INTEGRATED SECOND GENERATION OF THE WEST COAST DISRICT MUNICIPALITY INCLUSIVE OF FIVE LOCAL MUNICIPALITIES AIR QUALITY MANAGEMENT PLAN,

2019-2024

July 2019

Prepared for

&

Five local municipalities

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EXECUTIVE SUMMARY

INTRODUCTION

Air pollution is a growing concern across South Africa as a result of ongoing industrialization. The continuous increase of industrial development is important for economic growth, however emissions can be harmful to human health and the environment. It is therefore necessary to regulate industrial emissions that affect air quality. The National Environmental Management: Air Quality Act (39) of 2004 and Air Quality Management Plans (AQMP) are the primary tools used by National and Provincial Government and Municipalities to regulate air quality. There is growing understanding of the relationship between the air quality and climate change highlighting the importance of interlinking the two issues in terms of management in order to achieve a clean and safe environment.

The developmental framework used in the second generation AQMP was based on the Department of Environmental Affairs (DEA) Manual for Air Quality Management Planning (2012). The AQMP considered the vision and mission statements of the West Coast District Municipality (WCDM)

LEGISLATION

The National Environmental Management: Air Quality Act 39 of 2004 (NEM: AQA) replaced the repealed Atmospheric Pollution Prevention Act 45 of 1965 (APPA) in South Africa. National government has implemented NEM: AQA through a number of regulations and policies. This second generation AQMP aims to meet these national policies. Furthermore, the AQMP makes provision for climate change mitigation measures and adaptive strategies as part of inherent strategies and intervention plans. NEM: AQA provides the national norms and standards for air quality and makes provision for declared controlled emitters. Municipal By-laws are used to manage local air and noise related pollution. All other relevant policies, programs and plans that were reviewed during the compilation of this report are listed under this section.

BASELINE ASSESSMENT

An overview of the current baseline status within the WCDM and the five local municipalities was generated, based on the AQMP 2011. The baseline assessment

provides the basis for the development of the AQMP; guiding the strategies and interventions towards new set goals and objectives within a specific timeframe. The baseline assessment, evaluation of ambient air quality in the WCDM and the five local municipal area and an emission inventory results were covered in the baseline assessment report. The assessment provided a good understanding of the current state of air quality within the West Coast District Municipal area.

Geography and demography

The current AQMP was informed by the WCDM and the five local municipalities Integrated Development Plans to describe the geography of the West Coast District Municipal area. The population dynamics was informed by the 2011 census and the 2016 community survey.

Meteorology and climate

Meteorology and climate data were sourced from both air quality monitoring stations within the West Coast District Municipal area and the South African Weather Services (SAWS). The data from both stations show that the West Coast District Municipal area experiences high rainfall pattern during the winter months (May to July). High temperatures are experienced during the summer months (December to January). The annual prevailing wind direction within the area is from the south-west at St Helena and the north-east at the Malmesbury station.

Air Quality Management tools: A review of the air quality management tools entailed a review of the human resources, governance, emissions inventory, ambient air monitoring networks and air quality monitoring.

Air Quality Officers: The WCDM and the five local municipalities have filled the currently available positions of Air Quality Officers (AQO). An appointment of a Manager Air Quality within the WCDM has been made.

Governance: Working Groups and Environmental Management Inspectors (EMIs) were established to undertake the compliance issues. Three Working Groups have been established namely: the West Coast Air Quality Working Group (WCAQWG), the Industrial Stakeholder's Forums and the Joint Municipal Air Quality Working Group (JMAQWG).

Ambient Air Monitoring Stations. Five ambient air monitoring stations have been established within the West Coast District Municipal area. These stations have been situated in Malmesbury, St Helena, Velddrif, Saldanha Bay and Vredenburg.

Air Quality Monitoring Results: The reported annual averages from the ambient air quality measurements, across the five stations, were below the set National Ambient Air Quality Standards (NAAQS). Dust fallout measurements were an exception to the NAAQS where exceedance occurred in May and July 2018.

Emissions Inventory: An inventory list for the West Coast District Municipal area includes a total of 21 section 21 Listed Activities. An additional emissions inventory includes the section 23 Controlled Emitters and non-listed activities within the municipal area.

GAP ANALYSIS

Certain implementation gaps were identified during the review of the AQMP 2011. These identified gaps were used as the basis to inform the goals and objectives of the second generation AQMP. Some specific gaps identified include a lack of financial resources, skills and knowledge of air quality, the need to have air quality as core function within local municipalities. Further, an expansion of the current monitoring networks is needed, and the Matzikama and Cederberg Municipalities need to establish air quality By-laws.

SECOND GENERATION AQMP GOALS

The second generation AQMP highlights the need to focus on expanding the current human resources capacity, air quality management tools, creating awareness, and interlinking air quality management with climate change. The implementation strategies and indicators for the second generation AQMP are outlined with set timeframes.

CONCLUSION

The current state of air quality within West Coast District Municipal area is below the NAAQS thresholds. However, this does not negate the fact that the district municipality is considered to be of poor air quality, based on. Therefore, further efforts need to be directed into transitioning the poor air quality status to an acceptable status.

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ACRONYMS

AEL	Atmospheric Emission License
AQ	Air Quality
AQMP	Air Quality Management Plan
AQO	Air Quality Officer
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
EMI	Environmental Management Inspector
GDPR	Gross Domestic Product Per Region
GHG	Greenhouse Gas
GN	Government Notice
H_2S	Hydrogen sulphide
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
IA&Ps	Interested and Affected Parties
km^2	Kilometre Squared
MEC	Member of the Executive Council
MoU	Memorandum of Understanding
m/s	Metre per Second
NAAQS	South African National Ambient Air Quality Standards
NDC	Nationally Determined Contributions
NAEIS	National Atmospheric Emissions Inventory System

NEM: AQA	National Environmental Management: Air Quality Act 39 of 2004
NEMA	National Environmental Management Act 107 of 1998
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
O_3	Ozone
PM_{10}	Particulate matter with an aerodynamic diameter of 10 µm or less
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of 2.5 µm or less
ppm	Parts per million
PPP	Public Participation Process
PT	Provincial Treasury
Q2	Quarter 2
SAAQIS	South African Air Quality Information System
SAAELIP	South African Atmospheric Emission Licensing and Inventory Portal
SBM	Saldanha Bay Municipality
SIDZ	Saldanha Bay Integrated Development Zone
SDF	Swartland Development Framework
SO_2	Sulphur dioxide

SoEOR	State of Environment Outlook Report
µg/m³	Micrograms per cubic meter
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WCDM	West Coast District Municipality
WHO	World Health Organisation

1 INTRODUCTION

1.1 Background

Industrialization has played a major role in the economic growth of most developing countries including South Africa. Industries serve as source of employment for many low and middle income earners. The presence of industries and employment promotes the standard of living for many families. However, the continuous increase of industrial development in South Africa has brought in a great concern regarding the deterioration of air quality within the country. Hence, there is a growing need to regulate sources of emissions that affect air quality, in South Africa.

Section 24 (Bill of Rights) of the Constitution of the Republic of South Africa (1996) states that everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. Included under section 24 of Bill of Rights contained in the constitution of South Africa, the National Environmental Management: Air Quality Act (39) of 2004 provides a paradigm shift from source based air pollution to a holistic and integrated air quality management, thus:

- Decentralizing air quality management responsibilities.
- Setting ambient air quality targets as goals designed to drive emission reductions.
- Requiring all significant sources to be identified, quantified, and addressed.
- Recognizing source-based (command and control) measures in addition to alternative measures, market incentives and disincentives, voluntary programmes, and education and awareness-raising.
- Promoting cost-optimized mitigation and management measures.
- Stipulating air quality management planning by authorities, and emission reduction and management planning by sources.
- Promoting access to air quality information and public consultation during air quality management processes.

Mandated by the National Environmental Management: Air Quality Act 39 of 2004 (NEM: AQA), municipalities are required to include an Air Quality Management Plan (AQMP) as part of its Integrated Development Plan as per Chapter 5 of the Municipal Systems Act. The West Coast District Municipality adopted an Air Quality Management Plan in 2011 and within its capacity has taken the process of implementing the roles and responsibilities of air quality management, as outlined under the NEM: AQA and as spelt out in the National Air Quality Management Framework 2007, which was amended in 2012 (DEA, 2013). It has been eight (8) years since the AQMP went in to implementation stage within the district. In 2018/2019, the AQMP 2011 was reviewed with the objective of establishing an updated understanding of the current state of air quality in WCDM and its five local municipalities and further, to inform updated strategies which will form the basis of the second generation AQMP.

1.2 Review and Update of the AQMP 2011.

In order to ensure full compliance with section 16(1) of NEM: AQA, a comprehensive review of the AQMP 2011 was conducted to:

- Assess progress made in air quality management in the West Coast District Municipal area.
- Establish whether the previously identified goals and targets have been effectively implemented and achieved.
- Establish whether the goals and targets are still valid in terms of new developments and economic growth in the West Coast District Municipal area.
- Identify potential air quality risks and interventions that can be translated into new goals and objectives, where required.

The findings of the review of the AQMP 2011 informed the compiling of second generation AQMP2019-2024.

1.3 Second Generation of the Air Quality Management Plan

The goals for the second generation of AQMP 2019-2024 were informed by the findings as discussed under gap analysis in section 4 of this report. The WCDM has adopted the vision and mission as per the AQMP 2011.

1.3.1 Vision

To attain and maintain good air quality for the benefit of all inhabitants and the natural environmental ecosystems within the West Coast District Municipal area.

1.3.2 Mission

- To ensure the maintenance of good air quality through proactive and effective management principles that take into account the need for sustainable development into the future.
- To work in partnership with communities and stakeholders to ensure the air is healthy to breathe and is not detrimental to the well-being of persons in the District.
- To ensure that future developments (transportation, housing, etc.) incorporate strategies to minimize air quality impacts.
- To reduce the potential for damage to sensitive natural environmental systems from air pollution, both in the short and long-term.
- To facilitate intergovernmental communication at the Local, Provincial and National levels in order to ensure effective air quality management.

The aim of the second generation AQMP is to characterise the baseline air quality following eight years of implementation and determine the required improvements which resulted from implementation of the AQMP 2011. This second generation AQMP aims to establish revised strategies and intervention plans, based on a clear understanding of the current status, that will aid in further improvement and compliance within the area. National government has implemented NEM: AQA through a number of regulations and policies. This second generation AQMP aims to meet these national policies. Furthermore, the AQMP makes provision for climate change mitigation measures and adaptive strategies as part of inherent strategies and intervention plans.

1.4 Air Quality and Climate Change

Historically, air pollution and climate change have been treated as two separate issues. For a long period the focus has been on extensive control of atmospheric pollutants and little or no attention was paid to greenhouse gases and climate change; as a result greenhouse gas (GHGs) emissions increased. While the two aspects were treated as independent it is evident that both GHGs and air pollutants emanate from the same sources, thus interlinking air quality and climate change.

It is therefore beneficial to simultaneously promote the use of clean technology and to adopt strategies towards a green economy, which will aid in a reduction of air emissions and GHGs.

On 13 December 2015, South Africa was amongst the 195 nations that reached a historic agreement at the 21st Conference of the Parties (COP21). This meeting was held in Paris under the United Nations Framework Convention on Climate Change (UNFCCC), now known popularly as the Paris Agreement (DEA, 2016). The Paris Agreement commits all countries to contribute to an ambitious global GHG emissions reduction goal, and associated global goals for finance and adaptation, communicated through Nationally Determined Contributions (NDC). South Africa submitted its intended NDC goals to the UNFCCC in September 2015 (DEA, 2016).

To fulfil the Paris Agreement commitment, the South African Department of Environmental Affairs (DEA) is mandated with both air quality management and climate change matters. This is managed through two distinct branches: Air Quality Management and Climate Change, and is responsible for developing and implementing legislation in this regard. All spheres of government are tasked with air quality management and climate change adaptation and mitigation related-matters through the NEM: AQA and the Municipal Systems Act (Act No. 32 of 2000).

The WCDM IDP (2017-2018) states that Air Quality Management plans can respond to climate change in a number of ways, thus:

- Promoting alternatives to the use of coal as a primary energy source for industrial and commercial purposes.
- Promote technologies that reduce GHG emissions from industrial processes.
- Support transport programs around clean and alternative fuels and the shift from private to public transport and perform diesel vehicle testing, where relevant.

Saldanha Bay Municipality IDP (2017-2022) and the other four local municipalities state that the opportunities around small and large renewable energy initiatives also needs to be considered when planning in the West Coast District Municipal area.

1.5 Report Layout

The second generation AQMP is compiled as per the Department of Environmental Affairs (DEA) Manual for Air Quality Management Planning (2012).

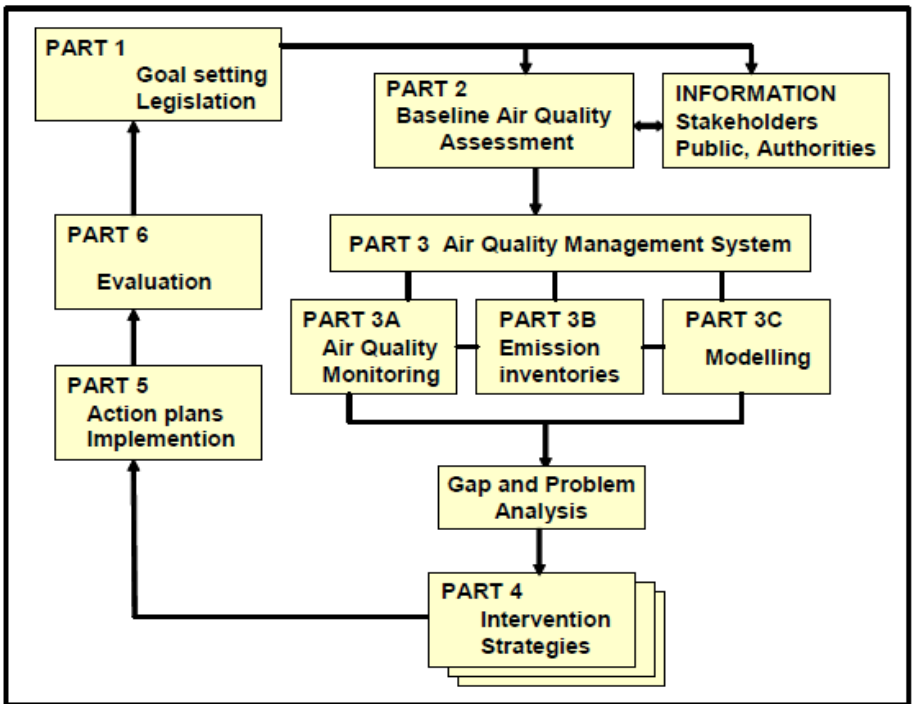


Figure 1: AQMP process (DEA Manual for Air Quality Management Plan, 2008).

2 LEGISLATION

2.1 National Environmental Management: Air Quality Act (Act No. 39 of 2004)

National Environmental Management: Air Quality Act (Act No. 39 of 2004) commenced on 11th September 2005 and replaced the previous repealed Air Pollution Prevention Act of 1965. The National Framework is the underpinning document to NEM: AQA, providing national norms and standards and policies and procedures for air quality management to ensure compliance. After its initial publication under Notice No. 30284 of 11 September 2007 in terms of section 7 of NEM: AQA, the National Framework has subsequently been updated twice, once in 2013 (Notice No. 36161 of 13 February 2013) and in 2018 (Notice No. 41650 of 25 May 2018). The NEM: AQA also makes provision for the declaration of controlled emitters. Municipal By-laws manage air and noise related pollution and dust within the area of the municipality's jurisdiction.

The sections below summarizes the legal and regulatory requirements based on current NEM: AQA.

2.1.1 National Ambient Air Quality Standards

The National Ambient Air Quality Standards (NAAQS) are set based on international best practice for criteria pollutants. These are based on pollutants that are most commonly emitted from different industrial sources and have proven detrimental health effects during exposure. The current NAAQS criteria for pollutants were published on 24 December 2009 (Government Gazette No. 32816) and updated on 29 June 2012 (Government Gazette No. 35463). Details of the NAAQS standards are reported in Table 1.

Table 1: NAAQS standards for South Africa (Government Notice 1210 in Government Gazette 32816 of 24 December 2009,)

Substance	Chemical formula / notation	Averaging period	Concentration limit (µg/m³)	Limit (µg/m³) Frequency of exceedance (a)	Compliance date (b)
Sulphur dioxide	SO_2	10 minutes	500	526	Immediate
		1 hour	350	88	Immediate
		24 hours	125	4	Immediate

Substance	Chemical formula / notation	Averaging period	Concentration limit (µg/m³)	Limit (µg/m³) Frequency of exceedance (a)	Compliance date (b)
		1 year	50	0	Immediate
Nitrogen dioxide	NO_2	24 hours	20	8	Immediate
		1 year	40	0	Immediate
Particulate matter	PM_{10}	24 hours	75	4	Immediate
		1 year	40	0	Immediate
Fine particulate matt	$PM_{2.5}$	24 hours	40	4	1 Jan 2016 – 31 Dec 2029
			25		1 Jan 2030
		1 year	20	0	1 Jan 2016 – 31 Dec 2029
			15		1 Jan 2030
Ozone	O_3	8 hours (running)	120	11	Immediate
Benzene	C_6H_6	1 year	5	0	Immediate
Lead	Pb	1 year	0.5	0	Immediate
Carbon monoxide	CO	1 hour	30 000	88	Immediate
		8 hours (based on 1-hourly averages	10 000	11	Immediate

2.1.2 National Dust Control Regulations

The National Dust Control Regulations (NDCR) were gazetted on 1 November 2013 (Notice No. 36974), with an updated draft published on 25 May 2018 (Notice No. 41650). The purpose of the regulations is to outline the effective measures for the control of dust in all areas including residential and light commercial. The standards for acceptable dust fall rates are set out in Table 2, below.

Table 2: National Dust Control Regulations of South Africa (National Ambient Air Quality Standards, Government Notice 1210 min Gazette 3281624 December 2009).

Restriction Area	Dust fall Rate (mg/m²/day, 30-day average)	Permitted Frequency of Exceeding Dust fall Rate
Residential area	D < 600	Two in a year, not sequential month
Non-residential area	600 < D < 1200	Two in a year, not sequential months

2.1.3 Section 21 – Listed activities

The section 21 listed activities as per NEM: AQA are classified into ten categories (and sub-categories) in the Government Gazette No.: 37054 (2013):

- Category 1: Combustion Installations.
- Category 2: Petroleum Industry, the production of gaseous and liquid fuels as well as petrochemicals from crude oil, coal gas or biomass.
- Category 3: Carbonization and Coal Gasification.
- Category 4: Metallurgical Industry.
- Category 5: Mineral Processing, Storage and Handling.
- Category 6: Organic Chemicals Industry.
- Category 7: Inorganic Chemicals Industry.
- Category 8: Thermal Treatment of Hazardous and General Waste.
- Category 9: Pulp and Paper Manufacturing Activities, Including By-Products Recovery.
- Category 10: Animal Matter Processing.

2.1.4 Section 23 -Controlled Emitters

Controlled emitters, as per Section 23(1) of NEM: AQA, include:

- Any small boiler with a design capacity exceeding 10 MW but less than 50 MW net heat input per unit, based on the lower calorific value used.
- Any temporary asphalt plants producing mixtures of aggregate and tar (or bitumen) for road surfacing purposes.
- Any small-scale char or charcoal plants.

2.1.5 Air Quality Management Plan Implementation

The DEA Manual for Air Quality Management Planning (2012) recommends that, in addition to the NEM: AQA, the following legislation be consulted in the goal setting processes of developing an AQMP:

- The Constitution of the Republic of South Africa, 1996.
- National Environmental Management Act (No. 107 of 1998).
- National Health Act 61 of 2003.
- Municipal Structure Act 117 of 1998 – Powers of (Executive) Mayors.
- Municipal Systems Act 32 of 2000.
- The National Framework for Air Quality Management in the Republic of South Africa as published in terms of Section 7 of NEM: AQA.

2.2 Climate Change Regulations and Policies

The table below gives a list of climate change regulations.

Table 3: Climate Change Regulations.

