMENT**
Build capacity in air quality management within the Municipal Health Services Department	**Provide EHP's within the MHS directorate with continuous training and development in air quality management.**	The CWDM strengthened the development of skills for affective AQM amongst the CWDM officials. Investments were made into personnel with opportunities to attend several air quality courses in the key performance areas of AQM, AQM planning and Atmospheric Emission Licensing.

OBJECTIVE 1.2: TO DEVELOP AND IMPLEMENT AN EFFECTIVE AIR EMISSIONS LICENSING SYSTEM		
TARGETS	**ACTIVITIES**	**ASSESSMENTS**
Build capacity in air emissions licensing	**a. Provide EHP's within the MHS directorate with training and development in Air Emissions Licensing.** **b. Secure assistance from the provincial department in relation to air emissions licensing**	**a.** Officials attended formal training to ensure the management, coordination and compliance with the statutory requirements of the air quality licensing function as detailed in the NEM: AQA. The CWDM as atmospheric emission licensing authority in terms of NEM: AQA, has licensed all Section 21 listed activities within the CWDM. **b.** The district build and maintained sound inter-governmental relationship between all spheres of government in the CWDM, through lateral engagements on regular basis between the DEA&DP, local municipalities and the CWDM related to Section 21 listed activities and Section 23 controlled emitters. When needed Inter-Governmental Task Team's (IGTT) are establish to address air quality related matters.
Develop an air emission licensing administration and management system.	**a. Develop forms, procedures, documentation and protocols for the administration of air emissions licensing.**	The CWDM adopted an internal licensing system to ensure atmospheric emission licensing is administrated in accordance to the legislated requirements of NEM: AQA. All Section 21 listed activities within the CWDM had been issued with atmospheric emission licenses (AEL's).

	b. Incorporate the air emissions licensing function into the MHS management system.	South African Atmospheric Emission Licensing and Inventory Portal (SAAELIP) is an online portal for the management of Atmospheric Emission Licences developed by DEA. This singular platform via the System for National Atmospheric Emission Licensing (SNAEL) aims to standardize the application, processing and issuing of AEL's', which provides for industries who have Section 21 Listed Activities to apply for an AEL online.

OBJECTIVE 1.3: DEVELOP, IMPLEMENT AND MAINTAIN AN AIR QUALITY MANAGEMENT SYSTEM		
TARGETS	**ACTIVITIES**	**ASSESSMENTS**
Compilation of a comprehensive emissions inventory.	**a. Compile an emission inventory of all line sources.** **b. Compile an emission inventory of all area sources.** **c. Compile an emission inventory of all industrial sources.**	The CWDM has a comprehensive emission inventory of all the Section 21 Listed Activities and Section 23 Controlled Emitters as mandated under the NEM: AQA and the National Framework. Local Municipalities within the CWDM are mandated to compile emission inventories of all non-listed activities within their jurisdiction. The Western Cape Air Pollutant and Greenhouse Gas Emissions Inventory also serve as a decision-supporting tool to inform air quality management planning in the CWDM.
Air Quality monitoring agreement with Province.	**Engagements with Province to assist with air quality monitoring within the district.**	DEA&DP Directorate Air Quality Management (D: AQM) operates two ambient air quality monitoring stations within the CWDM as part of the Western Cape Ambient Air Quality Monitoring Network. A station is operated in Stellenbosch and one in Worcester. The set of air quality parameters measured at each monitoring station primarily determined by the air quality conditions at the location and can provide an indication of the possible causes of air pollution in an area.

OBJECTIVE 1.4: ESTABLISH AN ANNUAL AQMP REVIEW PROCESS		
TARGET	**ACTIVITY**	**ASSESSMENT**
Review systems, structures and processes to review progress in relation to the AQMP.	**a. Establish a committee to review the AQMP.** **b. Establish review mechanism, systems, criteria and procedures.** **c. Establish a comprehensive complaint register.**	**a-b.** The CWDM annually report to DEA&DP on the progress made in terms of the CWDM AQMP. **c.** Complaints on air quality are registered in the MHS electronic records management system.

OBJECTIVE 1.5: ESTABLISH AN EMISSION REDUCTION STRATEGY.		
TARGETS	**ACTIVITIES**	**ASSESSMENTS**
Industries	**a. Electronic database of all small industries to be regularly updated.** **b. Periodic site inspections and the request of emissions data.** **c. Develop a register for all non-listed activities.**	In terms of NEM: AQA and National Framework non-listed activities are managed by the local municipalities. Local Municipalities must compile an emission inventory of all non-listed activities. Facilities regarded as Section 21 activities are visited periodically to assess compliance to their AEL's. In order to enable verification of compliance with permitted operating conditions and air emission standards, the Section 21 activities must submit an annual emission report for evaluation to the CWDM. The Controlled Emitters also submit annual data as requested in applicable legislation. The CWDM will join the local municipal air quality official during inter-governmental site inspections at problematic non-listed activities.

Domestic Fuel Burning	**a. Review domestic fuel burning emissions inventory with updated population statistics as these become available.** **b. Create awareness campaigns around the negative health impacts of domestic fuel burning.** **c. Encourage the distribution of alternative forms of domestic energy such as LPG, LSF, gas, methanol, etc.** **d. Promote the integration of energy efficiency measures in low cost houses such as housing insulation, solar panels and stove maintenance and replacement.** **e. Promote electrification in informal settlements.**	**a.** Access to electricity for lighting purposes in the Cape Winelands District in 2016 was 218 483 households, whilst 7.4 per cent of households made use of other sources of energy i.e. generator, solar home system, battery and other. Although high supply of electricity not all residents made use of electricity for heating and cooking due to the cost. The use of coal in the CWDM is low with residents mostly use wood, paraffin and gas. **b.** MHS Environmental Health Education awareness raising of health impacts with regards to the type of fuel used in fires. **c-d**. The change in the National Building Regulations ensured the compulsory inclusion of energy efficiency measures in all new building plans. The CWDM assisted Langeberg Municipality with a Department of Trade and Industry campaign to eliminate poor quality paraffin stoves to be replaced with more safe efficient stoves. The CWDM annually embark on the provision of a number SABS approved solar warm water systems as do-it-yourself packages to the rural areas of the CWDM. **e.** No performance as this is a Local Municipality function.
Transportation	**a. Review vehicle emissions database with updated traffic count data as these become available.** **b. Promote comprehensive vehicle emissions monitoring and diesel vehicle testing programmes in congested areas.** **c. Compile a detailed assessment of the vehicle fleet in the District including information on vehicle numbers, type, age and fuel usage.**	The functionality of Traffic Services within the CWDM resolves under the local municipalities. The N1, R44, R303 and R310 traffic through the CWDM has the potential for excessive vehicle emissions, especially heavy diesel-powered vehicles. The CWDM in conjunction with local municipalities should investigate the possibility of vehicle emission testing, in order to measure vehicle emissions to evaluate contribution to air pollution within the district.