Regulation	**Gazette No**	**Gazette Date /Commencement date**
National Climate Change Response White Paper	-	19 October 2011
Carbon Tax Act	42483	23 May 2019
Carbon Tax Bill	-	2018
Draft Regulations on the Carbon Offset	-	19 June 2016
Climate Change Bill	41869	8 June 2018

2.3 Legislative Context Interlinking Air Quality and Climate Change

After consideration of the link between the management of air quality and climate change, the DEA published multiple regulations under NEM: AQA. These regulations are set out to address both the management of air quality and climate change. The table below outlines the list of the regulations addressing management of air quality and climate change.

Table 4: Air Quality and Climate Change Regulations

Regulation	Gazette No	Gazette Date
Regulations regarding the phasing-out and management of ozone-depleting substances	37621	08 May 2014
Declaration of Greenhouse Gases as Priority Air Pollutants	40996	21 July 2017
Amendment of National Pollution Prevention Plans Regulations	41642	22 May 2018
National Greenhouse Gas Emission Reporting Regulations	40762	03 April 2017

The second generation WCDM AQMP, was further informed by the district municipality and local municipalities' programs and By-laws.

2.4 WCDM programs, plans and By-laws

- West Coast District Municipality Integrated Transport Plan, 2015-2020.
- West Coast District Municipality Integrated Developmental Plan (IDP), 2017-2022.
- West Coast District Municipality Air Quality Management By-law, 6 September 2013.

2.5 Local Municipalities Programs, Plans and By-laws

- Matzikama Municipality Integrated Development Plan, 2012-2017.
- Bergrivier Municipality Integrated Development Plan, 2017-2022.
- Cederberg Municipality Integrated Development Plan, 2017-2022.
- Saldanha Municipality Integrated Development Plan, 2017-2022.
- Swartland Municipality Integrated Development Plan. 2017-2022.
- Saldanha Bay Air Quality By-law, 09 April 2018.
- Bergrivier Municipality Air Pollution Control By-law,6 September 2013.
- Swartland Municipality Air Quality By-law 22 May 2015.

3 BASELINE ASSESSMENT

A baseline air quality assessment was undertaken to assess and evaluate the current air quality status of the West Coast District Municipal area. The baseline assessment gave an overview regarding the implementation of the strategic interventions as set in AQMP 2011. This overview aided in identifying any gaps that still exist, while acknowledging the progress made in terms of the implementation of AQMP 2011. The baseline assessment informs the decisions on the need for further and more advanced focus towards the air quality management planning to be undertaken by WCDM and the five local municipalities.

3.1 Geography and Demographics

3.1.1 Area Description

The West Coast District Municipality is a Category C municipality located in the Western Cape Province. The municipalities adjacent to the West Coast District are the Namakwa District Municipality to the north and north-east, City of Cape Town to the south and Cape Winelands District Municipality to the south-east. It is also bordered by the Atlantic Ocean to the west. It is comprised of five local municipalities: Swartland, with Malmesbury as the administrative centre; Bergrivier, with Piketberg as the administrative centre; Matzikama, with Vredendal as the administrative centre; Cederberg, with Clanwilliam as the administrative centre; and Saldanha Bay, with Vredenburg as the administrative centre. Moorreesburg is the seat of the district (municipalities.co.za. 2019).

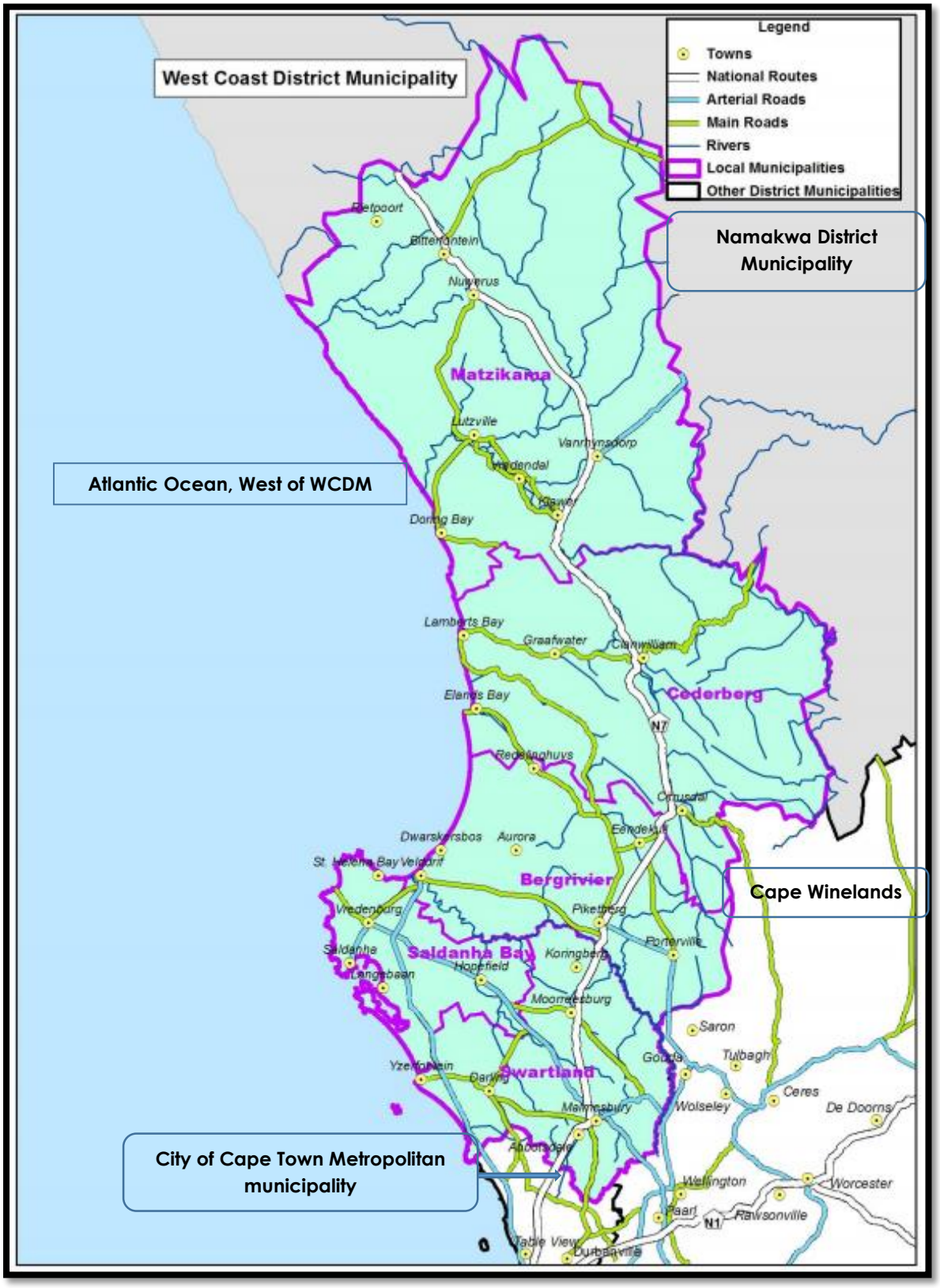


Figure 2: Locality Map of the WCMD and the five local municipalities (WCDM IDP, 2017-2022).

Swartland Municipality

Figure 3: Swartland Municipality

The Swartland Municipality is the southernmost municipality in the West Coast District of the Western Cape. The municipal area is 3 700 km^2, and consists mainly of farmlands, natural areas and coastal areas. The main towns and settlements in the municipal area are: Malmesbury, Moorreesburg, Darling, Yzerfontein, Riebeek West, Riebeek Kasteel, Koringberg, Ruststasie, Ongegund, Riverlands, Chatsworth, Kalbaskraal and Abbotsdale. The Swartland Municipality is bordered by the City of Cape Town to the south, Drakenstein Municipality, Cape Winelands District (south-east), Bergrivier Municipality, West Coast District (north) and Saldanha Bay Municipality, West Coast District (north-west) (Swartland Municipality IDP, 2017-2022).

Bergrivier Municipality

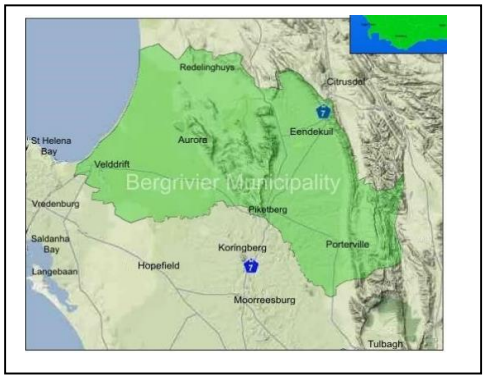


Figure 4: Bergrivier Municipality

The Bergrivier Municipality is bordered by Cederberg Municipality to north, Saldanha Bay Municipality to the west, Swartland Municipality to the south and by Drakenstein and Witzenberg Municipalities. The municipality covers an area of approximately 4 407 km^2. It encompasses major 9 urban settlements, approximately 40 km coastal line and a vast rural area. The main urban settlements include: the Municipality are Piketberg, the administrative seat of the municipality, Porterville, Velddrif, (which includes Port Owen, Laaiplek and Noord Hoek), Dwarskersbos, Eendekuil, Aurora, Radelighuys, Goedvertcht and Wittewater (Bergrivier Municipality IDP, 2017-2022).

Saldanha Bay Municipality

The Saldanha Bay Municipality (SBM) covers an area of 2 015 km² (approximately 166 565,48 hectares) and has a coastline of 238km. In total 6.5 % of the geographical land within the municipality comprises of urban land and 93.5 % rural land. Overall, Saldanha Bay municipality constitutes 6.4 % of the entire West Coast geographical land making it the smallest municipal area in the district. The area includes the towns of: Hopefield, Langebaan, Saldanha, Jacobsbaai, Vredenburg, Paternoster and St Helena Bay. The administrative office of SBM is located in Vredenburg, with satellite offices in Hopefield, St Helena Bay, Paternoster, Saldanha and Langebaan (Saldanha Bay Municipality IDP, 2017-2022).

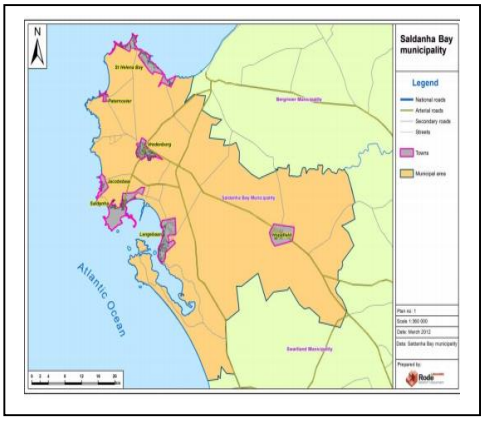


Figure 5: Saldanha Bay Municipality

Cederberg Municipality

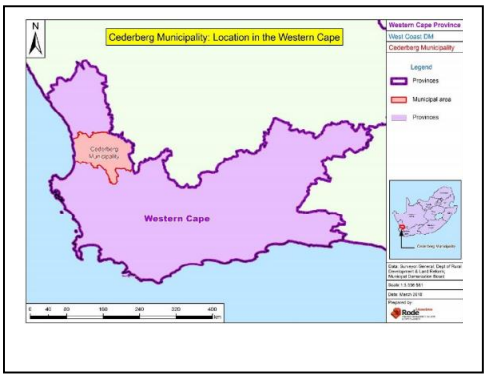


Figure 6: Cederberg Municipality

The jurisdiction of the Cederberg Municipality covers an area of 8 007 km², which constitutes 26 % of the total area (viz. 31 119 km²) of the West Coast District Municipality. The Cederberg Municipality is located in the northern segment of the district and wedged between the Matzikama municipality (to the north) and the Bergrivier municipality (to the south). It is bordered to the east by the Hantam municipality in the Northern Cape Province. Clanwilliam is the main town and is located approximately in the middle of the municipal area. Other settlements in the municipal area include: Citrusdal, Graafwater, Leipoldtville, Wupperthal, Algeria, Leipoldtville, and the coastal towns of Elands Bay and Lamberts Bay (Cederberg Municipality IDP, 2017-2022).

Matzikama Municipality

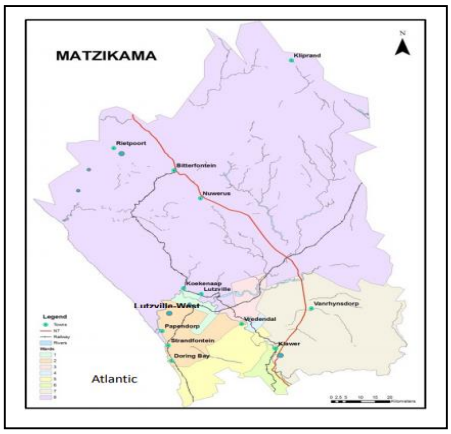


Figure 7: Matzikama Municipality

The Matzikama Municipality is a category B municipality proclaimed in terms of Provincial Notice No 481/2000 of September 2000. As of the last local government elections in May 2011, the previous district managed area to the north (shown in purple Fig. 7) of Matzikama has been incorporated as per notice in the Provincial Gazette Extraordinary 6825. As a result, the geographical area of the municipality increased from roughly 8000 km^2 to slightly less than 13000 km^2. The municipal area comprises 17 towns and or villages that are divided into 8 wards. These towns and villages include: Doring Bay, Strandfontein, Papendorp, Ebeneser, Lutzville-West, Lutzville, Koekenaap, Vredendal, Klawer, Vanrhynsdorp, Nuwerus, Biaerfontein, Kliprand, Put-se-Kloof, Rietpoort, Molsvlei and Stobraal. Matzikama is characterized by an arid environment but is served by a life-giving arterial; namely the Olifants River. The river with its associated canal system supports the agricultural sector that is mainly built around viniculture. Apart from the newly incorporated area to the north as well as the towns of Doring Bay, Strandfontein and Vanrhynsdorp the rest of the population is concentrated along the river and canal system (Matzikama Municipality IDP, 2012-2017).

3.1.2 Population

The population statistics of the WCDM were drawn from the Census 2011 and community survey 2016 results. The results were compared with the numbers currently reflected in the AQMP 2011. The numbers reflected in the AQMP 2011 were based on the Census 2001 and community survey 2007. The AQMP 2011 reflect the populations statistics of WCDM as 282 672 (census, 2001) and 286 751 (community survey, 2007). In comparison to 2001 population, the current population of WCDM stands at 391 766 (census, 2011) and 436 403 (community survey, 2016). Considering the census 2011 and community survey 2016, this indicates a population growth rate of 2.4 % for the WCDM. The table below gives a comparison of population numbers between census 2011 and community survey 2016 for the WCDM, which accounts for 6.9 % the total population of the Western Cape Province.

Table 5: Population distribution in the WCDM by local municipality: WCDM Census 2011 and Community Survey 2016 (STATSsa, 2016).

Local Municipality	Census 2011	Community Survey 2016
Saldanha Bay	99 193	111 173
Swartland	113 762	133 762
Bergrivier	61 897	67 474
Cederberg	49 768	52 949
Matzikama	67 141	71 045
Totals	**391 766**	**436 403**

3.2 Economic Drivers

The WCDM has the third largest non-metro district economy in the Western Cape Province. It is home to one of the deepest harbours in South Africa, Port of Saldanha. The SBM area houses one of the largest in South Africa industrial development zones (Saldanha Bay, IDZ), which contributes significantly to the local economy. The West Coast District Municipal area possesses a variety of tourist attractions including: the coastal lines, grain fields of the Swartland Municipal area, nature reserves, rooibos tea growing, Bushman paintings, water sports, fishing, flowers, fynbos, cycling tours and the natural beauty of the whole region (PT, 2015b). The main economic drivers of the West Coast District Municipal area can be categorized into primary, secondary and tertiary sectors.

- ✓ **Primary sector**
  - Agricultural, forestry and fishing.
  - Mining and Quarrying.
- ✓ **Secondary sector**
  - Steel manufacturing.
  - Electricity, shale, oil and gas, water.
  - Construction.
- ✓ **Tertiary sector**
  - Wholesale, retail trade catering and accommodation.
  - Transport, storage and communication.

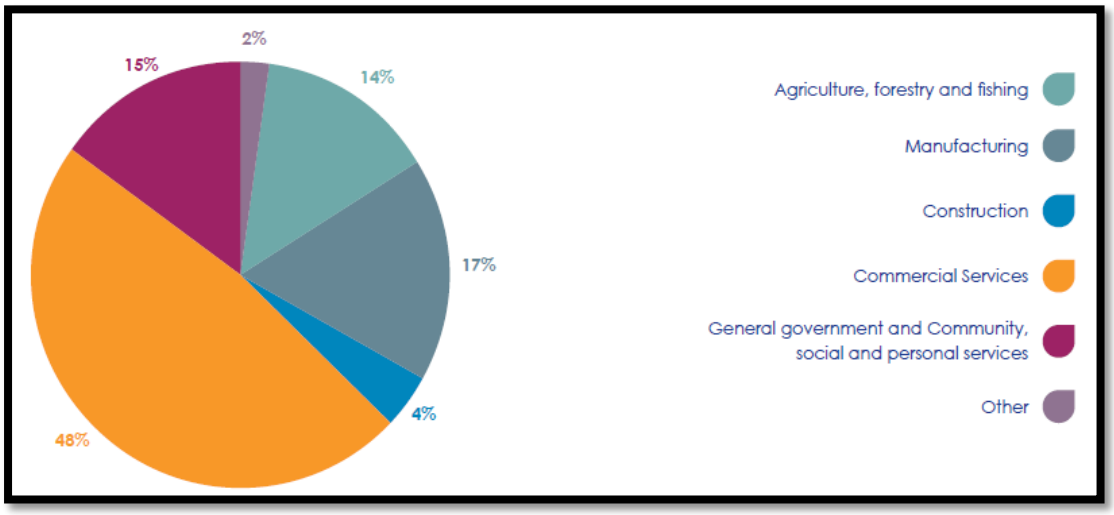


Figure 8: Sectoral composition of the WCDM (Provincial Treasury. Municipal Economic Review and Outlook. Western Cape Government, 2015)

Swartland Municipality

The main economic drivers of Swartland Municipal area's GDP include primary sector (agriculture, forestry, fishing, mining and quarry), secondary sector (manufacturing, commercial services, construction and government and community, social and personal services) and tertiary sector (trade, catering and accommodation, transport storage community and personal services, commercial services and government services). The sectors that contributed the most to the Swartland's GDP in 2016 are manufacturing (22.9 %), wholesale and retail trade, catering and accommodation (17.5 %) and agriculture, forestry and fishing (15.9 %). Overall, between 2006 and 2016, the economic sectors in Swartland grew positively in terms of GDPR. A notable exception to the growth are the electricity, gas and water sectors, that sectors that experienced a negative growth of -1.7 % in 2016. (Swartland Municipality IDP, 2017-20122).

Bergrivier Municipality

The Bergrivier Municipal area is the third largest local economy within the West Coast District Municipal area with gross domestic product of R 4 002.04 million in 2016. The main economic drivers within the Bergrivier are the commercial sector (47 %), followed by agriculture, forestry and fishing (16 %). The government, community services and manufacturing also contribute significantly to the economy of Bergrivier (11 % and 16

%) respectively. The above statistics indicate that the commercial services contributes 50 % towards the economy of Bergrivier (Bergrivier Municipality IDP, 2017-2022).

Saldanha Bay Municipality

The main economic drivers of Saldanha Bay Municipal area's GDP include agriculture, forestry and fishing in the primary sector with manufacturing, commercial services, construction and government and community, social and personal services in the secondary sector and no tertiary sector. The primary sector contributed 15.2 % towards the municipal area's GDP in 2015 whilst the 84.9 % was mainly from the secondary sector. At 41.0 %, commercial services contributed the most towards the municipal area's GDP (Saldanha Bay Municipality IDP, 2017-20122).

Cederberg Municipality

The economic activities in the Cederberg Municipality are dominated by agriculture and fishing (primary sector), manufacturing (secondary sector) and the following tertiary sector activities: wholesale and retail trade, catering and accommodation, and transport, storage and communication. The importance of the agriculture, forestry and fishing subsectors reflects the rural character of the area and the need for associated service infrastructure (e.g. roads, irrigation canal). The table below includes the four largest economic subsectors in the municipality with associated contributions.

Description (subsector)	Subsector contribution in 2016: Gross value added at basic prices (R millions current prices)
Agriculture, forestry and fishing	765
Manufacturing	709
Wholesale and retail trade, catering and accommodation	482
Transport, storage and communication	420

Figure 9: Economic sector contribution within the Cederberg Municipal area (Cederberg Municipality IDP, 2017-2022).