Agriculture	**a. Obtain information on the quantity of pesticides used in the District.** **b. Promote the safe and responsible use of pesticides throughout the district.** **c. Promote safe and responsible agricultural burning practises.**	DAFF regulated, administrated and register all fertilizers, farm feeds, agricultural remedies, stock remedies, sterilizing plants and pest control operators, regulate or prohibit the importation, sale, acquisition, disposal or use of all fertilizers, farm feeds, agricultural remedies and stock remedies. The CWDM had several engagements with the Western Cape Department of Agriculture to address complaints and to find meaningful resolutions for complaints on pesticides applications within the CWDM. MHS provide continuous education and promotion of the safe use, handling, storage and disposal of pesticides, to the farming community throughout the CWDM. MHS comments on the building of storage facilities for agricultural remedies and stock remedies. CWDM monitor agricultural burning if it affects the well-being of receptor community and advice on burning under favourable weather conditions.
Biomass Burning	**a. Identify and quantify emissions from biomass burning.** **b. Liaise with fire services to assist in air pollution control.** **c. Obtain information from local Fire Departments to maintain and update a database of the locations of veld fires and the extent of the areas burnt.** **d. Maintain a database for regional scheduled burn areas that are published for agricultural and management fires.**	Biomass burning can either be legislated through for destroying problematic vegetation or as precaution measures for possible veld fires. Conservation of Agricultural Resources Act and the National Veld and Forest Fires Act as assigned to DWAFF regulate the burning of the above mentioned biomass. The permitting of biomass burning is either handled by the local municipalities or the regional Fire Protection Agency. The approval for burning of biomass within the district remains problematic due to the increase of ambient pollution and burning on days when the natural temperature inversion traps air pollution creates a visual impairment.

Waste Treatment and Disposal	**a. Develop an emissions inventory of waste burning sources (incinerators, sewage and waste water treatment works).** **b. Ensure all operating incinerators are permitted and are operating within their permit requirements.** **c. Maintain a current database of permitted and non-permitted landfill sites.** **d. Introduce awareness programmes and public education of waste minimization and recycling initiatives.** **e. Promote efficient service delivery in residential areas in order to reduce illegal dumping and the creation of informal landfills.**	**a-c**. One Section 21 listed activity is licensed to operate a Category 8: Thermal Treatment of Hazardous and General Waste facility within the district. All the municipal waste treatment works and landfill sites within the district are accounted for. Several smaller waste water plants exist within the district especially with regards to the agro-processing industry but are regulated by the district and local municipalities. **d.** MHS has awareness programmes running in the district to educate scholars on waste minimization and recycling. **e.** The CWDM monitor removal of waste and report illegal activities to local municipalities.

3.1.2. GOAL 2: PROMOTE COMMUNICATION IN RELATION TO AIR QUALITY MANAGEMENT

OBJECTIVE: ESTABLISH AN AIR QUALITY FORUM IN ORDER TO ENSURE PROPER COMMUNICATION BETWEEN LOCAL AND PROVINCIAL GOVERNMENT, BUSINESS AND INDUSTRY AS WELL AS INTERESTED AND AFFECTED PARTIES.		
TARGETS	**ACTIVITIES**	**ASSESSMENT**
A committee/forum at a district level representing all interested and affected parties.	**The CWDM to take the leading role in the establishment and management of an Air Quality Officers Committee/ Forum.**	The CWDM had established the CWDM Industrial Air Quality Forum with representatives from the listed activities within the district, DEA&DP and the local Air quality officers.
Clearing up the division of functions between Local and District Municipalities.	**Discussions on the division of functions between B and C municipalities.**	DEAD&DP engaged with the local municipalities on their role and responsibilities with regards to implementation of NEM: AQA. All the local municipalities within the CWDM had their AQMP's drafted and designated officials as air quality officers for their respective municipalities.
Regular reporting and discussions on issues of AQM.	**Compile a annual state of air report for the district**	CWDM compile an annual report on the progress in terms of its AQMP for DEAD&DP and submit district related matters into the annual Provincial State of Air Quality Report. The CWDM officials report to and are represented at the quarterly Western Cape Provincial Air Quality Officers Forum meetings and the DEA National Air Quality Lekgotla.

3.1.3. GOAL 3: COMPLIANCE MONITORING

OBJECTIVE 3.1: ESTABLISH A COMPLIANCE MONITORING SYSTEM WITHIN CWDM		
TARGETS	**ACTIVITIES**	**ASSESSMENT**
Build capacity in compliance monitoring within the district.	**a. Provide EHP's within the MHS department with continuous training and development in compliance monitoring.** **b. Design and implement a compliance monitoring system.**	Officials from the CWDM have successfully completed the Environmental Management Inspectors Course (EMI) in terms of compliance monitoring under NEMA and the SEMA's. The CWDM a compliance monitoring system is imbedded within the listed activity's AEL's.
OBJECTIVE 3.2: ENSURE CONTINUOUS COMPLIANCE WITH ATMOSPHERIC EMISSION LICENSING CONDITIONS		
Control emissions from listed Processes.	**a. Periodic site inspections and retrieval emissions data.** **a. Licensing conditions to ensure compulsory monitoring and reporting by industries to the CWDM.**	The CWDM and DEA&DP perform jointly environmental compliance inspections within the district. Furthermore, the System for National Atmospheric Emission Licensing (SNAEL) provides for Licensing Authorities to schedule licensing related inspections and track inspection results, as well as manage online compliance reporting. Each listed activity has reporting of emission data set as a condition of authorisation within their AEL's. The National Atmospheric Emission Reporting Regulations require each listed activity to annual submit their emission inventory reports online onto the National Atmospheric Emission Inventory System (NAEIS). The district in tern audit the data submitted by the respective AEL holders.

3.2. FUTURE RELEVANCE OF CWDM AQMP2009 GOALS

3.2.1. GOAL 1- EFFECTIVE AIR QUALITY MANAGEMENT

This goal was considered important for inclusion in the 2nd Generation CWDM AQMP, highlighting the following aspects:-

- Continuous training in air quality management.
- Importance to foster and grow inter-governmental relationship between all spheres of government in the CWDM to ensure effective air quality management within the CWDM.
- Ensure CWDM internal licensing system functions effectively and are regularly updated to keep with new developments legislation related to air quality management.
- Importance of ambient air quality monitoring within the district and the financial cost associated with the purchasing, commissioning, operating and maintaining ambient monitoring equipment.
- Official CWDM AQMP review protocol compulsory.
- CWDM cooperation and assistance to local municipalities to compile and maintain emission inventory within CWDM.
- Significant of raising awareness with respect of air quality management within the district for residents, industry and departments within local and district municipality.
- The need for cooperation and liaison with stakeholders such as DEA, DEA&DP and municipalities to address current gaps, to find and implement interventions to strengthen air quality management within the CWDM.

3.2.2. GOAL 2- PROMOTE COMMUNICATION IN RELATION TO AIR QUALITY MANAGEMENT

This goal and its targets were deemed still relevant with the following considered to be of importance:-

- Maintaining CWDM Industrial Air Quality Forum with listed activities and increase the frequency of engagement to ensure constant communication and engage on important air quality matters associated with new legislation and amendment to current legislation.
- Extend to involve other stakeholders such as Clay Brick Association, regional Fire Protection Agency amongst others.
- Establishment of a District Air Quality Officers Forum for district and local municipal air quality officers within district engage and address air quality management matters within the district.
- Importance of intergovernmental cooperation to ensure assistance to the respective municipalities in implementing their Municipal Mandate to give effect to the AQA and to take up their roles and responsibilities in terms of AQM.

3.2.3. GOAL 3 - COMPLIANCE MONITORING

NEM: AQA and National Framework placed a strong emphasis on the roles and responsibilities of all spheres of government in terms of performing air quality compliance monitoring and enforcement in their respective jurisdictional areas. As this goal continue to be relevant, the wording of this goal was rearticulated to “Compliance and Enforcement” to be included in the 2nd Generation CWDM AQMP.

The following was considered to be of importance:-

- Continuous training in environmental management compliance monitoring.
- Designation of Environmental Management Inspectors within the CWDM.
- Inter-governmental cooperation between all spheres of government towards environmental compliance monitoring and investigations.
- Combined intervention to be enforced to ensure the principles of NEMA are adhered to.
- Promulgation of a district specific Air Quality by-law for the CWDM to provide an air quality management tool for enforcing specific reasonable measures within a given timeframe.

3.3. NEW GOAL – SUPPORT CLIMATE CHANGE PROTECTION PROGRAMMES

Climate change in one of the biggest challenges facing communities, likely posing serious risks to both human health and the environment and could have a major impact on vulnerable economic sectors.

The integrally linkage between air quality and climate change is well documented. As air pollution and climate change influence each other through complex interactions in the atmosphere, thus having significant consequences for each other. The definite change in temperature within the district can influence air quality management as air quality can be sensitive to increased temperatures. , increased greenhouse gas emissions as well as to an increased demand for local fuels such as paraffin and wood. In turn direct emissions of air pollutants (e.g. black carbon) or formation of emissions such as sulphate and ozone can alter the energy balance between the atmosphere and the Earth's surface resulting in temperature changes which can alter the chemical composition of the atmosphere. Thus, climate change and air quality management have significant consequences for each other.

The CWDM recognises the need to include the support to climate change initiatives and the reduction of greenhouse emissions in their AQMP, in order to provide mutual benefits that contribute towards maintaining good, clean air, while also reducing global warming.

CHAPTER 4

SUMMARY ANALYSIS OF AIR QUALITY WITHIN THE CAPE WINELANDS DISTRICT MUNICIPALITY

4.1. PRIMARY ECONOMIC ACTIVITIES

4.1.1. LISTED ACTIVITIES AND CONTROLLED EMITTERS

The CWDM has implemented a licensing system since 1 April 2010, licensing all Section 21 listed activities in operation within the district in accordance to Chapter 5 of the NEM: AQA. All these licensed listed activities are bound to conditions to give effect to Section 24(b) of the Constitution to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

CWDM incorporated the processing fees as contemplated in GN 250 of 2016 and the Administrative Fine in terms of section 22A of NEM: AQA into the district Tariff Structure.

Table 7 provide a list of Section 21 listed activities within the CWDM, with the substances to be monitored in terms of the conditions of authorisation of these atmospheric emission licenses. All listed activities report to the CWDM in terms of their reporting AEL conditions and in terms of the requirements of the National Atmospheric Emission Reporting Regulations (GN 283 of 2015), requiring each listed activity to annual submit their emission inventory reports online onto the National Atmospheric Emission Inventory System (NAEIS).

All the facilities considered as Section 23 Controlled Emitters operating within the CWDM, are boiler being operated for energy generation.

Table 7: LISTED ACTIVITIES WITHIN CWDM WITH THE REGULATED PARAMETERS

Industrial Activity	Categorised Listed Activity	Parameters measured and reported
Crematoriums & Veterinary Incinerator	Sub-category 8.2: - Crematoria and - Veterinary Waste Incineration	- Particulate Matter - Carbon Monoxide (CO) - Oxides of Nitrogen(as NO_2) - Mercury Hg (only human cremation)
Manufacture of Propellants	Sub-category 7.2: Production of acids	- Sulphur dioxide (SO_2) - Sulphuric acid mist and sulphur trioxide (as SO_3) - Oxides of nitrogen (as NO_2)
	Sub-category 8.3: Burning Grounds	- Sulphur dioxide (SO_2) - Dust fall
Production of clay bricks using clamp kilns	Sub-category 5.3: Clamp kilns brick production	- Sulphur dioxide (SO_2) - Dust fall

Production of clay bricks by firing excluding clamp kilns	Sub-category 5.9: Ceramic production	- Particulate Matter - Sulphur dioxide (SO2) - Hydrogen Fluoride (HF) - Dust fall
Lime Manufacturing	Sub-category 5.6: Lime production	- Particulate Matter - Sulphur dioxide (SO_2) - Oxides of nitrogen (as NO_2) - Dust fall
Animal Matter Rendering Plant	Category 10: Animal Matter Processing	Best practise measures intended to minimize or avoid offensive odour.