Matzikama Municipality

The main economic drivers of Matzikama Municipal area's GDP include primary sector (agriculture and mining), secondary sector (manufacturing, electricity and construction) and tertiary sector (trade, transport, finance and community services). The agriculture sector is the largest in the Matzikama Municipality accounting for R 738 million or 25.3 % of the total GDP in the area. The Community services contributes the second most to the GDP of Matzikama Municipality with 15.7 %, followed by the trade sector with 13.9 %. The sector that contributes the least to the economy of Matzikama Local Municipality is the construction sector with a contribution of 3.35 % (Matzikama Municipality IDP, 2012-2017).

3.3 Meteorology and Climate Description

Meteorological data from the monitoring and weather stations within the West Coast District Municipal area was assesses to give an indication of the baseline climate. The weather stations are shown on the table below.

Table 6: Meteorological Stations within the West Coast District Municipal area, 2018

Local Municipality	Station	Data Assessed	Data Assessed
Swartland	Malmesbury	Wind direction, wind speed, temperature and rainfall	2018
Saldanha Bay	St Helena	Wind direction, wind speed, temperature and rainfall	2018
Bergrivier	Porterville	Temperature and rainfall	2018
Cederberg	Clanwilliam	Temperature and rainfall	2018
Matzikama	Vredendal	Wind direction, wind speed, temperature and rainfall	2018

Temperature

Average temperatures across the five stations shown above indicate that the warmest temperatures are observed between December and February, while lowest temperatures are observed in June or July.

Average temperatures across the West Coast District Municipal area are generally mild. The coolest temperatures were recorded in July across all five stations (Table 7).

Table 7: Monthly average Temperature (°C) within the West Coast District Municipal area during 2018 (SAWS, 2019**).**

Stations Name	Jan	Feb	Mar	April	May	June	Jul	Aug	Sep	Oct	Nov	Dec
Malmesbury	21.8	21.9	20.6	18	14.9	12.8	11.9	12.6	14.1	16.6	18.9	20.5
St Helena	22.8	22.9	21.9	19.3	16.7	14.4	13.7	14.9	16.6	18.7	20.4	22
Porterville	23.6	23.5	22	18.1	14.7	12.5	11.6	12.6	14.5	17	20.3	22.3
Clanwilliam	24.4	24.4	22.6	19.2	15.3	12.6	11.8	13.1	15.1	17.9	21.1	23
Vredendal	22.5	22.5	21.9	19.8	16.5	14.5	13.7	14.2	16	18	20.1	21.3

Rainfall

Based on the average rainfall recorded at the five stations shown above indicate that the wettest months are observed between May and June, while the driest months are observed between November and March. A monthly average of 30 mm rainfall was reported within the West Coast District Municipal area. The lowest rainfall was reordered in Vredendal, however there is still an indication of increased rainfall recorded between June and August.

Table 8: Monthly average Rainfall (mm) within the West Coast District Municipal area (SAWS, 2019).

Stations Name	Jan	Feb	Mar	April	May	June	Jul	Aug	Sep	Oct	Nov	Dec
Malmesbury	12	13	1	41	70	79	78	69	45	31	19	15
St Helena	5	6	9	28	34	53	47	33	24	14	12	7
Porterville	8	16	17	40	73	72	65	70	31	31	18	14
Clanwilliam	6	9	14	28	47	56	48	45	22	19	11	10
Vredendal	1	3	7	17	27	31	29	20	11	10	8	6

Wind

Annual measurements of wind speed and direction for 2018 were assessed from the DEA&DP monitoring stations at St Helena Bay and Malmesbury, as reported on SAAQIS. The wind rose plots indicate strong prevailing wind from north of north-east in Malmesbury and from the south-west in St Helena Bay.

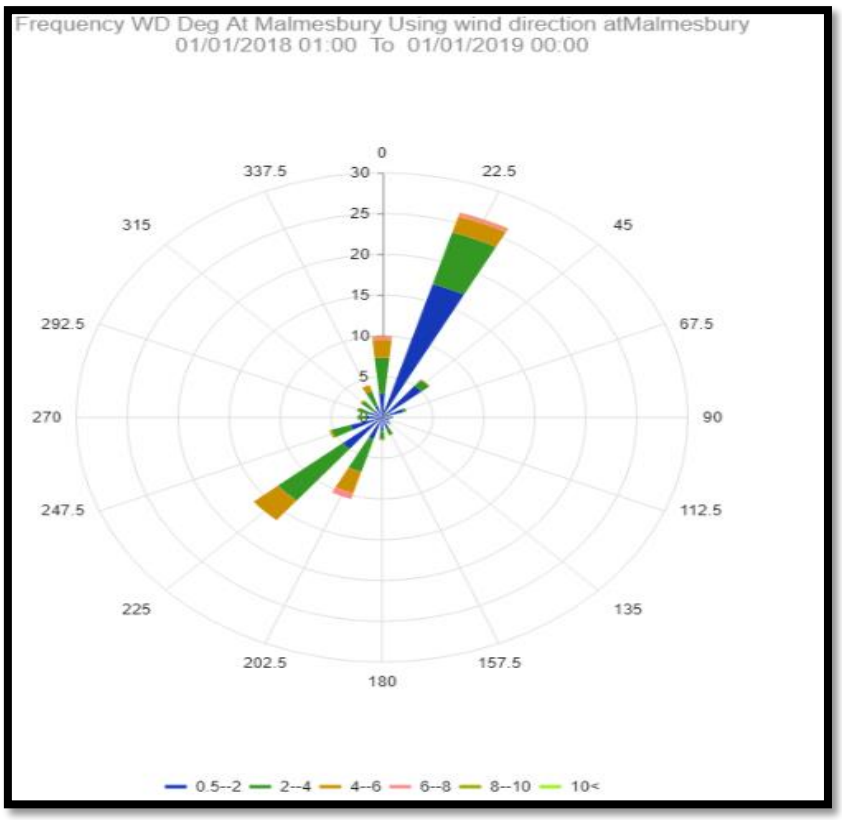


Figure 10: Wind Rose (m/s) at St Helena Bay Monitoring Station-2018 (https: //saaqis.environment.gov.za/Report/PollutantRose)

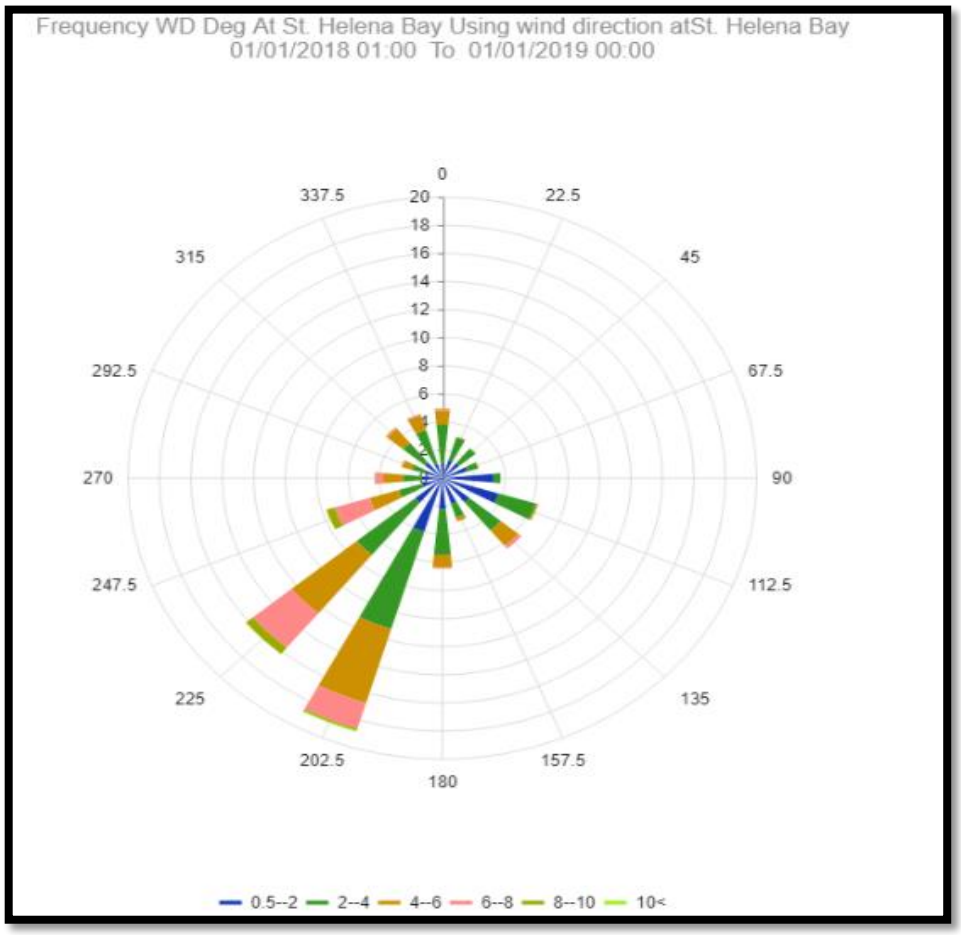


Figure 11: Wind Rose (m/s) in St Helena Monitoring Station Bay-2018 (https: //saaqis.environment.gov.za/Report/PollutantRose

3.4 Assessment of Air Quality Management

This section evaluates the progress made towards the implementation of the strategies outlined in the AQMP 2011 within the WCDM. This section further gives an assessment in terms of compliance with regards to the air quality standards, noise and offensive odours.

3.4.1 Air Quality Management Officials

The AQMP 2011 highlighted that the WCDM and the five municipalities lacked AQOs. As a result, efforts have been made to address this with a number of positions being opened up. The table below reflects the AQO positions within the West Coast District Municipal area:

Table 9: AQO Appointments within the WCDM and Five Local Municipalities

Municipality	Air Quality Designations
Saldanha Bay	Manager: Support Services , Infrastructure Planning Services
Bergrivier	Environmental Planning Management Officer
Swartland	Manager Occupational/Environmental Health
Cederberg	Environmental Officer
Matzikama	Community Development Officer
WCDM	Manager Air Quality
	Senior Air Quality Officer

The roles and responsibilities of the above mentioned air quality management functions of the municipalities are in conjunction with constitution of South Africa of 1996 and the National Framework (2018). As a result the municipalities are tasked with responsibilities in line with the level of government. These responsibilities are outlined below.

- **District Municipalities:**

Metropolitan and District Municipalities are charged with implementing the atmospheric emission licensing system in terms of Chapter 5 of NEM: AQA. For this purpose the Metropolitan and District Municipalities must perform the functions of licencing authority, as set out in this chapter. The AEL tasks relate only to Section 21 Listed Activities and Section 23 Controlled Emitters.

Local Municipalities:

Section 84(2) of the National Framework for Air Quality Management (2017) then states that local municipalities have the functions and powers in Schedule 4 Part B and Schedule 5 Part B as listed in the Constitution, excluding those functions and powers vested in terms of section 84(1) in the District Municipality in whose area it falls.

The DEA manual for air quality management planning (2012) makes provision for other parties such as research institutions, consultants and industry to form part of the air quality management process. DEA&DP, WCDM and Saldanha Bay Local Municipality undertake ambient air monitoring.

3.4.2 Governance

This section assesses the corporative governance between authorities and industries, ensuring the compliance and enforcement of legislated air quality management requirements. Such compliance and enforcement tools include establishment of air quality working groups including enforcement task teams (EMIs) and By-laws.

✓ **Working Groups**

The 2017 National Framework for Air Quality Management in the Republic of South Africa (2018) states that every province needs to establish a Provincial–Municipal Air Quality Officers' Forum and to convene quarterly forum meetings. In order to facilitate the efficient, effective and cohesive functioning of these forums, the National Department provided all provincial AQOs with generic terms of reference for such forums. The following working groups have been established in WCDM.

- **West Coast Air Quality Working Group (WCAQWG):** This working group is chaired by the WCDM Manager Air Quality and comprises of representatives from industry and authorities within the area of jurisdiction of the West Coast District Municipality.
- **Industrial Stakeholder's Forums:** As per AEL conditions it is required from industry to establish communication forums with members of public they impact on. The licensing authority as well as the AQO of the local municipality, in whose area the industry is operating, attends such meeting.
- **Joint Municipal Air Quality Working Group (JMAQWG):** In order to improve communication and cooperation between District and Local Municipal Air Quality Officers a communication platform has been established on 17 February 2015. In view of the above, a memorandum of understanding (MoU) has been established.

✓ **Environmental Management Inspectors**

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

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

By-laws

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

Section 156(2) of the Constitution of the Republic of South Africa, (1996) states: "A municipality may make and administer By-laws for the effective administration of the matters which it has the right to administer".

To effect the implementation of AQMP 2011 strategies, the WCDM promulgated their Air Quality Management By-law in 2013. The By-law addresses matters of air quality management such as appointment of AQOs and EMIs, monitoring requirements for both section 21 and 23 activities, compliance and enforcement. The table below lists the gazetted By- laws in the WCDM and the five municipalities.

Table 10: List of By-laws in WCDM and the five municipalities.

Municipality	By-law	Gazette No.	Gazette Date
WCDM	Air Quality Management By-law	7170	06 September 2013
Saldanha Bay	Air Quality By-law	7912	09 April 2018
Bergrivier	Air Pollution Control By-law	7170	6 September 2013
Swartland	Air Quality By-law	7394	22 May 2015
Cederberg	None to date		
Matzikama			

Complaints Management.

The WCDM and the five local municipalities investigate and record complaints when received. At times the public complain directly to industry. Subsequently, industry submits complaint reports to the licensing authority and the local municipality. The table below outlines the general types of complaints received by the WCDM.

Table 11: Types of Complaints Received by WCDM.

Complaint/Concern	Suspected Source
Smoke / Emissions	• Farmlands burning • listed activities • Process upset
Dust	• Spillage of particulate matter • Windblown dust from stockpiles • Windblown dust from open trucks • Ship loading activities • Material offloading • Material reclaiming • Open air storage of material • Unpaved roads • Manganese ore handling
Odours	• Sewage works • Fishmeal industries
Staining of buildings, vehicles and infrastructure	• Iron ore dust • Manganese ore dust

A database of records of complains from the local municipalities were not available during the review of AQMP 2011. Below is an overview of types complaints gathered during the public participation process per local municipality.

Table 12: Types of complaints Received by the Local Municipalities

Municipality	Complaint/Concern	Suspected Source
Saldanha Bay	Red Dust	• From the iron ore facilities
	Dust	• Stockpiles near the harbors prior to being transported • Non listed activities • Unregulated access roads to the harbors • Storage, handling and transporting of Manganese • Sand mining and quarries • Road and construction • Agricultural activities • Railways and on road transportation(trucks)

	Odour	• From the fishmeal factories • Sewage treatment works and spillages • Spillage of sewage into estuaries
	Spillages	• Staining of red iron ore dust • Spillages of materials from uncovered trucks
	Vehicles Emission	• Emissions from petrol and diesel vehicles
	Staining of buildings, vehicles and infrastructure	• Iron ore dust • Manganese ore dust
	Noise	• Industrial operations
Bergrivier	Spraying of pesticides near residential area	• Farming
	Noise pollution and vibration	• Mechanisms used during farming activities • Industries • Overnight idling of trucks
	Odour	• Fishmeal factory
Swartland	Dust	• Grain silos and • Mining activities
	Noise	• Industries • Clubbing activities
		• Places of worship
	Agricultural activities	• Spraying of pesticides near residential areas
Cederberg	Dust	• From road networks • Construction
	Odour	• Waste dumping and sewage spillages
	Smoke	• Burning of waste and tyres
	Agricultural activities	• Spraying of pesticides near residential areas
Matzikama	Dust	• From road networks • Windblown dust from trucks in transit
	Noise	• Overnight idling of trucks in residential areas

3.5 Air Quality Management tools

Air Quality management tools are those tools that can be adopted as a means of tracking and managing the current air quality situation within the WCDM and local municipalities. The situational analysis of air management tools is assessed in detail below.

3.5.1 Emissions source inventories

The WCDM emissions inventory list gives a quantifiable number of the different emission sources including section 21 Listed Activities, and section 23 Controlled Emitters operating on the facilities holding AELs. The local municipal inventory list will

include non-listed activities. Below is a list of emissions sources as identified in the West Coast District Municipal area.

- ***Section 21 listed industrial operations,***

A total of 21 Listed Activities as per section 21 of NEM: AQA were identified within the WCDM (Table 13). The distribution of the geographical extent of the emissions source per listed category per local municipality can be found in Figure 12.

Table 13: Total Number of Listed Activities per Local Municipality.

Local Municipality	**Totals**
Saldanha Bay	12
Swartland	3
Bergrivier	2
Matzikama	4
Cederberg	0
Totals	**21**

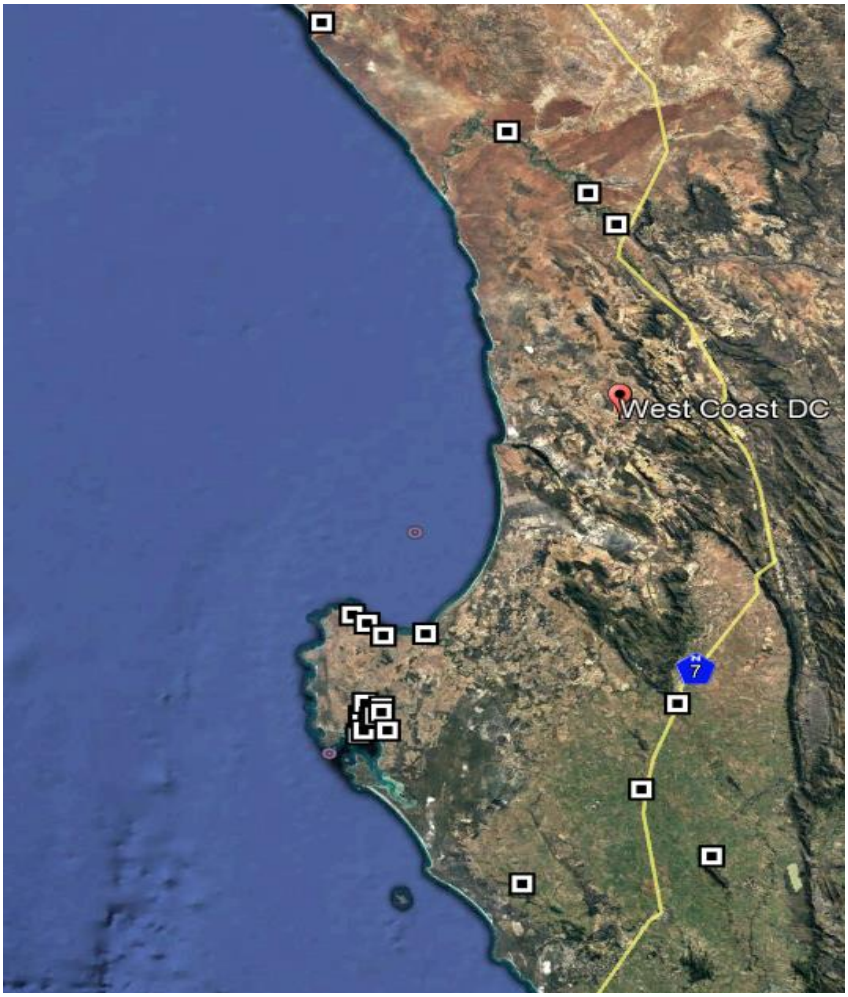


Figure 12: Emissions Source Inventory List as per Listed Activities (WCDM State of Air Quality, 2017).

Non Listed Activities

Local municipalities are mandated by NEM: AQA and their By-laws to undertake the management and compliance monitoring of non-listed activities. During the compilation of this document, no inventory list of non-listed activities was available. Below is the list of potential non listed emission source inventory.

- ***Agricultural activities***

Agricultural activities are one of the main drivers of the WCDM economy. Emissions from agricultural activities such as pesticides spraying and dust generation during ploughing and harvesting seasons should be quantified.

- ***Biomass burning (farmlands and veld fires),***

The burning of farmlands occurs in a controlled manner particularly in April and May once a permit has been obtained from the West Coast District Municipal area. The local municipal fire marshal and AQO are also informed once the permit is issued.