4.1.2. AGRICULTURAL

Agriculture forms the backbone of the Cape Winelands District Municipality economy. Two agricultural sectors dominate, namely horticultural produce (namely fruits, viticulture, vegetables and wheat fields) and animal farming (mostly chicken, sheep, pigs and, cattle). Particulate matter is the main pollutant of concern from agricultural activities as particulate emissions are deriving from windblown dust, burning crop residue, and dust entrainment as a result of vehicles travelling along dirt roads. In addition the use and storage of agricultural remedies within this sector can cause chemical emissions. Odorous emissions can be associated with animal farming (such as chicken broilers, piggeries, etc.), but can also result from crop residue, application of manure and fertilizer.

The District has a strong agro-processing industry producing agricultural products, which comprises more than a quarter of all agro-processing in the Western Cape. Boilers operations mainly the use solid or liquid fuel for energy generation with the preserving and canning of agricultural produce, dairy produce and production of juices, liquor and wine in the agro-processing industry. Most of the Section 23 Controlled Emitters registered in the district are being operated within the agro-processing industry.

One Section 21 listed activity can be considered under the agricultural sector namely an animal matter rendering facility with the main pollutant of concern being odorous emissions.

Transport from agricultural practices and the associated agro-processing industry, is also considered a contributor to vehicle tailpipe emissions within the CWDM.

Intergovernmental cooperation between DEA&DP, the district and local municipalities have been the approach to address emissions from the non-listed activities within the district. A closer intergovernmental working relationship, which include National and Provincial departments, are required to ensure that the problematic emissions from the agriculture activities can be address meaningfully for ambient air quality not harmful to human health and to the environment.

4.1.3. INDUSTRIAL AND COMMERCIAL OPERATIONS

Most of the district's listed activities resonate under industrial and commercial operations, inclusive of cremation operators, propellant -, clay brick – and lime production. It must be noted that some activities in the CWDM are licensed and included as industrial operations, although due to type of operation these activities can encroach on being considered as mining operations.

The remainder of the industrial and commercial operations are non-listed activities and non-controlled emitters must be regulated by the Local Municipalities. This includes small boiler operations, spray booths, pizza ovens, printers, production of rubber products, fires from informal meat trading, amongst others. Storage and supply of construction materials to the construction and building market, such as sand, aggregates, cement, ready-mix cement with related crusher and screening operations, are activities that could possibly contribute to air pollution in the district.

4.1.4. MINING AND QUARRYING

Open pit mining and quarry activities are in operation within the CWDM. Mining operations represent potentially significant sources of fugitive dust emissions, with particulate emissions being the main pollutant of concern. Fugitive dust sources associated with mining activities include materials handling activities, vehicle-entrainment by haul trucks and wind-blown dust from tailings impoundments and stockpiles. Mining for sand and aggregate for the construction industry, and clay for brick manufacturing are the most prominent mining activities in the district.

In terms of the amended NEM: AQA (Revised 2012) and the National Framework, the Department of Mineral Resources (DMR) are the authority to administer the approval of mining rights and the responsible atmospheric emission licensing authority responsible in respect of managing atmospheric emissions from these facilities.

All operating brick manufacturing facilities and a lime manufacturing facility is licensed as listed activities. These listed activities and one quarry submit and manage their emission inventory reports, as mandated under the National Atmospheric Emission Reporting Regulations, onto NAEIS.

Intergovernmental co-operation between the CWDM and DMR are limited, with no up to date inventory on the mines or quarries operating in the district or which of these are licenced under NEM: AQA. Mines and quarries have the potential to create a dust fall nuisance and contribute to airborne concentration of fine particulates, if an environmental management programme is not followed correctly.

4.1.5. BIOMASS BURNING

Biomass burning is inclusive of wild fires, controlled preventative fires and agricultural burning practices. The seasonal and irregular nature of biomass burning makes characterisation difficult, and as a result, the contribution of this source to the ambient air quality in the region cannot be accurately determined. However, it is recognised that biomass burning has an impact on the district air quality, especially in terms of its particulate emissions and is also considered is a significant source of greenhouse gases. Smouldering fires have less complete combustion and release more CO, whereas, intense fires have more complete combustion and release more CO_2.

Preventative and/or controlled burning is Department Agriculture, Forestry and Fisheries (DAFF), under the Department Agriculture, Forestry and Fisheries (DAFF)Conservation of Agricultural Resources Act (Act No. 43 of 1983) and the National Veld and Forest Fires Act (Act No. 101 of 1998).

As a result of the predicted general trend of rising temperatures associated with the changing climate, a future increase in the intensity, severity and frequency of the natural veldt fires could be anticipated. The rise in temperature and the increase in veldt fires could have a negative influence on the ambient air quality of this district.

The CWDM investigate complaints on biomass burning as well as possible unauthorised burning however the engagement with different stakeholders from government spheres to identifying interventions to minimise the legislated – and/or uncontrolled biomass burning, is not imminent.

4.1.6. DOMESTIC FUEL BURNING

Domestic fuel burning has been identified as a major cause of poor ambient air quality in the rural and informal urban areas of South Africa. Residents in low income areas, rural - and informal settlements tend to use domestic fuel for cooking, heating and lighting with the residents in low income areas are usually poorly insulated, which demand more frequent heating. The elevation of the release concentrations from domestic fuel burning coincide with periods of low temperatures and stable atmospheric conditions associated with the winter months. Domestic fuel burning have the potential for significant human health effects.

More than 92 present of residents residing in the CWDM has access to electricity for lighting purposes. Although most residents have access to electricity, poverty is a major contributing factor to the use of domestic fuels in households for space heating purposes, supports cooking and lighting. Little coal as a cost effective substitute for electricity is used by CWDM residents due to the availability of wood and two major gas distributors in the district.