- ***Domestic fuel burning (particularly, wood and paraffin),***

Domestic fuel burning refers to fuel combustion for energy use such as paraffin, gas and coal in the domestic environments (residential areas). Emissions released form the use of the above mentioned fuels include CO, NO_2 and SO_2, hydrocarbons and inhalable particulates. The Community Survey Report (2016) indicates that around 90 % of WCDM has access to electricity. Data collection on use of fossil fuel is required within the West Coast District Municipal Area. This will aid in computing emission from the use of fossil fuel in domestic setting, thus modelling can be applied.

- ***Mobile source emissions (aircraft, trains and vehicles)***

Tailpipes and engines can emit various pollutants into the atmosphere including SO_2, NOx, PM_{10} and CO. The concentrations of these pollutants are regulated in South Africa through the NAAQS. Emissions from mobiles sources can be summarized in terms of public, commercial and private transport. According to the WCDM Integrated Transport Plan 2015-2020, motorized means of transport accounts for 51.3 % of the total transport, while the remaining 42.7 % is composed of mainly non-motorized transport.

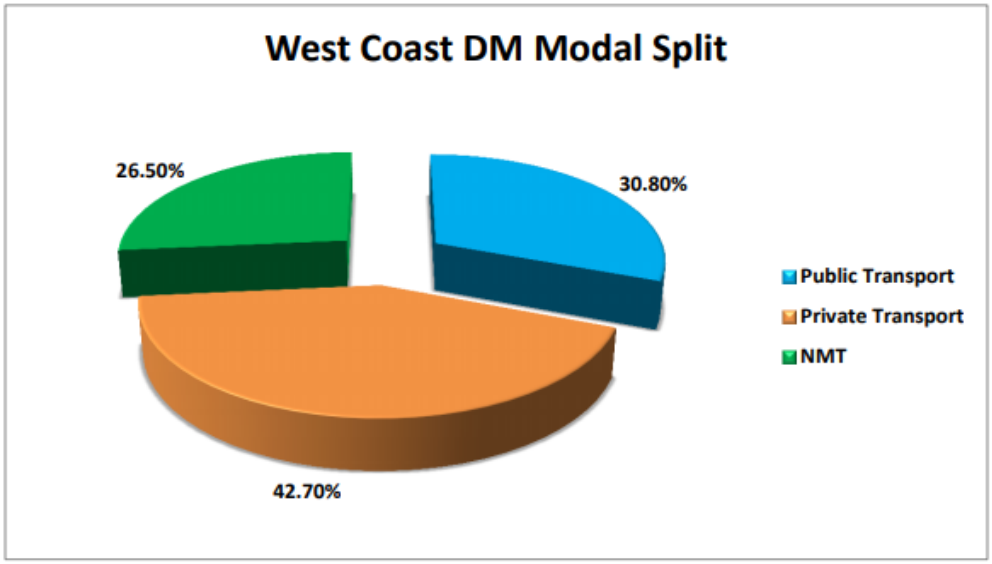


Figure 13: West Coast District Municipal area transportation model (WCDM Integrated Transport Plan 2015-2020).

In order to quantify the emissions from tailpipe sources, vehicle emissions testing and dispersion modelling should be carried out. This will require thorough traffic counts of vehicles across all roads.

- ***Waste treatment and disposal (landfills and waste water treatment facilities),***

Landfill emissions due to decomposition consist primarily of CO_2, methane (CH_4), and non-methane volatile organic compounds. Due to limited data availability, an estimate of emissions was not computed for the purpose of this assessment. Currently, there are reported cases of illegal landfill burning activities. In the event where waste burning does occur, the local municipalities will address the issue. Waste water treatment facilities are likely to result in emissions of CO_2, methane (CH_4), non-methane volatile organic compounds; and potentially odorous compounds such as hydrogen sulphide (H_2S) and ammonia (NH_3).

- ***Additional fugitive dust sources***

Fugitive dust sources have been identified as mining operations, material stockpiles and handling, construction sites and unpaved roads near residential areas. These sources contribute to the cumulative effect of airborne particulate matter within the respective areas.

The DEA&DP computed estimates emissions inventory in terms of kg/annum for the Western Cape Province. The results were presented in the AQMP 2016 for WCDM as outlined on the table below.

Table 14: Estimated Emissions from Section 21 Listed Activities in the WCDM (WC AQMP 2016).

WCDM	PM_{10}	SO_2	NO_X	VOC	CO	CO_2	CH_4	Benzene
Section 21 Listed Activities	1 528 822	7 694 044	6 733 757	627 991	1 335 007	-	-	-
Non Listed Activities	708 328	7 389 887	3 035 974	44 362	450 193	541247 608	4 484	1 521

Given the results above, it is evident that the emissions estimates of SO_2, NO_X PM_{10} and CO were the highest in West Coast District Municipal area; making them pollutants of concern.

3.5.2 Air Quality Monitoring Networks

Municipalities are required as per section 8 of NEM: AQA to carry out ambient air quality monitoring. There are currently five ambient air quality monitoring stations within the West Coast District Municipal area found at: Malmesbury, St Helena, Velddrif, Vredenburg and Saldanha Bay. The monitoring stations are managed by Western Cape Province (DEA&DP), WCDM and Saldanha Bay Municipality. In addition to the five stations are the seven dust monitoring stations commissioned by the Saldanha Bay Local Municipality. The Velddrif station is currently facilitated and managed by the Bergrivier Municipality under a Memorandum of Understanding (MoU) with WCDM. Additional monitoring is done by industries as part of their compliance with the conditions of the AELs.

Table 15: Monitoring stations in the West Coast Municipal area.

Station Manager	Station	Air Quality parameters measured	Measurement period	Data Processed
Province	St Helena Bay	H_2S, CO_2	2011-2018	2014-2015
	Malmesbury	NO_x, SO_2, CO, O_3, PM_{10}	2011-2018	2014-2015
WCDM	Velddrif	H_2S	2017-2018	2017-2018
Saldanha Bay Local municipality	Vredenburg	NO_2, SO_2, O_3, $PM_{2.5}$, PM_{10}	2017-2018	2018
	Saldanha Bay	NO_2, SO_2, O_3	2017-2018	2018

Table 16: Dust fallout monitoring stations in the Saldanha Bay Municipality.

Monitoring Station	Latitude	Longitude	Measurement period	Data Processed
Vredenburg Electricity Dept.: SBM-06	32° 54' 27.2" S	17° 59' 13.7" E	2014-2019	2015-2016 & 2017-2019
Vredenburg Reservoir: SBM-05	32° 54' 30.3"S	17° 59' 12.9" E	2014-2019	2015-2016 & 2017-2019
Juffroushoogte: SBM07	32° 56' 13.8" S	18° 04' 33.6" E	2014-2019	2015-2016 & 2017-2019
Airport: SBM-01	32° 57' 34.5" S	17° 58' 12.5" E	2014-2019	2015-2016 & 2017-2019
Saldanha AQM Station: SBM-02	33° 00' 41.0" S	17° 56' 18.5" E	2014-2019	2015-2016 & 2017-2019
Blue Water Bay: SBM-04	32° 59' 43.8" S	17° 58' 24.7" E	2014-2019	2015-2016 & 2017-2019
Curro School: SBM-03	33° 02' 16.2" S	18° 02' 59.9" E	2014-2019	2015-2016 & 2017-2019

Below is an outline of the representation of monitoring network as commissioned by local municipalities.

- **Saldanha Bay Local Municipality**

Saldanha Bay is actively conducting ambient air quality monitoring within the WCDM. The stations at Saldanha Bay and Vredenburg were commissioned in July 2014 to monitor criteria pollutants: NO_2, SO_2, O_3, $PM_{2.5}$ and PM_{10}. In addition to the two ambient air stations, there are seven dust fallout monitoring stations. The dust fallout monitoring network was established in July 2014 (Table 15 and 16). Data from the monitoring stations is reported to the Saldanha Bay Local Municipality on a monthly basis.

- **Bergrivier Local Municipality**

The WCDM commissioned an H_2S monitoring stationing Velddrif in June 2014 (Table 14). The District entered into a MoU with Local Municipalities to facilitate ambient air monitoring initiatives and as a result, the Velddrif station is actively managed by the Bergrivier Local Municipality. The results from this station are reported to both the WCDM and Bergrivier Municipality on monthly basis.

- **Swartland Local Municipality**

The Swartland Municipality has not commissioned any monitoring station under the management of the municipality. There is currently one ambient air monitoring station located in Malmesbury commissioned and managed by DEA&DP. This station has been in operation since 2009.

- **Cederberg Local Municipality**

Currently no monitoring stations have been commissioned in this local municipality. It is suggested that a service provider be appointed to conduct passive monitoring within the Cederberg municipality. There are no section 21 listed activities in the Cederberg municipality, however, there are definitely non listed activities that need to be monitored within Clanwilliam and Lambert's Bay. It is suggested that passive H_2S monitoring be conducted in Lambert's Bay, considering the concerns raised regarding the smell linked to a factory in the town.

- **Matzikama Local Municipality**

Currently no monitoring stations have been commissioned in this local municipality. It is suggested that a service provider be appointed to conduct passive monitoring within the Matzikama municipality. Four section 21 listed activities have been licensed in the Matzikama municipality. There are non-listed activities that need to be monitored within Doringbaai. Due to the location of municipality within a corridor from the Northern Cape to Saldanha Bay, it is further suggested that the municipality takes an initiative towards vehicle emissions testing.

Given the current monitoring networks in the WCDM, it is evident that there is still more work to be done in installing the monitoring networks to cover all the five local municipalities. A review of current monitoring stations networks is suggested to conform to the monitoring needs of all the five local municipalities. Further provisions should be made for vehicle emissions testing.

3.5.3 Ambient Air Quality Monitoring

This section gives an overview of the current state of measured pollutants parameters from the stations above mentioned stations. The assessment is done per monitoring station and the results are compared to the NAAQS to ensure compliance. Data used

for the baseline assess was acquired from Western Cape Department of Environment Developmental Planning.

Swartland Local Municipality:

- ***Malmesbury Station***

For the purpose of this assessment data from the Malmesbury ambient air monitoring station for the period of 2014 to 2018 was assessed (DEA&DP). The DEA&EP also provided statistical data for the compilation of the tables and figures below. The data capture rate (%) at Malmesbury for 2014-2018 is given in the table below.

Table 17: Data Capture Rate (%) at Malmesbury Monitoring Station (DEA&DP, 2019)

Malmesbury					
Year	**NO_2**	**SO_2**	**O_3**	**CO**	**PM_{10}**
2014	75	62	70	78	76
2015	79	43	82	53	83
2016	63	20	66	72	78
2017	80	33	75	77	26
2018	20	2	77	84	0

The compliance snapshot of the long term trend ambient air quality data in relation to the NAAQS as monitored at Malmesbury shows the compliant status for NO_2, SO_2, O_3, CO and PM_{10}. Given the threshold indicated by the results in Figures 15-18, the average monitoring results lie below the NAAQS threshold.

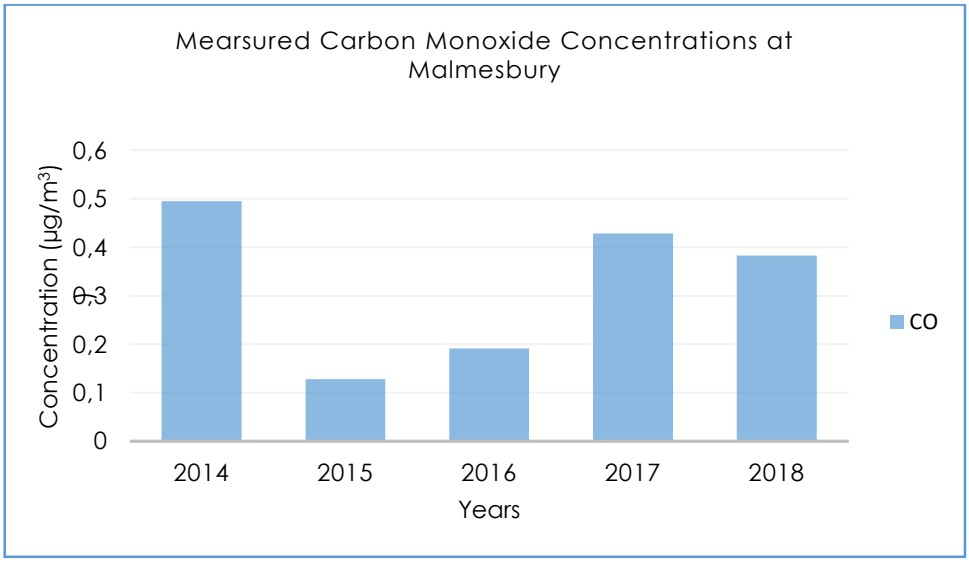


Figure 14: Annual averaged carbon monoxide concentrations at the Malmesbury Station (2014-2018).

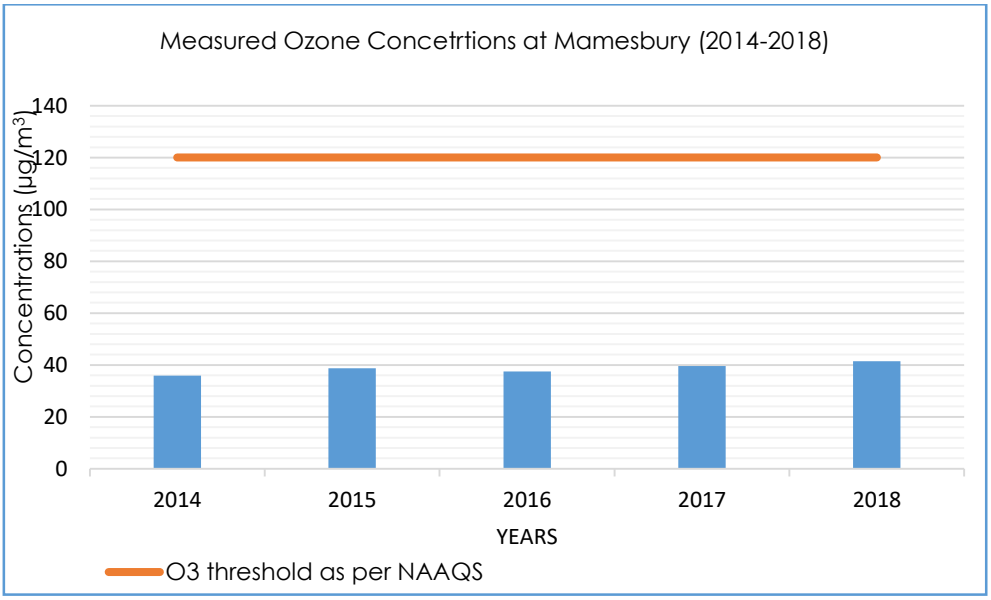


Figure 15: Annual averaged ozone concentrations at the Malmesbury Station (2014-2018).

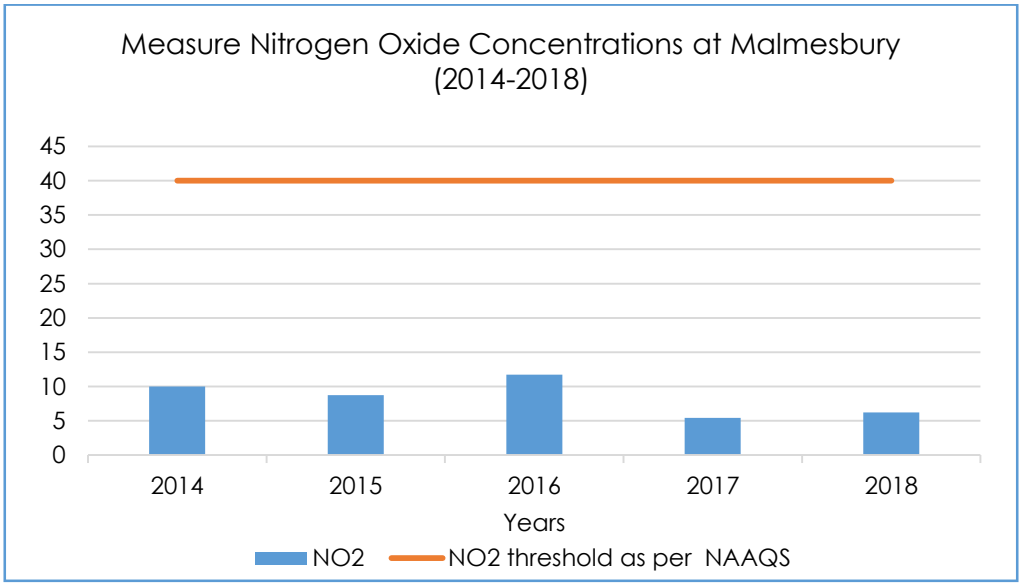


Figure 16: Annual averaged NO_2 concentrations at the Malmesbury Station (2014-2018).

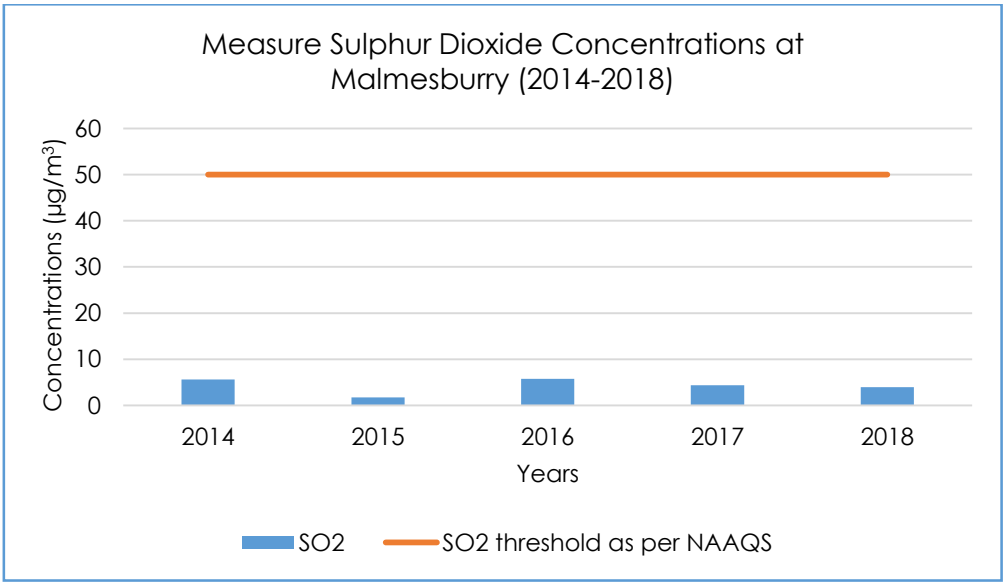


Figure 17: Annual averaged SO_2 concentrations at the Malmesbury Station (2014-2018)

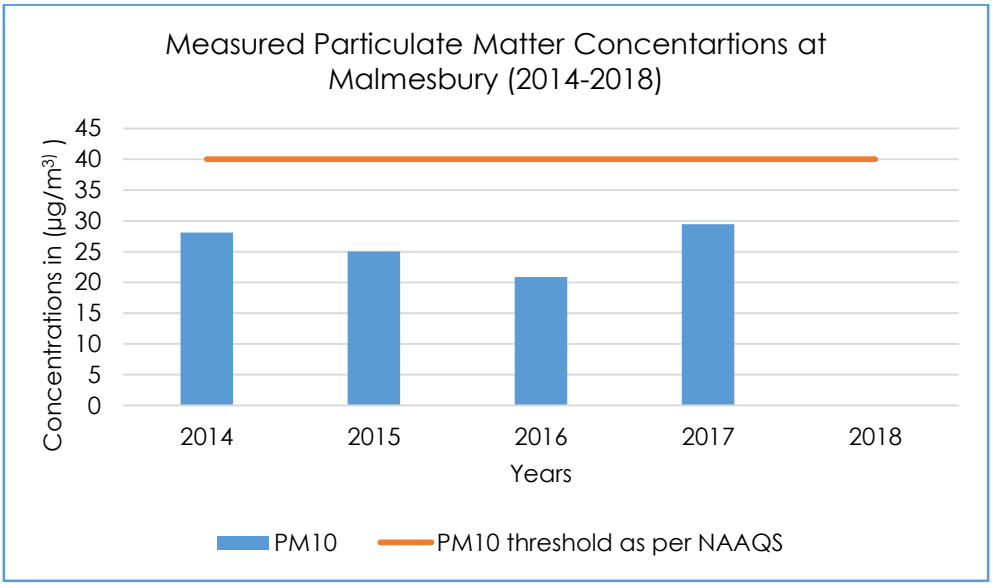


Figure 18: Annual averaged PM_{10} concentrations at the Malmesbury Station (2014-2018).

Saldanha Bay Local Municipality

- ***St Helena***

Data for the St Helena monitoring station is available from 2011 to date. For the purpose of this assessment, data from 2014 to 2018 was assessed. The data capture rate (%) at St Helena for the years 2014-2018 is given in the table below.

Table 18: Data Capture Rate (%) at St Helena Monitoring Station (DEA&DP, 2019)

St Helena		
Year	**H_2S**	**CO_2**
2014	66	99
2015	55	55
2016	0	0
2017	61	66

There are currently no annual National Ambient Air Quality Standards for H_2S in South Africa. The compliance snapshot of the long term ambient air quality trend at St Helena shows compliance with the WHO standards, H_2S and CO_2 (Figures 19-20). The

annual averaged H_2S concentrations at the St. Helena Bay monitoring station showed a steady value of approximately 3 µg/m³, with the highest average values being recorded in 2015. The CO_2 concentrations monitored at St. Helena Bay show a steady increase from an average of 380 ppm in 2015 to 430 ppm in 2018.

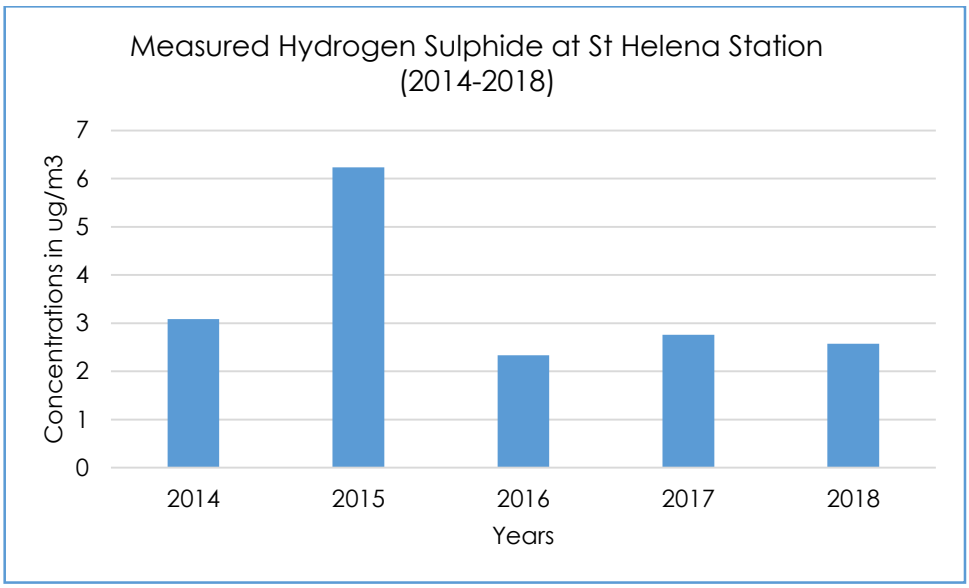


Figure 19: Annual averaged H_2S at the St Helena Station (2014-2018).

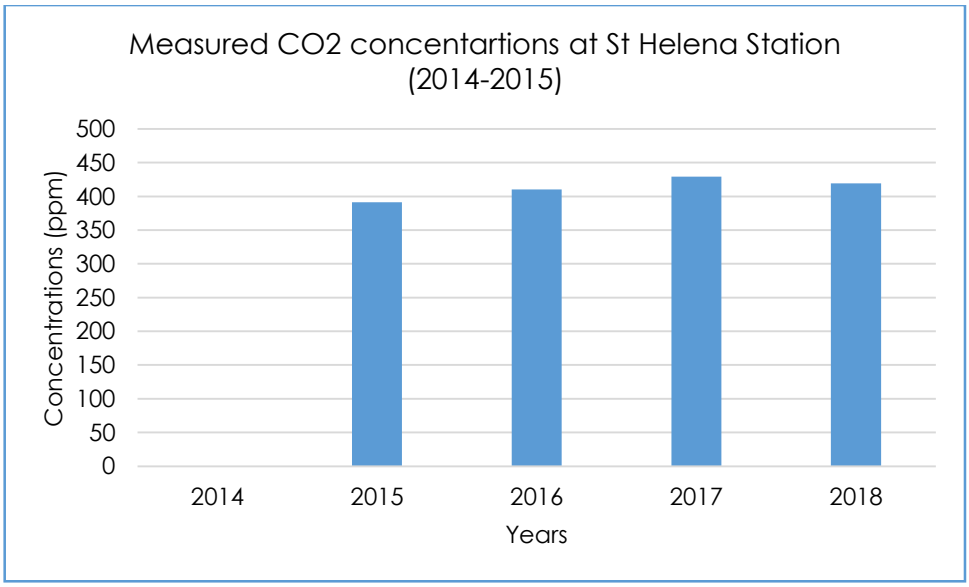


Figure 20: Annual averaged CO_2 concentrations at the St Helena Station (2014-2018).

Saldanha Bay Monitoring Station

The compliance snapshot of the quarter two (Q2) ambient air quality data in relation to the NAAQS as monitored at Saldanha Bay shows the compliant status for PM_{10}. $PM_{2.5}$, SO_2, NO_2 and O_3. The elevated concentrations of PM 10 are as a result windblown dust in due to strong South Westerly winds experienced in Saldanha Bay during the months April, May and June 2018 (Figure 26). Figures 21-25 below represent the daily average concentrations of for PM_{10}. $PM_{2.5}$, SO_2, NO_2 and O_3 as monitored at the Saldanha Bay monitoring station.

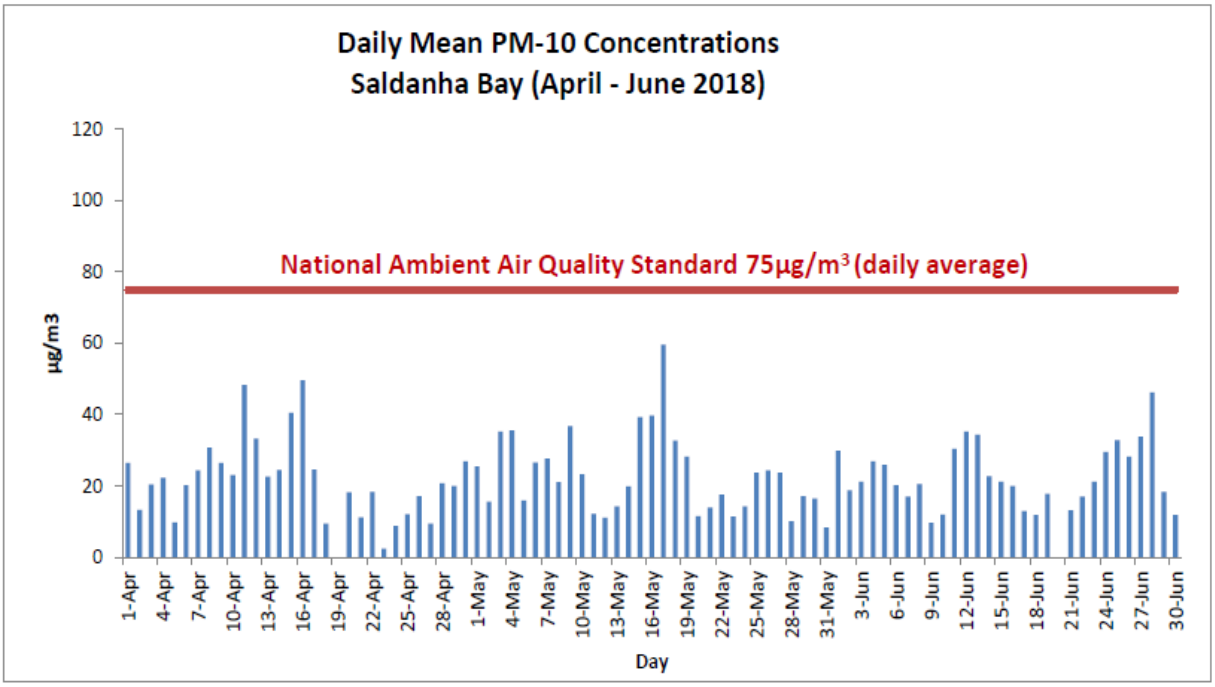


Figure 21: Daily average PM_{10} concentrations at Saldanha Bay Monitoring Station during Q2-2018 (ARGOS Scientific, 2018).

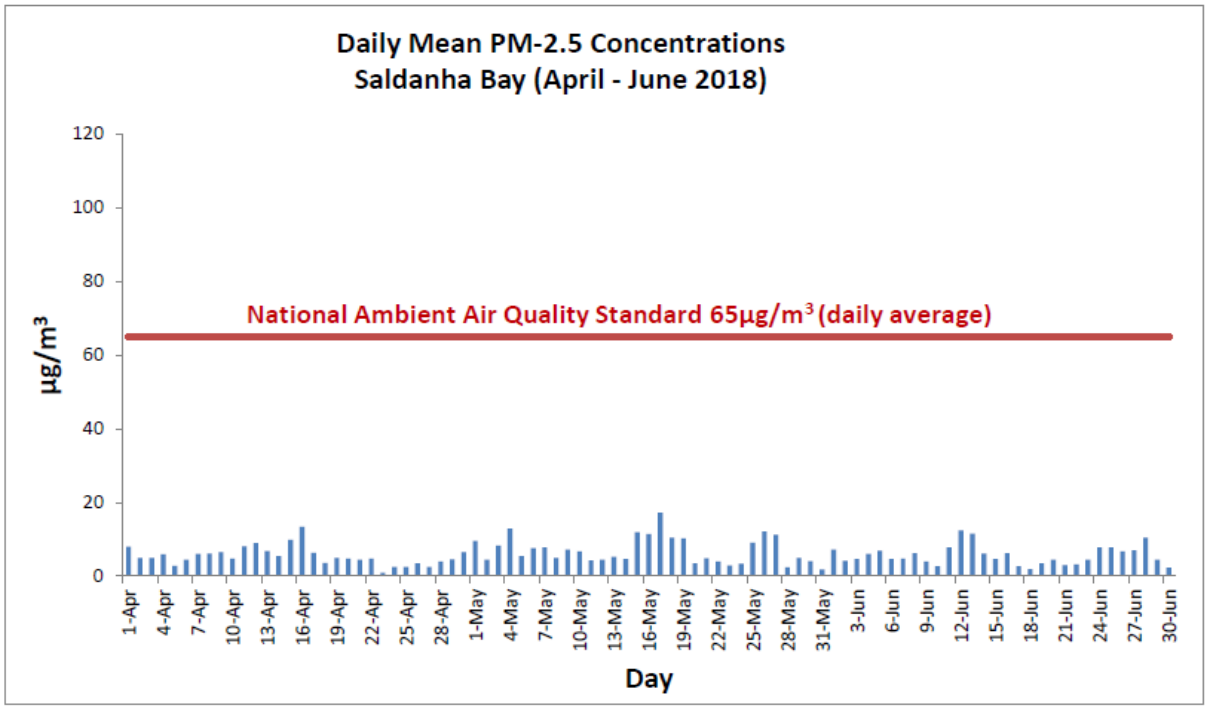


Figure 22: Daily average $PM_{2.5}$ concentrations at Saldanha Bay Monitoring Station during Q2- 2018 (ARGOS Scientific 2018)

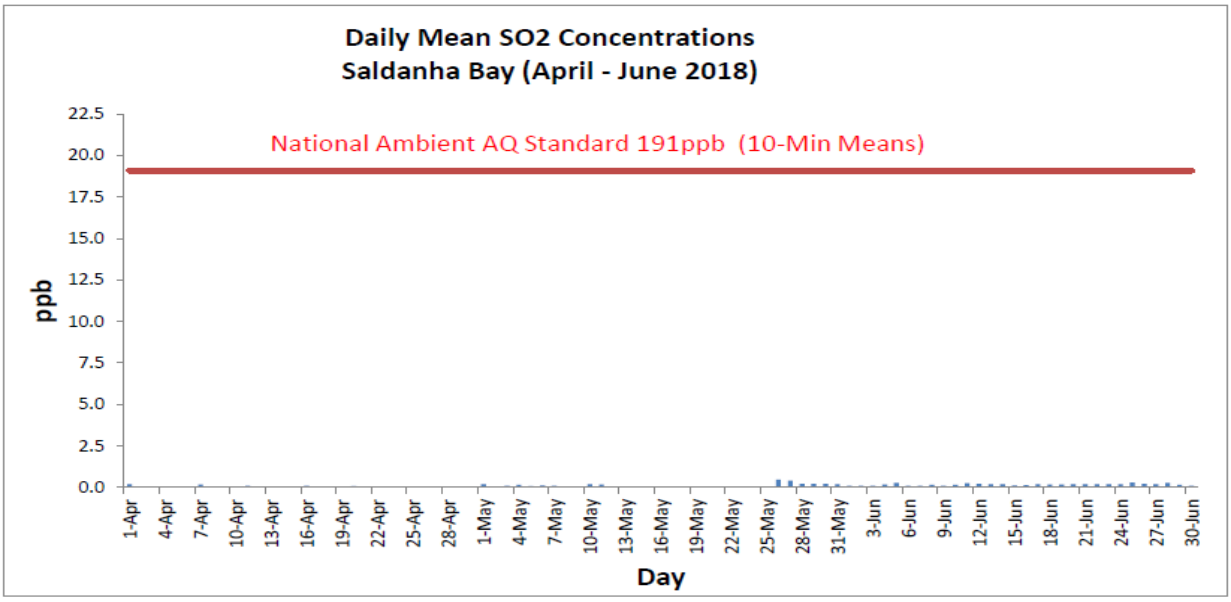


Figure 23: Daily average SO_2 concentrations at Saldanha Bay Monitoring Station during Q2-2018 (ARGOS Scientific, 2018)

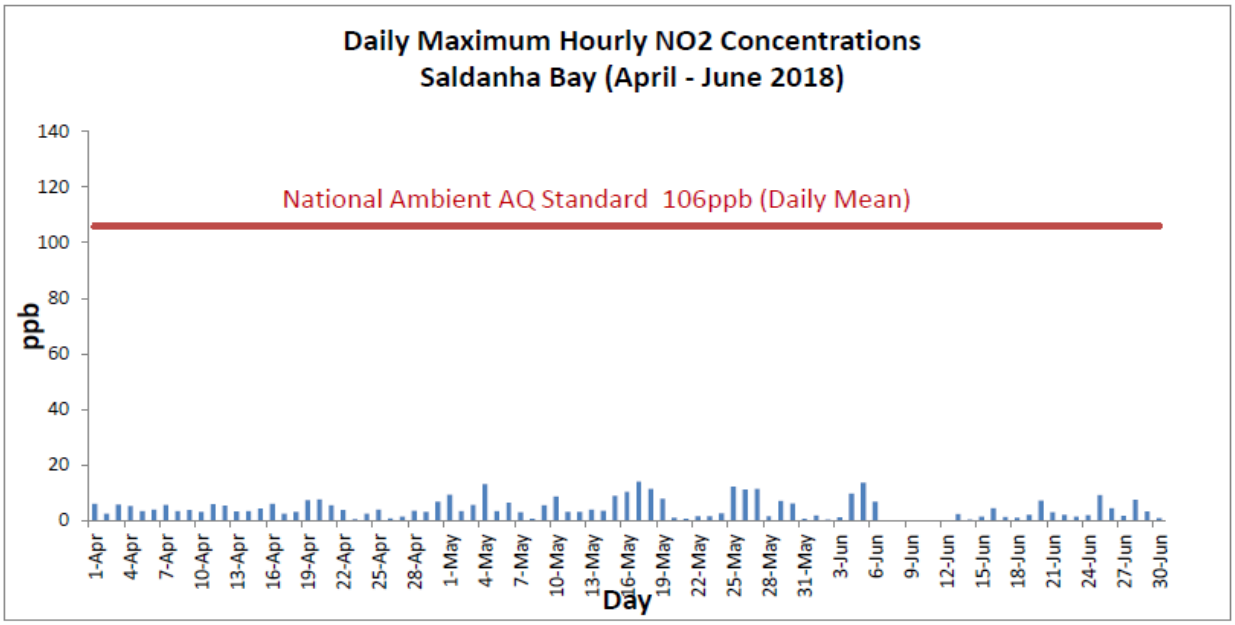


Figure 24: Daily average NO_2 concentrations at Saldanha Bay Monitoring Station during Q2-2018 (ARGOS Scientific, 2018)

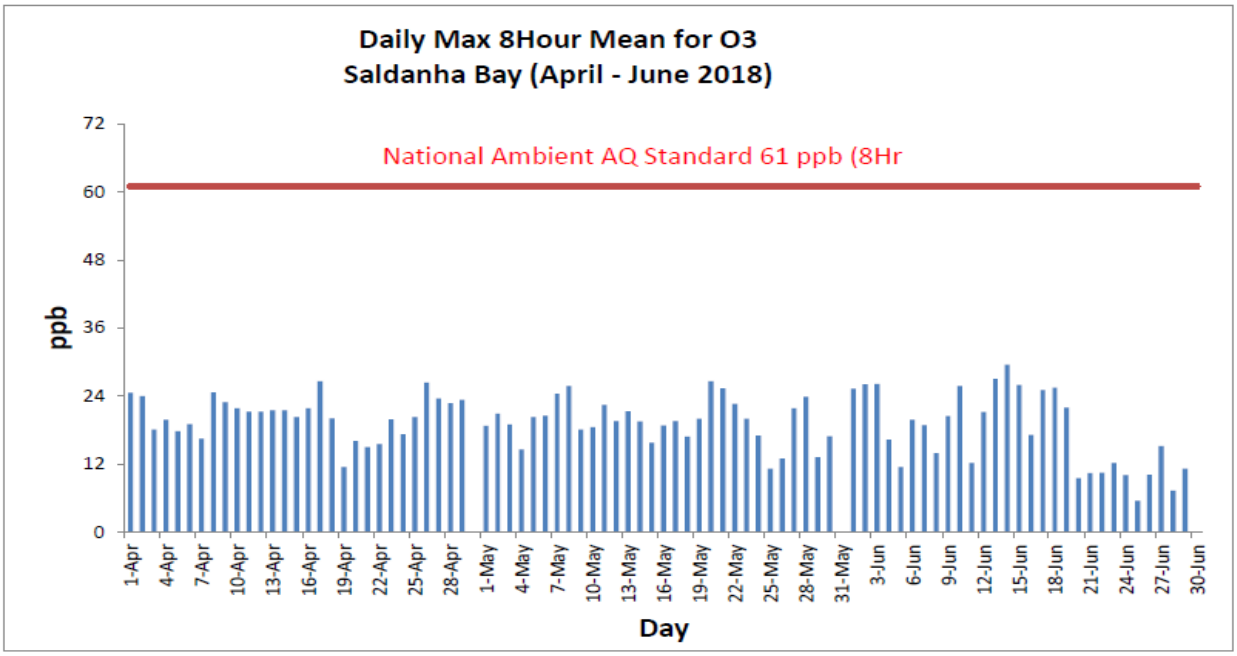


Figure 25: Daily average O_3 concentrations at Saldanha Bay Monitoring Station during Q2-2018 (ARGOS Scientific, 2018)

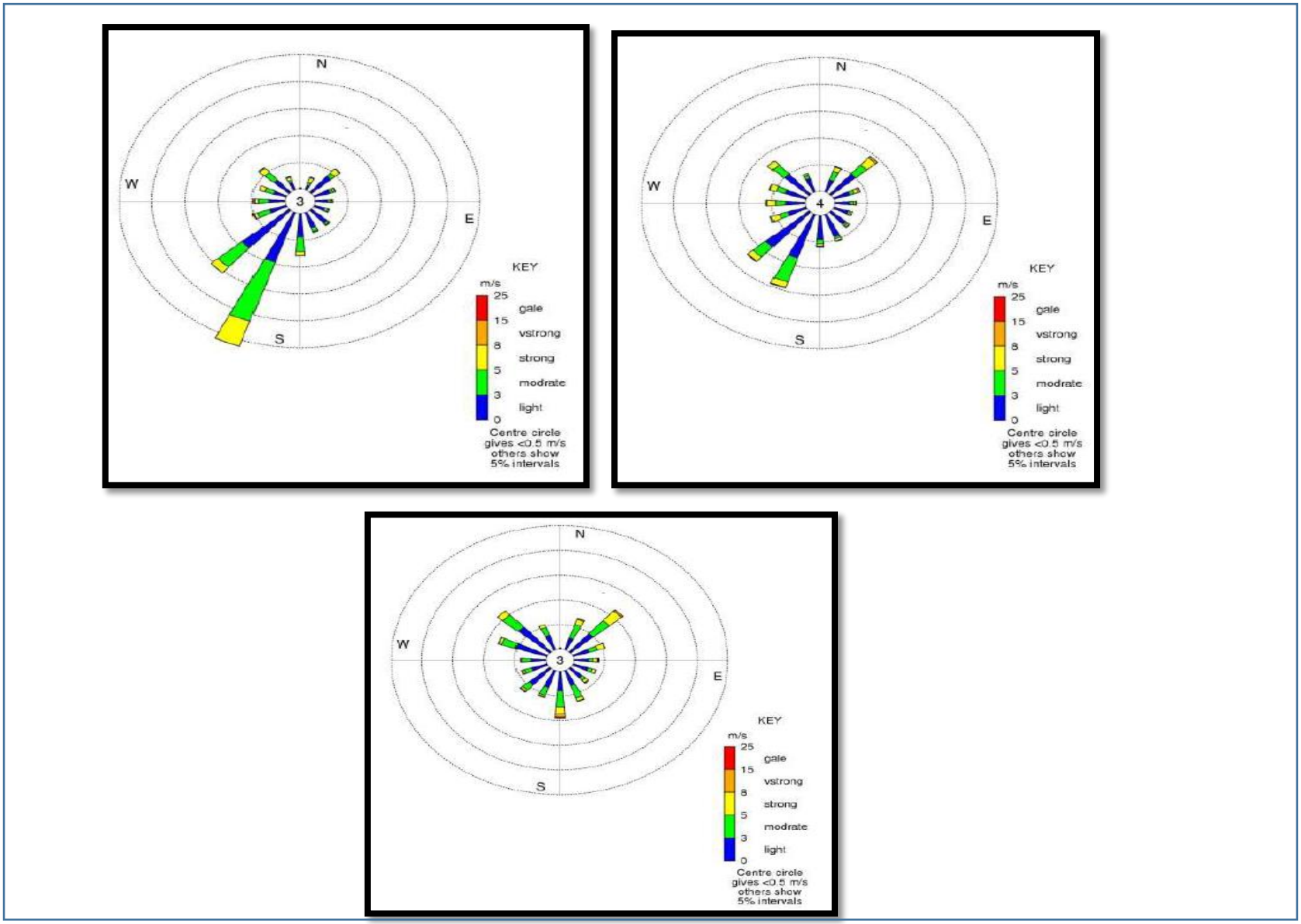


Figure 26: Wind Roses for the months for April, May and June 2018 (ARGOS Scientific, 2018)

Vredenburg Monitoring Station

The compliance snapshot of the quarter two (Q2) ambient air quality data in relation to the NAAQS as monitored at Vredenburg shows the compliant status for SO_2, NO_2 and O_3. Figures 21-25 below represent the daily average concentrations of for SO_2, NO_2 and O_3 as monitored at Saldanha Bay monitoring station.