The delivery of improved thermal efficiency formal houses and the distribution of electricity as basic services to residents constitute to less dependency on domestic fuel. This functionality of the local municipalities will ensure reduction of this air pollution concentrations, to acceptable levels in formal residential areas.

The CWDM address complaints with regards to domestic fuel burning and engage to create awareness on the health implications of using domestic fuel such as coal, paraffin and wood.

4.1.7. TRANSPORT

Transport sources within the CWDM include on-road sources such as cars and light trucks, heavy trucks and buses, farm and construction machines, aircraft, and locomotives.

Given that no major airports are located within the CWDM during 2007, air transport was excluded as potentially significant air quality source. With the use of electrical locomotives over diesel locomotives, railway transport was also omitted as a source of important to air quality management. Should future evidence indicate these as sources significantly contributing to the state of ambient air quality in the CWDM, these sources should be included during a revision of the AQMP.

The N1 highway and several other main routes such as R44, R303 and R310 within the CWDM, have the potential to significantly contribute to pollution with the excessive exhaust emissions. The predominant inefficient public transport system in the district had resulted in an increasing number of privately owned vehicles within the region, including an increase in use of taxis as the main mode of public transport. Historical poor town planning at local level resulted in traffic congestion in many urban areas in the CWDM, with specific reference to Stellenbosch and Paarl. The proliferations of heavy vehicles on the local road network to transport heavy/bulk materials also contribute to the district's vehicle tailpipe emissions.

The NEM: AQA makes for the Minister provision to declare vehicles as controlled emitters with emission limits and related monitoring requirements, and to declare controlled fuels. For the ever

increasing vehicle activity rate, the national government focus must be to secure effective legislation to change in fuel composition (unleaded petrol, lower sulphur in diesel), improve fuel efficiency - and emission control system of vehicles, to ensure vehicle tailpipe emissions reductions. Such legislation will give the district and local municipalities control to regulate vehicle emissions.

A detailed assessment of the district's vehicle fleet should be undertaken including information on vehicle numbers, type, age and fuel usage. The assessment should inform the district to the efficiency of its fleet and the replacement need of insufficient vehicles. The CWDM should integrating air quality considerations through environmentally responsible purchasing of new vehicles, with specification on higher fuel efficiency vehicles and/or alternatively fuelled vehicles where finances and availability allow.

Inter-governmental cooperation is required with local municipal departments such as town planning, traffic services and air quality management to ensure well-informed spatial town planning with proper road infrastructure to ensure optimum traffic flow.

4.2. AIR QUALITY MANAGEMENT FRAMEWORK

Effective air quality management has as its basis a comprehensive management framework including the requirement organisational and functional structures and an integrated air quality management system comprising of an emission inventory, air quality and meteorological monitoring modelling.

4.2.1. *CAPACITY ASSESSMENT*

4.2.1.1. *Capacity Assessment*

The CWDM has embraced and fully implemented the assigned roles and responsibilities of air quality management and gave effect to Section 24 of the Constitution, NEMA and Section 14(3) of the NEM: AQA, with the designation of an air quality officer (AQO), to co-ordinating matters pertaining to air quality management within the district. The responsibility and accountability for the implementation of the AQA resolves under the Directorate: Community and Development Services with the designated AQO within the Department Municipal Health Services (MHS). To ensure the CWDM fulfil the air quality management role and responsibilities placed on the district, the CWDM showed commitment through the amendment of the organizational structure to accommodate the AQM functionality as a separate, dedicated function with specific functions related to air quality management and control.

The CWDM invested in air quality management by affording officials the opportunity to attend several courses in the key performance areas of atmospheric emission licensing, environmental authorisation, air quality management monitoring and - planning. These officials successfully completed these courses and gained the necessary level to deal with the variety and complexity demanded by this function.

It is not foreseen that any additional staff structures will have to be established to implement this plan for the immediate future. It must however be noted that should the situation changes and the function develops within the district, it might become necessary to establish a specialised unit within the MHS directorate to tend to air quality matters.

The CWDM have the following air quality management tools:-

- current AQMP;
- human resources (staff availability, expertise and experience); and
- air quality guidelines, and the emission inventory of Section 21 and Section 23 activities, with the required monitored emission data from these respective facilities.

The CWDM however lack additional essential air quality management tools to monitor and assess changes in the environment and to plan for effective environmental management.

The following tools should be acquired:-

- comprehensive district emissions inventory
- comprehensive air quality and meteorological monitoring in regions without such facilities
- atmospheric dispersion modelling.

4.2.2. AIR QUALITY MANAGEMENT SYSTEM

4.2.2.1. Ambient Air Quality Monitoring in the Cape Winelands District Municipality

As part of the Western Cape Ambient Air Quality Monitoring Network within the province the department of Environmental Affairs and Development Planning, Directorate Air Quality Management (DEA&DP D: AQM) established ambient air quality monitoring stations within the CWDM.

The set of air quality parameters measured at each monitoring station was primarily determined by the historical air quality conditions at the location. Each set of parameters measured may include complimentary sets of parameters, i.e. SO_2, O_3 and NO_2 (vehicle emissions and combustion), PM_{10} and CO (combustion), and H_2S and CO_2 (odour and combustion), which often provides an indication of the possible causes of air pollution in an area. Meteorological parameters (wind speed and direction, ambient temperature, pressure, relative humidity) are also measured to provide the context within which the air quality is measured.

These stations are located in Worcester and Stellenbosch and provide an indication of possible causes of air pollution in the monitoring location. The data obtained from these stations provide the CWDM with an indication of the state of air quality within the areas where these stations are located and determine to what level inhabitants are exposed to air pollutants.

CWDM officials assist DEA&DP D: AQM as required in these monitoring activities and/or to perform minor task at the mentioned stations.

Table 8: Ambient Air Monitoring Stations in Cape Winelands District Municipality

Location	Air quality Parameters Measured	Date Commenced
Worcester	SO_2, O_3, NO2,CO, PM_{10}, full metrological parameters	July 2009
	H_2S	February 2017
Stellenbosch	SO_2, O_3, NO_2,CO, CO_2 ,PM_{10}, $PM_{2.5}$, full metrological parameters	October 2011

The annual average concentrations of the air quality parameters measured at each location of the DEA&DPs Ambient Air Quality Monitoring Network in the CWDM, was compared to the respective annual averages of the National Ambient Air Quality Standards (NAAQS), where applicable.