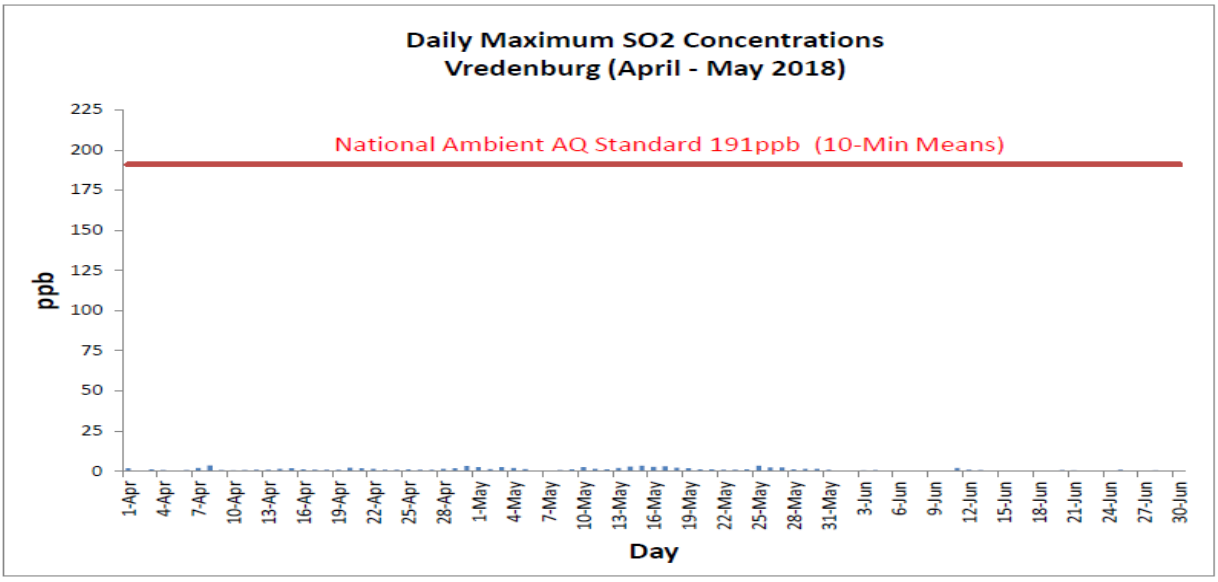


Figure 27: Daily Mean SO_2 Concentrations at Vredenburg Monitoring Station during Q2-2018 (ARGOS Scientific, 2018)

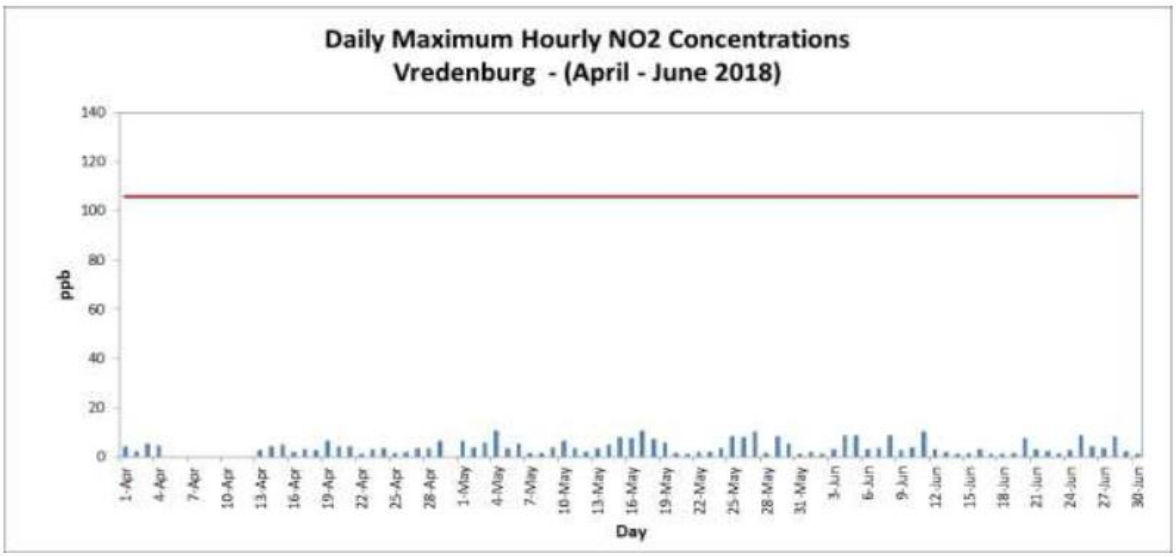


Figure 28: Daily Mean NO_2 Concentrations at Vredenburg Monitoring Station during Q2-2018 (ARGOS Scientific, 2018)

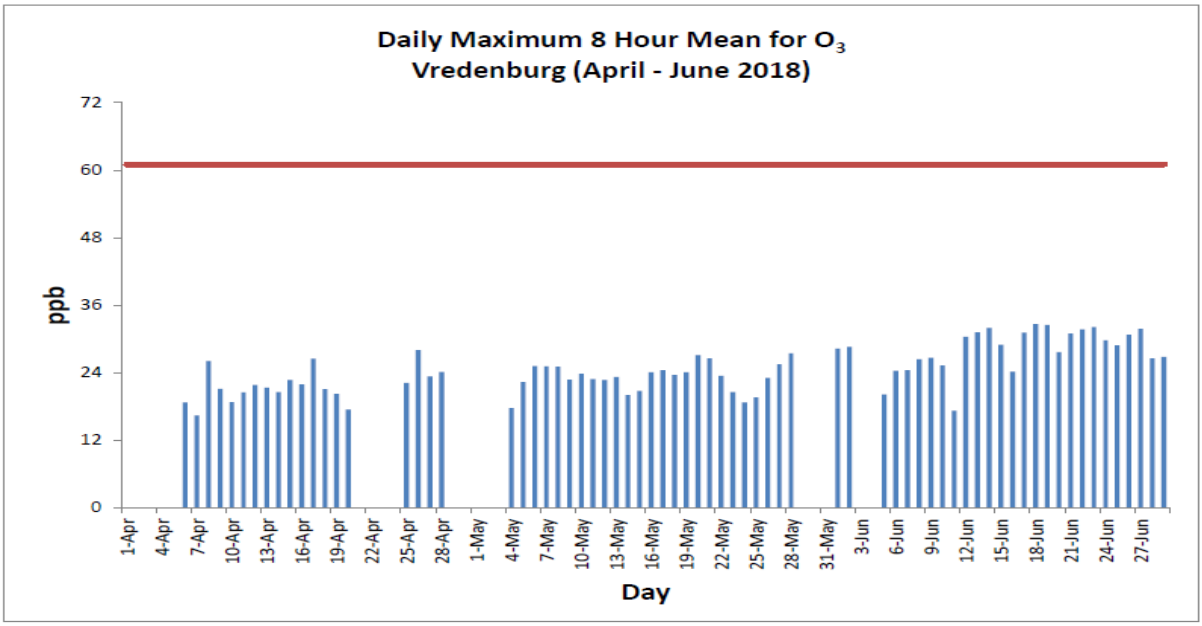


Figure 29: Measured O_3 Concentrations at Vredenburg Monitoring Station during Q2-2018 (ARGOS Scientific, 2018)

- **Dust Fallout Monitoring Stations**

The compliance snapshot of the quarter two (Q2) dust fallout data in relation to the NAAQS as monitored at Saldanha Bay shows the compliant status for the period of January 2015 and June 2016. For the period of from September 2017-February 2019, the dust fallout concentrations were elevated and exceeded both the residential and non-residential thresholds as per NAAQS. This exceedance was experienced in May and July 2018 and can be linked to strong winds experienced in Saldanha Bay in these two months. Figures 30 and 31 show the average daily dust fallout concentrations as monitored in Saldanha Bay.

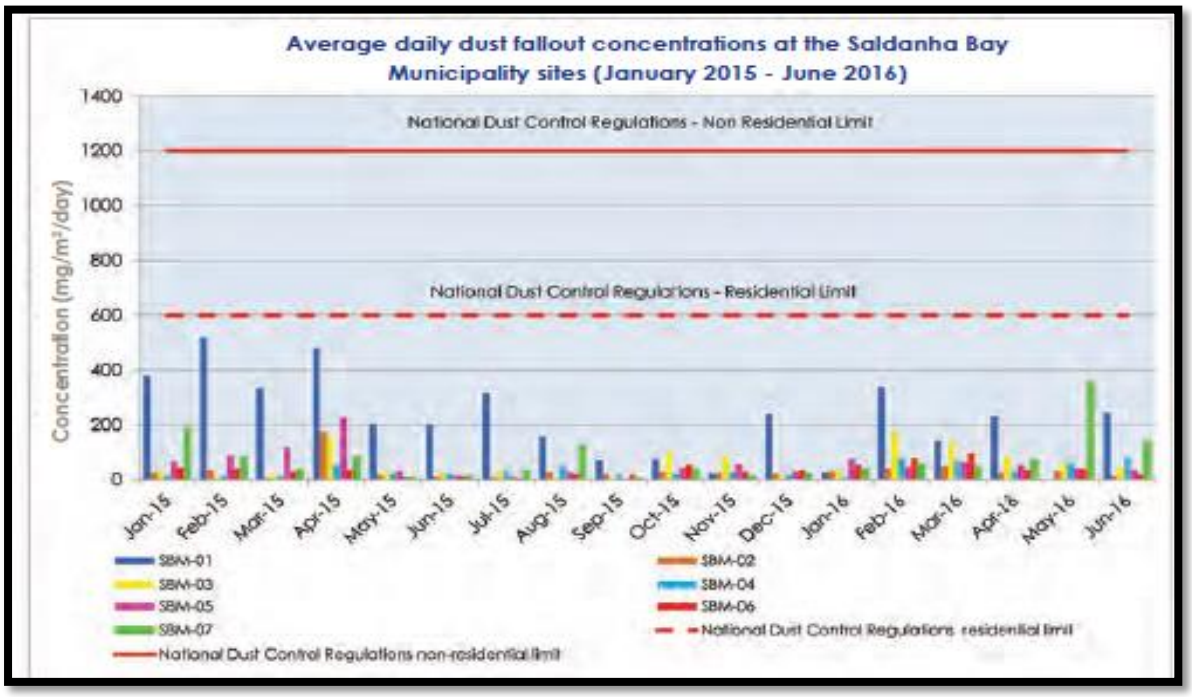


Figure 30: Average Daily Dust Fallout Concentrations from January 2015 and June 2016 (ARGOS Scientific, 2016)

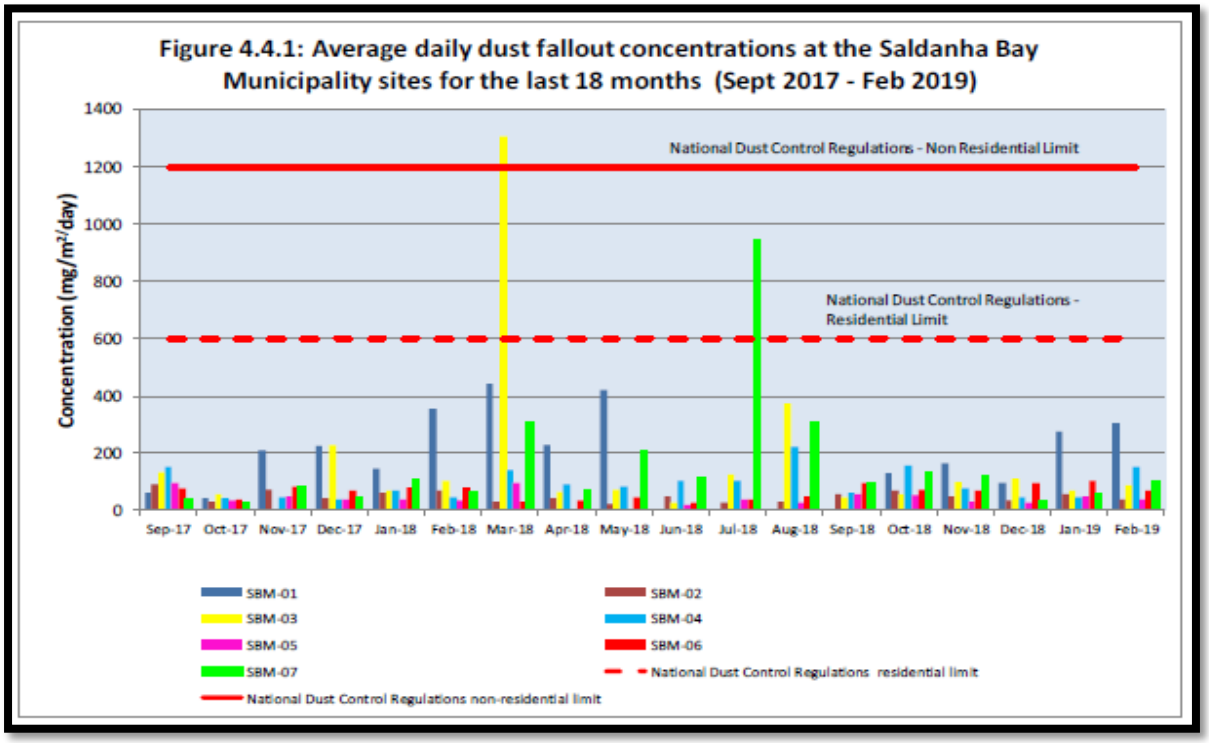


Figure 31: Average Daily Dust Fallout Concentrations from September 2017-February 2019 (ARGOS Scientific, 2019)

Bergrivier local Municipality

- **Velddrif Station**

Data for the Velddrif monitoring station was available from 2 June 2017 to date. For the purpose of this assessment, data from June 2017 to August 2018 was assessed. Data capture rate at Velddrif for the assessed years is 97 % on average.

There is currently no annual National Ambient Air Quality Standard for H_2S South Africa, consequently the 30-minute exposure health guidelines of 150 µg/m^3 standards as set out by WHO are used as thresholds for compliance here. The H_2S concentrations measured at Velddrif monitoring station shows an average of 4 µg/m^3 for 30 minutes averaging time with the highest values of 150 µg/m^3 recorded in July 2017. The compliance snapshot of the long term ambient air quality trend, in relation to the WHO standards, as monitored at the Velddrif shows the compliant status for H_2S.

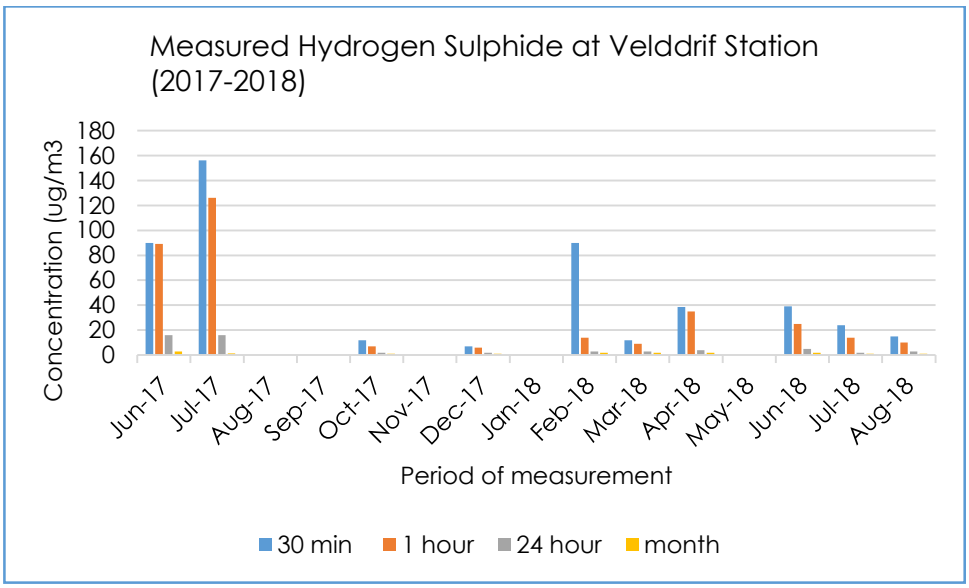


Figure 32: Measured H_2S concentrations at Velddrif at Station (2017-2018).

3.5.4 Dispersion Modelling

Dispersion modelling forms the basis for the emissions inventory. This gives an indication of emission in relation to the sensitive receptors. The dispersion modelling helps in the case of risk and impact assessment. Through the use of dispersion modelling, the need to carry out a more detailed health risk assessment may be determined as a sensitive

receptor could be identified. AERMOD and CALPUFF are the atmospheric dispersion models recommended by DEA. This is due to their ability to model up to 50km of domain radius. Section 37 (2)b) of NEM: AQA outlines the need for an air quality impact assessment as part of the AEL application by industries. Such report requires industries to undertake dispersion modelling for baseline assessment. The dispersion modelling is guided by published regulations under Government Notice R898.