No annual National Ambient Air Quality Standard established for O_3 or CO. It is important to note, however, that the annual average O_3 concentrations are significantly below the 8-hour standard and the annual average CO concentrations were significantly below the 8-hour standard of 10mg/m3 at both monitoring locations.

All annual averages of sulphur dioxide (SO_2) nitrogen dioxide (NO_2), Ozone (O_3) and Particulate Matter (PM_{10}), as depicted for each monitoring station, were below the annual National Ambient Air Quality Standard.

Due to historical and current complaints related to odorous emissions the monitoring of Hydrogen Sulphide (H_2S) was included in the parameters measured at the Worcester station. As there is currently no annual National Ambient Air Quality Standard for H_2S, the annual average concentrations are compared against the 30-minutes health guidelines of 150 µg/m^3, as set out by the World Health Organisation (WHO). The average H_2S annual concentrations measured at this station were below the WHO standards.

The CWDM monitored concentrations correlated with the downward trend within the Western Cape in the O_3 -and SO_2 annual average. Within the Western Cape, CWDM included, annual NO_2 averages showed an upward trend. Fuel combustion in vehicles plus industrial and chemical manufacturing processes are considered the main contributors of NO_2 to the environment. The priority placed on growth and development the increasing trend of NO_2 levels, is likely to continue.

DEA&DP will be launching another new ambient air quality monitoring station within the CWDM, with the Drakenstein Municipal region identified as a possible location. The addition of another station within the CWDM will ensure more comprehensive ambient air quality monitoring within the district.

4.2.2.2. Passive Ambient Air Quality Sampling in the Cape Winelands District Municipality

In order to identify and assess the long term regional air quality trends over a period of time, the CWDM budgeted to set up a network of passive air sampling within the geographical area of the Cape Winelands. The results obtained from this passive sampling program will be used for determining geographical base-line concentrations and to identify “hotspots” within the district.

The program identified a site in each of the five local municipalities for the setup and monitoring purposes. This program will be rolled out with the assistance of the CWDM Environmental Health Practitioners and the local municipal air quality officers, ensuring capacity building on air quality management and local air quality air quality circumstances are taken into account. All results and information obtained from the passive sampling program will be captured on a database, with the results of the pollutants monitored will be compared against the National Ambient Air Quality Standard where applicable.

4.2.2.3. Additional Air Quality Management System Tools for the Cape Winelands District Municipality

An AQMP cannot be successfully implemented and revised in the absence of an effective air quality management system. Essential tools in an air quality management system include an emissions inventory, dispersion modelling and source and ambient air quality monitoring.

4.2.2.3.1. Emission inventory

The listed activities and controlled emitters operated within the CWDM are captured in a detailed CWDM emission inventory database. One municipality has a comprehensive emission inventory of the non-listed activities in the municipality. Compiling of an emission inventories have been taken up as short term objectives into the other municipalities AQMP's.

4.2.2.3.2. Dispersion Modelling/Meteorological Monitoring

Accurate meteorological monitoring data is an integral component of air quality management and planning. Topographical diversity within the CWDM implies different metrological conditions throughout the district. In order to obtain accurate data it is foreseen that the CWDM will have to invest in meteorological monitoring equipment.

As monitoring all sources within the district will be financially not achievable, dispersion modelling is a reliable method to acquire ambient data through stimulation. Modelling will assist the district with effective baseline air pollution characterisation and for assessing the air quality benefits of implementing proposed management and mitigation strategies. Dispersion modelling can be considered as a long term futuristic air quality management requirement.

4.3. AIR QUALITY COMPLIANCE AND ENFORCEMENT

The CWDM AQO perform regular inspections at the district's listed activities and controlled emitters, to assess compliance to the conditions of authorisation under the NEM: AQA. The required monitoring data submitted to the AQO are evaluate against the set parameters for monitoring and the National Ambient Air Quality Standard were applicable. The CWDM monitor the submission of the required annual reporting of data and information emission data onto the NAEIS system and audit the information submitted.

The CWDM joins DEA&DP on compliance inspections at the respective listed activities to assess environmental compliance to the NEMA and SEMA's. The district provides assistance and guidance to the local municipalities during compliance and enforcement with regards to complex air quality related complaints.

The CWDM AQO gives input on air quality management into Environmental Impact Assessments processes as well as into town planning applications for rezoning or new developments. Furthermore, the AQO respond to air quality related NEMA Section 30 incidents within the district, either as leading authority or for assistance to the local municipalities.

4.4. GOVERNMENTAL/ DEPARTMENTAL/STAKEHOLDER COOPERATION

The CWDM maintain the principle of cooperative governance with all the sphere of government and interaction with all stakeholders (officials, consultants, committees, business and public) to ensure effective and efficient rendering of air quality management within the district through the following:–

- provision of input on air quality management to the different spheres of government;
- participate in air quality management and – planning meetings, working groups and forums;
- assist and/or provide guidance in air quality matters at local municipal level;
- dissemination information and guidelines on statutory requirements; and
- AQO foster a good interdepartmental relationship and ensure feedback/input within the district.

CHAPTER 5

GAP ANALYSIS

Gaps were identified in the CWDM AQMP 2009 through the assessment and collaboration of information in the review process. The following is a summary of the gaps with the recommendations:-

5.1. INSTITUTIONAL FUNCTIONS	
GAPS IDENTIFIED	**RECOMMENDATIONS**
AQMP Review protocol	○ Formulate protocol – internal annually and external every 5 years.
Air quality bylaw	○ Finalise draft district specific bylaw, get council approval, promulgate bylaw for CWDM. ○ Ensure local municipalities formulate and promulgate local bylaw.
Designations of EMI's in CWDM	○ Designate EMI's to ensure powers of inspection, investigation, enforcement and administrative powers under NEM: AQA
Additional air quality management tools	○ Provision of tools to include meteorological monitoring and dispersion modelling. ○ Expand existing ambient monitoring in CWDM. ○ Establish inventory of CWDM vehicle fleet.
Awareness raising	○ Ensure for the design of awareness raising campaigns ○ Foster interdepartmental relations with MHS with regards to environmental awareness raising functionality.
CWDM District Air Quality Officers Forum	○ Establish District Air Quality Officers Forum.
CWDM Industrial Forum	○ Ensure bi-annual meetings for Industrial Forum.
Climate Change	○ Inclusion of climate change in AQMP as an air quality functionality. ○ Interdepartmental engagement to included air quality management in CWDM climate change programs.

5.2. PRIMARY ECONOMIC ACTIVITIES	
GAPS IDENTIFIED	**RECOMMENDATIONS**
Listed Activities	○ Awareness raising on co-benefits philosophy between air quality management and climate change interventions. ○ Capacity training on management of good air quality management practices.
Industries and other sources	○ Ensure compilation of emission inventory on non-listed activities by local municipality.
Agricultural and agricultural biomass burning	○ Engagement with stakeholders, National, Provincial and Local sphere of government plus farm unions on agricultural biomass burning and pesticides applications.
Biomass burning	○ Engagement with local – and district Fire Services with regards to permitting of biomass burning. ○ Secure inventory on wild - and controlled fires.
Mine and quarries	○ Engagement with DMR on licensing and listed mines and quarries in CWDM.
Transport	○ Engagement with local municipalities departments on town planning and traffic management. ○ Engage on vehicle emission testing with local municipalities.
Domestic fuel burning	○ Ensure environmental awareness in terms of domestic fuel burning.

CHAPTER 6

2ND GENERATION CAPE WINELANDS DISTRICT MUNICIPALITY AIR QUALITY MANAGEMENT PLAN

The goals as included in the CWDM AQMP 2009 were still deemed relevant with one additional goal added. The four goals of the 2nd Generation CWDM AQMP support the vision and mission, with each goal are underpinned by objectives to achieve them through a series of activities.

6.1. VISION

"TO BE A DISTRICT WITHIN WHICH THE CONSTITUTIONAL RIGHT OF ALL INHABITANTS TO CLEAN AND HEALTHY AIR IS MAINTAINED IN A SUSTAINABLE MANNER WITHOUT COMPROMISING ECONOMIC AND SOCIAL DEVELOPMENT FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS."

6.2. MISSION

"TO IMPLEMENT SUSTAINABLE AIR QUALITY MANAGEMENT PRACTICES THROUGHOUT THE DISTRICT TO PROGRESSIVELY ACHIEVE AIR QUALITY GOALS."

6.3 GOALS

GOAL 1: EFFECTIVE AIR QUALITY MANAGEMENT

GOAL 2: PROMOTE COMMUNICATION IN RELATION TO AIR QUALITY MANAGEMENT

GOAL 3: COMPLIANCE MONITORING AND ENFORCEMENT

GOAL 4: SUPPORT CLIMATE CHANGE PROTECTION PROGRAMMES

6.4. IMPLEMENTATION ACTION PLAN

- Short-term (1-2 years)
- Medium-term (3-5 years)
- Long term (>5 years)
- Continuous

6.5. IMPLEMENTATION ACTION PLAN

The Implementation Action Plan for the CWDM 2nd Generation AQMP on Pages 41 - 47.

6.6. REVIEW OF AQMP

The AQMP should function as a living document and an internal review of the CWDM AQMP should be done on a continuous basis since it refers to implementation goals as set out in Section 6 of this document. The AQMP review comprises of the AQMP and its implementation, and further address developments in science as well as management of air quality, with a review every five years.

The review is subject to funding and political cycles, meaning that an element of elasticity is necessary to achieve the implementation goals to be conducted on an annual basis

6.5. IMPLEMENTATION ACTION PLAN

GOAL 1 - EFFECTIVE AIR QUALITY MANAGEMENT			
OBJECTIVES	**TARGETS**	**ACTIVITIES**	**TIMEFRAMES**
Objective 1.1: Strengthen and Build Capacity in Air Quality Management	Build capacity in air quality management within the Cape Winelands District Municipality.	Provide CWDM air quality personnel with specific training requirements to ensure continuous development in technical expertise.	Continuous
		Capacitate CWDM Environmental Health Practitioners with the necessary skills and knowledge that is required within the district to manage air quality and ensure statutory enforcement of current and future legislation for air quality management.	Short-term
	Skills development for a sustained air quality expertise base.	Collate and share Best Practise Methodologies in air quality management practices (AEL's, compliance & enforcement)	Continuous
		Develop strategies and programmes for training, and skills transfer to local municipal officials for achieving the goals and objectives of the AQMP.	Medium-term
Objective 1.2 : Develop and Maintain Effective Air Emissions Licensing System	Effective Atmospheric Emission Licensing System.	Perform the functions as Atmospheric Emission Licensing Authority for Section 21 Listed Activities wrt new applications, AEL renewals, transfers, reviews and variations.	Continuous
		Foster and grow intergovernmental relationships between all spheres of government to inform the District emission licensing system.	Continuous

Objective 1.3: Develop, Implement and Maintain Effective Air Quality Management System	Comprehensive Air Quality Management System in the CWDM	Manage and maintain a comprehensive District emission inventory to all listed activities and controlled emitters.	Continuous
		Engage and promote compilation of emission inventory on non-listed activities by local municipality.	Medium-term
		Ensure reporting of data and information by all listed activities and controlled emitters in district, to the NAIES.	Continuous
		Annual audit on data reports submitted by district's listed activities and controlled emitters onto NAIES.	Continuous
		Manage and maintain electronic air quality complaints handling database for district.	Continuous
		Liaise with stakeholder (DEA, DEA&DP, local municipalities) to address gaps in CWDM air quality management system and to find and implement interventions.	Continuous
	Comprehensive Air Quality Monitoring Network in the CWDM	Maintain and grow working relationship between DEA&DP and CWDM, on the running of Western Cape ambient air quality monitoring network in operation within the district.	Continuous
		Engage with industry to establish industrial air quality monitoring network, as required by their AEL's.	Continuous
		Establish an air quality screening through a network of passive air sampling within the geographical area	Short-term
		Establish, operate and maintain a meteorological monitoring network within CWDM to obtain accurate meteorological data for the district.	Long-term 3rd Generation AQMP
		Perform air quality dispersion modelling in the district.	Long-term 3rd Generation AQMP