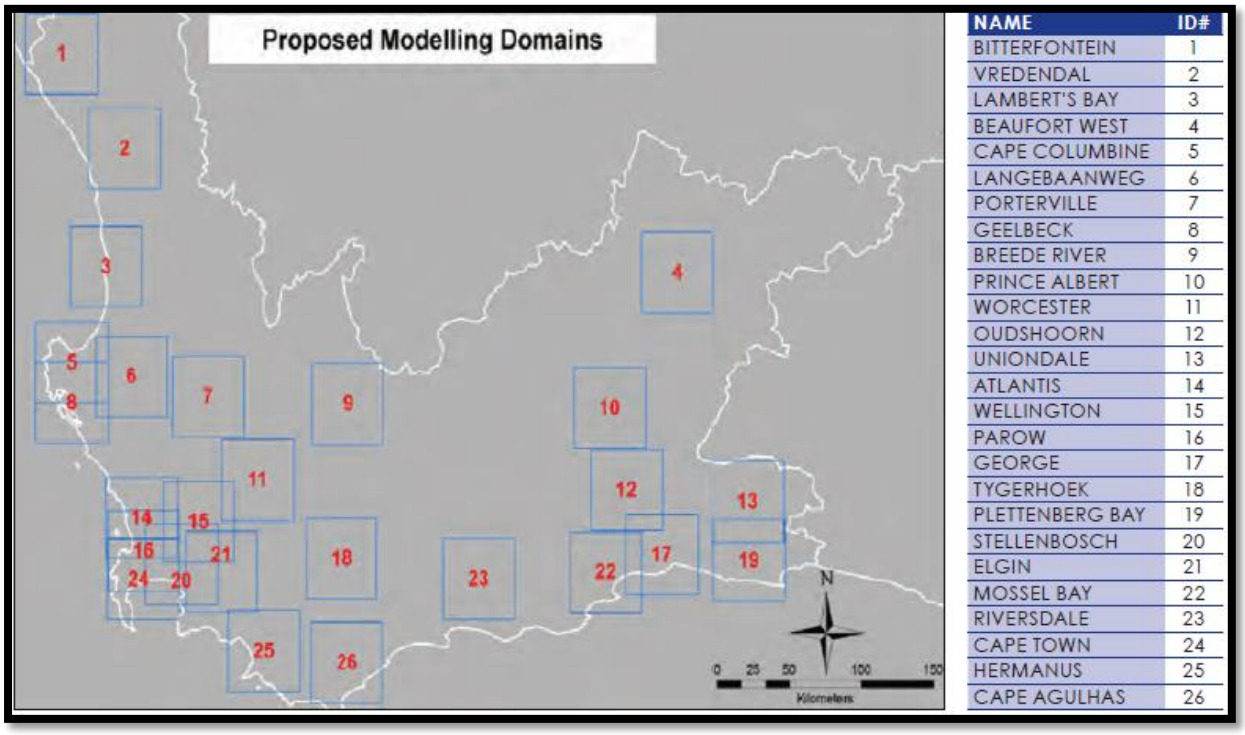
For the AQMP 2011, ADMS 4 modelling software was used to model the emissions from the WCDM. The model was deployed to model only the areas saturated with industrial activities. Thus, limiting the emissions sources to section 21 listed activities. To date no dispersion modelling has been done by the WCDM; to model the entire district based on the inventory list of the emissions sources. The model results in AQMP 2011 have not been quantified.

AQMP 2011 suggested at least a five year interval between conducting dispersion modelling studies. Currently a limited dispersion modelling study is conducted by industry for the purpose of AEL application as per National Framework dated October 2018. The Western Cape Province identified seven modelling domains within the West Coast District Municipality. These domains were based on the potential location of sources as identified in emission inventory (SoA, Western Cape, 2015). The table below highlights the modelling domains in WCDM and a model of choice suggested for the area.

Table 19: Model Domain identified by DEA&DP (SoR, Western Cape, 2015)

Name	Identification No	Local Municipality	Preferred Model
Bitterfontein	1	Matzikama	CALPUFF/AERMOD
Vredendal	2	Matzikama	CALPUFF/AERMOD
Lambert's Bay	3	Cederberg	CALPUFF
Cape Columbine	5	Saldanha Bay	CALPUFF
Langebaanweg	6	Saldanha Bay	CALPUFF/AERMOD
Geelbek	8	Saldanha Bay	CALPUFF
Porterville	7	Bergrivier	CALPUFF

The Western Cape Province has model ready datasets for the above mentioned areas which can be formerly requested from the DEA&DP; following the Promotion for Access to Information Act (Act No.2 of 2000; PAIA).



NAME	ID#
BITTERFONTEIN	1
VREDENDAL	2
LAMBERT'S BAY	3
BEAUFORT WEST	4
CAPE COLUMBINE	5
LANGEBAANWEG	6
PORTERVILLE	7
GEELBECK	8
BREEDE RIVER	9
PRINCE ALBERT	10
WORCESTER	11
OUDSHOORN	12
UNIONDALE	13
ATLANTIS	14
WELLINGTON	15
PAROW	16
GEORGE	17
TYGERHOEK	18
PLETTENBERG BAY	19
STELLENBOSCH	20
ELGIN	21
MOSSEL BAY	22
RIVERSDALE	23
CAPE TOWN	24
HERMANUS	25
CAPE AGULHAS	26

Figure 33: The proposed modelling domains in Western Cape (SoA-WC, 2015).

3.6 Climate Change

This section gives an overview of the current state of measures deployed to mitigate climate change within the West Coast District Municipal area in fulfilment of South Africa's commitment to the Paris Agreement.

3.6.1 GHG emissions profile

The GHG profile refers to the measure of greenhouse gas emissions that are directly and indirectly caused by an activity and a lifecycle of a product. The GHG emissions are typically expressed in carbon dioxide equivalents (CO_2e). To compute the greenhouse gas emissions, a carbon footprint assessment has to be done. The current GHG emissions for West Coast District Municipal area are presented in the figure below. The emission profile is limited to fuel consumption. Electricity consumption in WCDM is higher than other sources. The current emission factor applicable in South Africa to assess electricity carbon footprint is 1 kg/CO_2e as per Eskom report (2018).

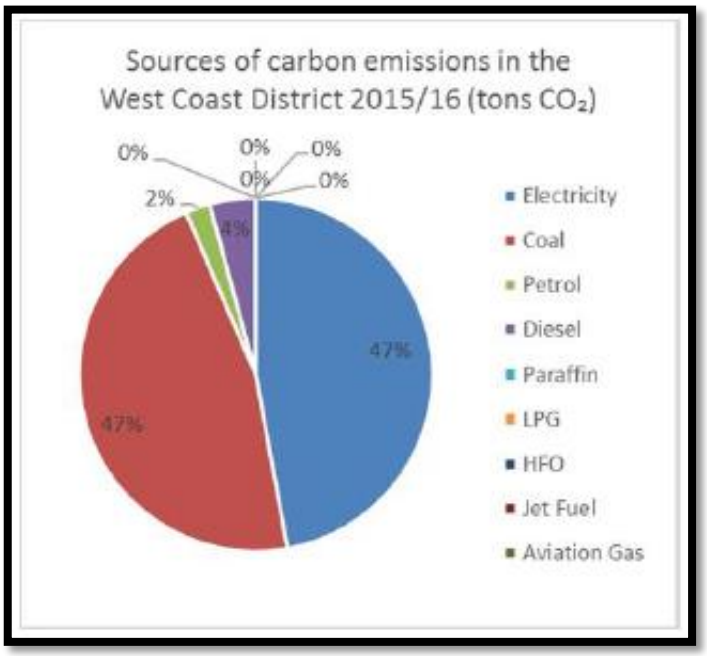


Figure 34: Sources of Emissions in WCDM (WC-SoE Outlook, 2017).

3.6.2 CO_2e Emissions Reduction Strategies in WCDM

The WCDM IDP (2017-2018) identifies the need to adopt climate change mitigations in contribution to national and global efforts to significantly reduce GHG emissions. This is done to build a sustainable low carbon economy, which simultaneously addresses the need for economic growth, job creation and improving socio-economic conditions. Included in this are the municipal responses such as a reduction in need for transport fuels, compact settlement planning, a reduction in energy use and a switch to renewable energy.

- **Renewable Energy**

The West Coast District municipal area houses several large scale solar and wind energy projects which include:

- The Aurora-Rietvlei Solar Power (RF) (Pty) Ltd.
- The Paleisheuwel Solar PV Park.
- The Solar PV Slimsun 5MW Darling Plant.
- De Bron Complex 50kw Rooftop Photo Voltaic grid tied plant.
- The Hopefield Wind Farm.
- The Darling Wind farm.

- **Renewable Energy Development Zones and strategic Transmission Corridors**

In addition to the above renewable energy strategies, West Coast District Municipal area forms part of the approved renewable energy strategic transmission corridors.

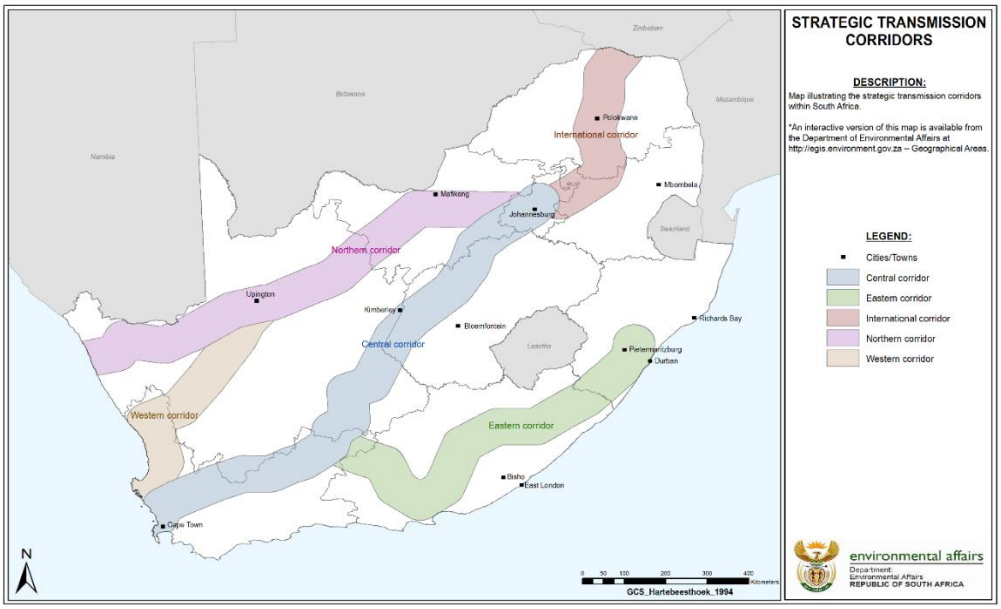


Figure 35: The renewable energy development zones and strategic transmissions in South Africa (GN 113, Government Gazette 41445, 16 February 2019).

3.7 Future Developments

Future developments play a significant role when assessing the baseline air quality within an area. Future developments assist in assessing potential cumulative impact on air quality. The information on future developments should be considered when carrying out dispersion modelling of the area.

It is important to note the potential future growth of industries relating to the oil and gas industry and marine repair and fabrication cluster, which are the main industries foreseen in Saldanha Bay Industrial Development Zone (SIDZ). These industries will increase the burden on air quality, thus management plans should make provision for such.

4 GAP ANALYSIS AND RECOMMENDATIONS

A gap analysis was conducted to evaluate the areas of concern as per the baseline assessment. The identified gaps have been moulded in to goals and objectives of the second generation AQMP. The implementation of the identified gaps within the AQMP 2011 are discussed below.

Table 20: Gap Analysis within the West Coast Municipal area.

Gaps Identified	WCDM	Local Municipalities
Human Resources	**Description of the Gap Identified and Recommendations**	
Limited Expertise and Resources	With an increase in industries within the WCDM, the designated AQO and Manager AQ will not be able to carry out their responsibilities, therefore there is a need for additional AQOs within the WCDM.	• There is a need to appoint AQOs qualified in the area of air quality. • Appointed additional AQOs within the local municipalities should be provided ion ongoing training in the field of air quality. • Provisions for training are required. • The roles and responsibilities of AQOs are often taken in conjunction with other roles within the municipalities. • Air quality management is not a primary role of the designated AQO. An air quality function should be recognized as core function within the local municipalities. • There is a lack of educational resources for AQ
Funding constraints	There is a need for funding for the following: • Environmental and health related studies. • Materials for awareness campaigns. • Maintenance of existing ambient air monitoring station located in Velddrif. • Passive sampling, dust fallout monitoring and dispersion modelling within the West Coast District Municipal area. • Additional human capacity.	There is a need for funding for the following: • Environmental and health related studies, at relevant local authorities. • Materials for awareness campaigns. • Additional human capacity building. • Establishment of atmospheric monitoring network. • Maintenance of existing ambient air monitoring station, at relevant local authorities.

Gaps Identified	WCDM	Local Municipalities
Air Quality Management Tools	**Description of the Gap Identified and Recommendations**	
Monitoring		• Due to continuous increase of industries in SBM, Saldanha Municipality needs to expand the monitoring network. • Establish ambient air monitoring network. • Establish dust monitoring network.
Emissions Inventory	• WCDM: To maintain an Inventory list of section 21 Listed Activities and section 23 controlled emitters.	• Establish and maintain an inventory list of non-listed activities.
Compliance and Enforcements	**Description of the Gap Identified and Recommendations**	
Compliance	• Review of WCDM and Local Municipality By-laws. • Implement a fine system for all non-compliant entities.	
Complaints Management	• Establish and maintain complaints database.	
Stakeholder engagement	**Description of the Gap Identified and Recommendations**	
Communication and Governance	• Awareness raising. • Communication amongst all spheres. • Corporative governance with all spheres of government.	

5 SECOND GENERATION AQMP GOALS

This section focuses on the vision, missions and goals for the AQMP 2019-2024. The WCDM has adopted the vision and mission as per the AQMP 2011. The goals for the AQMP 2019-2024 are guided by the findings as discussed under gap analysis in Section 4 of this report.

5.1 Goals and Objectives

To achieve the current vision and mission, new goals and objectives have been set for WCDM and the five local municipalities. Below are the adopted goals:

- Improve compliance enforcement and management of air quality within the West Coast Municipal area.
- Improve awareness with respect to air quality management.
- Improve the current air quality management tools.
- Invest in adequate human and financial recourses to ensure effective implementation and management of air quality.
- Integrate Climate Change and Air Quality Management.

6 IMPLEMENTATION OF INTERVENTION STRATEGIES

The action plan / intervention strategy implementation ensures that the interventions identified in Section 5 are implemented. The objective is to:

- Implement the control strategies, including financing the control measures and setting a time frame.
- Identify how to implement the intervention strategies / action plans.
- Enforce the policies and regulations needed to implement the strategies.

The timeframe for the implementation of the intervention strategies may vary from Short term, Medium-term, Long term and continuous:

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

The implementation strategies towards AQMP 2019-2024 within the West Coast District Municipal area are outlined in the table below.

WCDM

Table 21: Implementation strategies towards AQMP 2019-2024 in WCDM.

Goal and Objective	strategy	indicator	Responsibility	Time frame
Goal 1: Improve compliance enforcement and management of air quality within West Coast Municipal Area **Objective**1:Ensure compliance enforcement and monitoring of air quality within WCDM and local municipalities	Identify and investigate section 21 illegal operations that impact on air quality.	Records of section 21 illegal activities and fines or directives issued	WCDM	Continuous
	Investigate and resolve complaints as soon as they are received. Assist local municipalities when required to investigate and resolve complaints.	Records of complaints to be kept and managed with proof of measures used to address complaints	WCDM	Continuous
	Identify and regulate activities listed in terms of section 23 of NEM:AQA	Maintain an inventory list of section 23 controlled emitters	WCDM	Continuous
	Promote and maintain a more user-friendly platform for public to lodge air quality complaints.	Established user friendly platforms for public to lodge their complains	WCDM	Continuous
	Review of By-law to amend	Notices of WCDM By-law review.	WCDM	Continuous
	Implement fine system for addressing air quality related offenses.	Fine system to be in place and working.	WCDM	Medium term

Goal and Objective	strategy	indicator	Responsibility	Time frame
Goal 2: Improve awareness with respect to air quality management **Objective 1**: Ensure awareness on AQ matters within WCDM	Engage with public to create awareness on AQ.	Public engagements on AQ	WCDM	Continuous
	Make use of Environment Day as awareness day on environmental matters including AQ Usually with Environment Day there is a specific theme attached which is not always air quality related. Suggest to rather remove this item as public awareness is mentioned in the point above. Also no campaigns have been done in the past due to no resources.	Awareness activities on environment day	WCDM	Continuous
	Make use of media and websites to give notices on new AQ legislation	Awareness uploads and post on both media platforms and WCDM websites	WCDM	Long term - Continuous
Goal 3: Expand human and financial resources capacity for effective implementation and management of air quality **Objective 1**: Sufficient human resource, skills capacity and financial resources to undertake the responsibilities of air quality management.	Make provisions to employ more AQOs to carry out responsibilities of AQM	Timely appointment of AQO in line with area expansion and work load increase	WCDM	Short term – Continuous
	Invest in training needs for AQOs as part of growth development	Attended trainings by AQOs	WCDM	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Engage with service providers to provide training to both district and local municipalities on technical skills relating to air quality management and climate change response	Air quality officers and EMIs undertaking formal training for skills development.	WCDM	Continuous
	Engage with DEA&DP/DEA to provide training to air quality officers in WCDM and local municipality	Air quality management training provided for by DEA/DP/DEA to WCDM and local municipalities.	WCDM &DEA&DP	Continuous
	Provision of finances to carry out the responsibilities of air quality management within West Coast District Municipal area.	Funding to be allocated for AQ in WCDM	WCDM	Medium term-continuous
Goal 3: Integrate Climate Change and Air Quality Management. **Objective 1:** Ensure reduction of greenhouse gases emission within WCDM	Add implementation of emissions reduction strategies as a condition on AELs.	Reduction in emissions from the industries	WCDM	Continuous
	Promote green economy within the West Coast District Municipal area	Support best practices to promote better air quality	WCDM	Continuous
Objective 2: Promote compliance and implementation of pollution preventative plan of and reporting on GHGs	Add implementation of pollution preventative plan and reporting on GHG as a conditions on AEL	Addition of pollution preventative plan and reporting on GHGs as requirements in the AEL conditions	WCDM	Continuous

Saldanha Bay Local Municipality

Table 22: Implementation Strategies towards AQMP 2019-2024 in Saldanha Bay Municipality

Goal and Objective	strategy	indicator	Responsibility	Time frame
Goal 1: Improve compliance enforcement and management of air quality within Saldanha Bay Local Municipality; **Objective1**: Ensure compliance enforcement and monitoring of air quality within the municipality	Establish and keep the complaints database updated	Complaints database in place and updated.	Saldanha Bay Local Municipality	Continuous
	Handle complaints received by municipality as soon as they are presented	Records of complaints managed and proof of measures used to address complaints	Saldanha Bay Local Municipality	Continuous
	Implement fine system for non-compliant entities	A working fine system in place	Saldanha Bay Local Municipality	Long term-Continuous
	Promote and maintain a more user-friendly platform for public to lodge air quality Authorities.	Established user friendly platforms for public to lodge their complains	Saldanha Bay Local Municipality	Long term
	Carry out health impact assessment studies within Saldanha Bay Municipal Area	Health impact study conducted within Saldanha Bay Local Municipality	Saldanha Bay Local Municipality	Long term
	Engage with facilities handling ore to undertake toxicity study of iron ore dust	Toxicity studies from the industries received and acknowledged by Saldanha Bay Local Municipality	Saldanha Bay Local Municipality	Long term
	Engage with facilities handling , storing and transporting manganese to undertake toxicity study on manganese dust	Toxicity studies from the industries received and acknowledged by Saldanha Bay Local Municipality	Saldanha Bay Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Establish and implement a guideline and management of transportation, storage and handling of manganese and other potentially hazardous ores and concentrates.	Establishment and implementation of guidelines and management of transportation, storage and handling of manganese and iron ore.	Saldanha Bay Local Municipality	Continuous
	Engage with material handling industries to clean the spillages within Saldanha Bay Municipal area.	Spillage clean ups by relevant entities within Saldanha Bay Municipal area.	Saldanha Bay Local Municipality	Continuous
	Identify and manage non listed activities within the Saldanha Bay Municipal area	Implementation of an inventory list on non-listed activities.	Saldanha Bay Local Municipality	Continuous
	Saldanha Bay Municipality must keep an inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	An inventory list of list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	Saldanha Bay Local Municipality	Continuous
Goal 2: Improve and expand the current air quality management tools **Objective 1**: Ensure sufficient air quality management tools within Saldanha Bay Municipal area.	Expand and maintain the current ambient air monitoring to keep up with continuous industrial developments within the Saldanha Bay Municipal area.	Additional ambient monitoring networks established in Saldanha Bay Municipal area	Saldanha Bay Local Municipality	Medium term
Goal 3: Improve awareness with respect to air quality management	Engage with schools to create awareness on AQ.	School talks on AQ	Saldanha Bay Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
Objective 1: Ensure awareness on AQ matters within Saldanha Bay Municipal area	Make use of Environment Day as awareness day on environmental matters including AQ	Awareness activities on Environment Day	Saldanha Bay Local Municipality	Continuous
	Make use of media and websites to give notices on new AQ legislation	Awareness uploads and post on both media platforms and WCDM websites	Saldanha Bay Local Municipality	Continuous
Goal 4: Expand human capacity for effective implementation and management of air quality **Objective 1**: Sufficient human resource, skills capacity and financial resources to undertake the responsibilities of air quality management.	Make provisions to employ more AQO's to carry out responsibilities of AQM	Timely appointment of AQO when needed	Saldanha Bay Local Municipality	Long Term
	Invest in training needs of AQO as part of growth development	Attended trainings by AQO	Saldanha Bay Local Municipality	Medium term-continuous
	Engage with service providers to provide training to both district and local municipalities on technical skills relating to air quality management and climate change response	Number of air quality officers and EMIs undertaking formal training for skills development	Saldanha Bay Local Municipality	Continuous
	Source funding from external sources to carry out the responsibilities of air quality management plan such as training, awareness, monitoring and maintenance of monitoring stations.	Funding allocated for AQ in Saldanha Bay	Saldanha Bay Local Municipality	Medium term-continuous
Goal 5: Integrate Climate Change and Air Quality Management.	Explore training opportunities for officials to perform vehicle emission tests.	Reduction in emissions from the industries	Saldanha Bay Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
Objective 1: Ensure reduction of greenhouse gases emission within Saldanha Bay Municipal Area	Promote the use of alternative forms of space heating and cooking in informal residential areas	Support programs to promote waste to energy projects	Saldanha Bay Local Municipality	Continuous
Goal 6: Promote corporative governance and stakeholder engagement **Objective 1:** Ensure effective communication and engagement with all spheres of government	Engage with the WCDM concerning air quality issues within the Saldanha Bay Municipal area	Collaborative effort with WCDM to resolve issues concerning air quality in Saldanha Bay	Saldanha Bay Local Municipality	Continuous

Swartland Local Municipality

Table 23: Implementation strategies towards AQMP 2019-2024 in Swartland Municipality.