Objective 1.4: Establish AQMP review process	Review system and processes to review progress.	Establish review mechanism, systems, criteria and procedures (internal annually and external every 5 years)	Short-term
	Annual AQMP progress report.	Compile annual progress report to be submitted to Council and DEA&DP	Short-term and Continuous
Object 1.5: Establish emission reduction strategy	Compilation of emission inventory for non-listed activities	Provide assistance to local municipality to compile an emission inventory of non-listed activities within their jurisdictions.	Continuous
	Environmental pollution management	Ensure liaison, coordination and communication with District Municipal Health Services with regards to air quality incidents and trends per municipality.	Continuous
		Ensure cooperative interdepartmental engagement between Municipal Health Services and Air Quality Management Services to raise awareness with respect to air quality.	Continuous
	Agricultural	Pursue better cooperation with DAFF to address air quality matter.	Continuous
		Promote departmental engagement at National Level on legislation for agricultural application of pesticides, preventative - and controlled burning.	Continuous
		Promote Best Practise Methodologies in agricultural activities to prevent or minimize air pollution.	Continuous

	Transport	District: ○ Assess the CWDM vehicle fleet in order to reduce emissions from vehicles through improvements in the vehicle fleet. ○ Interdepartmental engagement within district wrt environmentally responsible purchasing of new vehicles.	Short-term
		Local Municipalities: ○ Engage and promote the testing of vehicle emissions by local municipalities. ○ Promote cooperation with local municipal town planning and traffic services to ensure well-informed spatial town planning with proper road infrastructure to ensure optimum traffic flow.	Continuous
	Biomass burning	Engage with Fire Services at district and local level to maintain and update a database of the number, locations of veld fires and the extent of the areas burnt.	Continuous
		Provide information and promote alternative environmental friendly methods for biomass burning to agricultural communities.	Continuous
	Domestic Fuel Burning	Create awareness on the health implications of domestic fuel burning.	Continuous
	Mines and Quarries	Engage in intergovernmental discussions with DMR on provision of a database and environmental management plans on mines and quarries within District,	Short-term

GOAL 2 - EFFECTIVE AIR QUALITY MANAGEMENT			
OBJECTIVES	**TARGETS**	**ACTIVITIES**	**TIMEFRAMES**
Objective: **Establish an air quality forum in order to ensure proper communication between Local and Provincial government, business industry and public as well as interested and affected parties.**	Membership of the CWDM to the Provincial Air Quality Forum.	Ensure attendance to Provincial Air Quality Officers Forum Meetings to discuss, monitor and to provide feedback air quality management matters in line with the CWDM AQMP, in terms of NEM: AQA.	Continuous
	Forum at district level representing all interested and affected parties.	Manage and maintain the CWDM Industrial Air Quality Forum with listed activities and ensure bi-annual engagement to warrant constant communication and engage on important air quality matters associated with new legislation and amendment to current legislation.	Continuous
	District Air Quality Officers Forum to represent all AQO in CWDM.	The CWDM to establish and manage District Air Quality Officers Forum to engage in intergovernmental coordination and collaboration to develop ways in addressing air quality management challenges in their respective jurisdictions.	Short-term
	Improve governance with fully functional air quality structures at local municipalities.	Engage in intergovernmental cooperation with local municipalities in implementing their air quality management functionality and assist with complex air quality matters within these municipalities.	Continuous
	Reporting on air quality management in the CWDM.	Integrated air quality and climate change response in Provincial Working Groups on Air Quality and Climate Change engagements.	Continuous
		Provide inputs to the National Air Quality Officers Report.	Short-term and Continuous
		Provide inputs to the Provincial Quarterly Performance Reports.	Short-term and Continuous

GOAL 3 - COMPLIANCE MONITORING AND ENFORCEMENT			
OBJECTIVES	**TARGETS**	**ACTIVITIES**	**TIMEFRAMES**
Objective 3.1: Establish a compliance monitoring system within CWDM	Capacity building and skills development for sustainable air quality compliance and enforcement base.	Provide CWDM air quality personnel with continuous training and development in compliance monitoring.	Short-term - Continuous
		Designate District EMI's in terms of Section 31 of NEMA, to enable them to exercise the powers and duties under NEM: AQA within the district.	Short-term
	Air Quality Compliance and Enforcement Programme	Design and implement a CWDM Compliance and Enforcement Programme.	Short-term
Object 3.2: Ensure continuous compliance of Section 21 and Section 23 activities.	Control emissions from Section 21 and Section 23 activities.	Develop district specific Air Quality Bylaw to determine non-compliance with the requisite air quality management standards set out by the district in order to reach the goals and objectives of the AQMP.	Short-term
		Included the Offences and Penalties, as well as spot fines, from the Air Quality Bylaw in the CWDM Tariff Structure.	Short-term
		Periodic site inspections to ensure compliance to AEL conditions and conditions of authorisation for controlled emitters.	Short-term and Continuous
		Ensure reporting of emission data as required in terms of AEL's and legislated controlled emitter operating requirements.	Short-term and Continuous
		Evaluate emission data reports in terms of legislated minimum emission standards, and the sampling –and analysis methods used during sampling of these emissions.	Short-term and Continuous
		Identify and investigate illegal operations that impact on air quality.	Continuous

GOAL 4 - SUPPORT CLIMATE CHANGE PROTECTION PROGRAMMES			
OBJECTIVES	**TARGETS**	**ACTIVITIES**	**TIMEFRAMES**
Objective: **Reduce Greenhouse Gas Emissions in line with National and International Requirements.**	Support of national and international protocols on the reduction of greenhouse gases	Set up district air quality goals that are linked to climate change mitigation and which talks to all the applicable legislation.	Long-term 3rd Generation AQMP
		Support Climate Change through interdepartmental engagement in the execution of current or future Climate Change Strategies in the CWDM.	Short- term to Medium-term
		Promote self-regulation by listed industry and to adopt environmental best practices.	Short-term and Continuous
		Support the awareness raising of greenhouse gas and carbon footprint reduction strategies to industry.	Short-term and Continuous