Goal and Objective	strategy	indicator	Responsibility	Time frame
Goal 1: Improve compliance enforcement and management of air quality within Swartland Municipal Area **Objective**1:Ensure compliance enforcement and monitoring of air quality within the municipality	Keep the complaints database updated	Complaints database in place and updated.	Swartland Local Municipality	Continuous
	Handle complaints received by municipality as soon as they are presented	Records of complaints managed and proof of measures used to address complaints	Swartland Local Municipality	Continuous
	Implement fine system for non-compliant entities	A working fine system in place	Swartland Local Municipality	Long term-Continuous
	Promote and maintain a more user-friendly platform for public to lodge air quality Authorities.	Established user friendly platforms for public to lodge their complains	Swartland Local Municipality	Long term
	Review of By-law to amend where needed.	Notice of Swartland By-law Review published for commenting	Swartland Local Municipality	Long term-Continuous
Goal 2: Improve and expand the current air quality management tools **Objective 1**: Ensure sufficient air quality management tools within Swartland Municipal area	Establish ambient air monitoring network managed and maintained by Swartland local Municipality.	Establishment of ambient air monitoring network owned by Swartland Municipality	Swartland Local Municipality	Continuous
	Establish dust monitoring network managed and maintained by Swartland local Municipality.	Establishment of passive monitoring network owned by Swartland Municipality	Swartland Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Establish inventory list of non-listed activities within Swartland Municipality	Establishment of non-listed activities with Swartland Municipality	Swartland Local Municipality	Continuous
	Conduct Dispersion modelling once every five years.	Dispersion modelling conducted every five years within Swartland Municipality	Swartland Local Municipality	Continuous
	Swartland Municipality must keep an inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	An inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	Swartland Local Municipality	Continuous
Goal 3: Improve awareness with respect to air quality management **Objective 1**: Ensure awareness on AQ matters within Swartland Municipal area	Engage with schools to create awareness on AQ.	School talks on AQ	Swartland Local Municipality	Continuous
	Make use of Environment Day as awareness day on environmental matters including AQ	Awareness activities on Environment Day	Swartland Local Municipality	Continuous
	Make use of media and websites to give notices on new AQ legislation	Awareness uploads and post on both media platforms and Swartland municipality websites	Swartland Local Municipality	Continuous
Goal 4 : Expand human capacity for effective implementation and management of air quality **Objective 1**: Sufficient human resource, skills capacity and financial resources to undertake the	Make provisions to employ AQO qualified in the area of Air Quality with Air Quality as a core function	Appointment of qualified AQO with Air Quality as a core function	Swartland Local Municipality	Long Term
	Invest in training needs of AQO as part of growth development	Attended trainings by AQO	Swartland Local Municipality	Medium term-continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
responsibilities of air quality management.	Engage with service providers to provide training to both district and local municipalities on technical skills relating to air quality management and climate change response	Number of air quality officers and EMIs undertaking formal training for skills development	Swartland Local Municipality	Continuous
	Source funding from external sources to carry out the responsibilities of air quality management plan such as training, awareness, monitoring and maintenance of monitoring stations.	Funding allocated for AQ in Saldanha Bay	Swartland Local Municipality	Medium term-continuous
Goal 5: Integrate Climate Change and Air Quality Management. **Objective 1:** Ensure reduction of greenhouse gases emission within Swartland Municipal area	Explore training opportunities for officials to perform vehicle emission tests.	Reduction in emissions from the industries	Swartland Local Municipality	Continuous
	Amend the by-Law with vehicle emission test as additional responsibility of Swartland Municipality.	Vehicle emission testing as additional functions of the Swartland Municipality	Swartland Local Municipality	Continuous
	Promote the use of alternative forms of space heating and cooking in informal residential areas	Support programs to promote waste to energy projects	Swartland Local Municipality	Continuous
Goal 6: Promote corporative governance and stakeholder engagement **Objective 1:** Ensure effective communication and engagement with all spheres of government	Engage with department of agriculture to promote environmentally friendly means of farming.	Working together with department of agriculture to achieve environmentally friendly methods of farming.	Swartland Local Municipality	Continuous
	Promote collaborative effort with other related spheres of governments to ensure effective air quality management.	Collaborative efforts towards clean air.	Swartland Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Work with department of agriculture and department health to create awareness on the effects of using pesticides near the residential areas.	Collaborative efforts towards awareness campaigns	Swartland Local Municipality	Continuous
	Establish community forums to address noise pollution within Swartland Municipal area	Working together with community to address noise pollution within Swartland Municipal area	Swartland Local Municipality	Continuous

Bergrivier Local Municipality

Table 24: Implementation strategies towards AQMP 2019-2024 in Bergrivier Municipality.

Goal and Objective	strategy	indicator	Responsibility	Time frame
Goal 1: Improve compliance enforcement and management of air quality within Bergrivier Municipal area **Objective**1:Ensure compliance enforcement and monitoring of air quality within the municipality	Keep the complaints database updated	Complaints database in place and updated.	Bergrivier Local Municipality	Continuous
	Handle complaints received by municipality as soon as they are presented	Records of complaints managed and proof of measures used to address complaints	Bergrivier Local Municipality	Continuous
	Implement fine system for non-compliant entities	A working fine system in place	Bergrivier Local Municipality	Long term-Continuous
	Promote and maintain a more user-friendly platform for public to lodge air quality Authorities.	Established user friendly platforms for public to lodge their complains	Bergrivier Local Municipality	Long term
	Review of By-law to amend where needed.	Notice of Bergrivier By-law Review published for commenting	Bergrivier Local Municipality	Long term-Continuous
Goal 2: Improve and expand the current air quality management tools **Objective 1**: Ensure sufficient air quality management tools within Bergrivier Municipal area.	Establish ambient air monitoring network managed and maintained by Bergrivier local Municipality.	Establishment of ambient air monitoring network owned by Bergrivier Municipality	Bergrivier Local Municipality	Continuous
	Establish dust monitoring network managed and maintained by Bergrivier Local Municipality	Establishment of passive monitoring network owned by Bergrivier Municipality	Bergrivier Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Establish inventory list of non-listed activities within Bergrivier Local Municipality	Establishment of non-listed activities inventory list with Bergrivier Municipality	Bergrivier Local Municipality	Continuous
	Bergrivier Municipality must keep an inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	An inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	Bergrivier Local Municipality	Continuous
Goal 3: Improve awareness with respect to air quality management **Objective 1**: Ensure awareness on AQ matters within Bergrivier Local Municipality	Engage with schools to create awareness on AQ.	School talks on AQ	Bergrivier Local Municipality	Continuous
	Make use of Environment Day as awareness day on environmental matters including AQ	Awareness activities on environment day	Bergrivier Local Municipality	Continuous
	Make use of media and websites to give notices on new AQ legislation	Awareness uploads and post on both media platforms and Bergrivier municipality websites	Bergrivier Local Municipality	Continuous
Goal 4 : Expand human capacity for effective implementation and management of air quality **Objective 1**: Sufficient human resource, skills capacity and financial resources to undertake the	Make provisions to employ AQO qualified in the area of Air Quality with Air Quality as a core function	Appointment of qualified AQO with Air Quality as a core function	Bergrivier Local Municipality	Long Term
	Invest in training needs of AQO as part of growth development	Attended trainings by AQO	Bergrivier Local Municipality	Medium term-continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
responsibilities of air quality management.	Engage with service providers to provide training to both district and local municipalities on technical skills relating to air quality management and climate change response	Number of air quality officers and EMIs undertaking formal training for skills development	Bergrivier Local Municipality	Continuous
	Source funding from external sources to carry out the responsibilities of air quality management plan such as training, awareness, monitoring and maintenance of monitoring stations.	Funding allocated for AQ in Bergrivier Local Municipality	Bergrivier Local Municipality	Medium term-continuous
Goal 5: Integrate Climate Change and Air Quality Management. **Objective 1:** Ensure reduction of greenhouse gases emission within Bergrivier Local Municipality	Explore training opportunities for officials to perform vehicle emission tests.	Reduction in emissions from the industries	Bergrivier Local Municipality	Continuous
	Amend the by-Law with vehicle emission test as additional responsibility of Bergrivier Municipality.	Vehicle emission testing as additional functions of the Bergrivier Municipality	Bergrivier Local Municipality	Continuous
	Promote the use of alternative forms of space heating and cooking in informal residential areas	Support programs to promote waste to energy projects	Bergrivier Local Municipality	Continuous
Goal 6: Promote corporative governance and stakeholder engagement **Objective 1:** Ensure effective communication and engagement with all spheres of government	Engage with department of agriculture to promote environmentally friendly means of farming.	Working together with department of agriculture to achieve environmentally friendly methods of farming.	Bergrivier Local Municipality	Continuous
	Promote collaborative effort with other related spheres of governments to ensure effective air quality management.	Collaborative efforts towards clean air.	Bergrivier Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Work with department of agriculture and department health to create awareness on the effects of using pesticides near the residential areas.	Collaborative efforts towards awareness campaigns	Bergrivier Local Municipality	Continuous

Cederberg Local Municipality

Table 25: Implementation strategies towards AQMP 2019-2024 in Cederberg Municipality.

Goal and Objective	strategy	indicator	Responsibility	Time frame
Goal 1: Improve compliance enforcement and management of air quality within Cederberg Municipal area **Objective**1:Ensure compliance enforcement and monitoring of air quality within the Cederberg municipal area	Keep the complaints database updated	Complaints database in place and updated.	Cederberg Local Municipality	Continuous
	Handle complaints received by municipality as soon as they are presented	Records of complaints managed and proof of measures used to address complaints	Cederberg Local Municipality	Continuous
	Implement fine system for non-compliant entities	A working fine system in place	Cederberg Local Municipality	Long term-Continuous
	Promote and maintain a more user-friendly platform for public to lodge air quality complaints.	Established user friendly platforms for public to lodge their complaints	Cederberg Local Municipality	Long term
	Establishment and review of By-law to amend where needed.	Establishment of By-law and ad hoc review to amend when needed.	Cederberg Local Municipality	Long term-Continuous
Goal 2: Establish and maintain air quality management tool within Cederberg Municipal area **Objective 1**: Ensure sufficient air quality management tools within Cederberg Municipal area.	Establish and maintain ambient air monitoring network within Cederberg Municipal area	Establishment of ambient air monitoring network owned by Cederberg Municipality	Cederberg Local Municipality	Continuous
	Establish and maintain dust monitoring network within Cederberg Municipal area	Establishment of dust monitoring network owned by Cederberg Municipality	Cederberg Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Establish inventory list of non-listed activities within Cederberg Municipal area	Establishment of non-listed activities within Cederberg Municipal area	Cederberg Local Municipality	Continuous
	Cederberg Municipality must keep an inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	An inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	Cederberg Local Municipality	Continuos
Goal 3: Improve awareness with respect to air quality management **Objective 1**: Ensure awareness on AQ matters within Cederberg Municipal Area	Engage with schools to create awareness on AQ.	School talks on AQ	Cederberg Local Municipality	Continuous
	Make use of Environment Day as awareness day on environmental matters including AQ	Awareness activities on environment day	Cederberg Local Municipality	Continuous
	Make use of media and websites to give notices on new AQ legislation	Awareness uploads and post on both media platforms and Cederberg municipality websites	Cederberg Local Municipality	Continuous
Goal 4 : Expand human capacity for effective implementation and management of air quality	Make provisions to employ AQO qualified in the area of Air Quality with Air Quality as a core function	Appointment of qualified AQO with Air Quality as a core function	Cederberg Local Municipality	Long Term

Goal and Objective	strategy	indicator	Responsibility	Time frame
Objective 1: Sufficient human resource, skills capacity and financial resources to undertake the responsibilities of air quality management.	Invest in training needs of AQO as part of growth development	Attended trainings by AQO	Cederberg Local Municipality	Medium term-continuous
	Engage with service providers to provide training on technical skills relating to air quality management and climate change response	Number of air quality officers and EMIs undertaking formal training for skills development	Cederberg Local Municipality	Continuous
	Source funding from external sources to carry out the responsibilities of air quality management plan such as training, awareness, monitoring and establishment of monitoring stations.	Funding allocated for AQ in Cederberg Local Municipality	Cederberg Local Municipality	Medium term-continuous
Goal 5: Integrate Climate Change and Air Quality Management. **Objective 1:** Ensure reduction of greenhouse gases emission within Cederberg Local Municipality	Explore training opportunities for officials to perform vehicle emission tests.	Reduction in emissions from the industries	Cederberg Local Municipality	Continuous
	Add vehicle emission testing as a responsibility of Cederberg Municipality when establishing By-law	Vehicle emission testing as functions of the Cederberg Municipality	Cederberg Local Municipality	Continuous
	Promote the use of alternative forms of space heating and cooking in informal residential areas	Support programs to promote waste to energy projects	Cederberg Local Municipality	Continuous
Goal 6: Promote corporative governance and stakeholder engagement	Engage with department of agriculture to promote environmentally friendly means of farming.	Working together with department of agriculture to achieve environmentally friendly methods of farming.	Cederberg Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
Objective 1: Ensure effective communication and engagement with all spheres of government	Promote collaborative effort with other related spheres of governments to ensure effective air quality management.	Collaborative efforts towards clean air.	Cederberg Local Municipality	Continuous
	Work with department of agriculture and department health to create awareness on the effects of using pesticides near the residential areas.	Collaborative efforts towards awareness campaigns	Cederberg Local Municipality	Continuous
	Engage with WCDM to assist in developing the Air Quality By –law for Cederberg Local Municipality	Establishment of By-law in Cederberg Local Municipality	Cederberg Local Municipality	Short term

Matzikama Local Municipality

Table 26: Implementation strategies towards AQMP 2019-2024 in the Matzikama Municipality.

Goal and Objective	strategy	indicator	Responsibility	Time frame
Goal 1: Improve compliance enforcement and management of air quality within Matzikama Municipal area **Objective**1:Ensure compliance enforcement and monitoring of air quality within the Matzikama Municipal area	Keep the complaints database updated	Complaints database in place and updated.	Matzikama Local Municipality	Continuous
	Handle complaints received by municipality as soon as they are presented	Records of complaints managed and proof of measures used to address complaints	Matzikama Local Municipality	Continuous
	Implement fine system for non-compliant entities	A working fine system in place	Matzikama Local Municipality	Long term-Continuous
	Promote and maintain a more user-friendly platform for public to lodge air quality complaints.	Establish user friendly platforms for public to lodge their complaints	Matzikama Local Municipality	Long term
	Establishment and review of By-law to amend where needed.	Establishment of By-law and ad hoc review to amend when needed.	Matzikama Local Municipality	Long term-Continuous
Goal 2: Establish and maintain the current air quality management tools **Objective 1**: Ensure sufficient air quality management tools within Matzikama Municipal area.	Establish and maintain ambient air monitoring network within Matzikama Municipal area	Establishment of ambient air monitoring network owned by Matzikama Municipality	Matzikama Local Municipality	Continuous
	Establish and maintain dust monitoring network within Matzikama Municipal area	Establishment of dust monitoring network owned Matzikama Municipal area	Matzikama Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Establish inventory list of non-listed activities within Matzikama Municipal area	Establishment of non-listed activities within Matzikama Municipal area	Matzikama Local Municipality	Continuous
	Matzikama Municipality must keep an inventory list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	An inventory list of list of boilers with a MW heat input of less than 10MW and other fuel burning appliances as well as the types of industry within their area.	Matzikama Local Municipality	Continuous
Goal 3: Improve awareness with respect to air quality management **Objective 1**: Ensure awareness on AQ matters within Matzikama Municipal Area	Engage with schools to create awareness on AQ.	School talks on AQ	Matzikama Local Municipality	Continuous
	Make use of Environment Day as awareness day on environmental matters including AQ	Awareness activities on Environment Day	Matzikama Local Municipality	Continuous
	Make use of media and websites to give notices on new AQ legislation	Awareness uploads and post on both media platforms and Matzikama municipality websites	Matzikama Local Municipality	Continuous
Goal 4 : Expand human capacity for effective implementation and management of air quality **Objective 1**: Sufficient human resource, skills capacity and financial resources to undertake the	Make provisions to employ AQO qualified in the area of Air Quality with Air Quality as a core function	Appointment of qualified AQO with Air Quality as a core function	Matzikama Local Municipality	Long Term
	Invest in training needs of AQO as part of growth development	Attended trainings by AQO	Matzikama Local Municipality	Medium term-continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
responsibilities of air quality management.	Engage with service providers to provide training on technical skills relating to air quality management and climate change response	Number of air quality officers and EMIs undertaking formal training for skills development	Matzikama Local Municipality	Continuous
	Source funding from external sources to carry out the responsibilities of air quality management plan such as training, awareness, monitoring and establishment of monitoring stations.	Funding allocated for AQ in Matzikama Local Municipality	Matzikama Local Municipality	Medium term-continuous
Goal 5: Integrate Climate Change and Air Quality Management. **Objective 1:** Ensure reduction of greenhouse gases emission within Matzikama Local Municipality	Explore training opportunities for officials to perform vehicle emission tests.	Reduction in emissions from the industries	Matzikama Local Municipality	Continuous
	Add vehicle emission test as a responsibility of Matzikama Municipality when establishing By-law	Vehicle emission testing as functions of the Matzikama Municipality	Matzikama Local Municipality	Continuous
	Promote the use of alternative forms of space heating and cooking in informal residential areas	Support programs to promote waste to energy projects	Matzikama Local Municipality	Continuous
Goal 6: Promote corporative governance and stakeholder engagement **Objective 1:** Ensure effective communication and engagement with all spheres of government	Engage with department of agriculture to promote environmentally friendly means of farming.	Working together with department of agriculture to achieve environmentally friendly methods of farming.	Matzikama Local Municipality	Continuous
	Promote collaborative effort with other related spheres of governments to ensure effective air quality management.	Collaborative efforts towards clean air.	Matzikama Local Municipality	Continuous

Goal and Objective	strategy	indicator	Responsibility	Time frame
	Work with department of agriculture and department of health to create awareness on the effects of using pesticides near the residential areas.	Collaborative efforts towards awareness campaigns	Matzikama Local Municipality	Continuous
	Engage with WCDM to assist in developing the Air Quality By –law for Matzikama Local Municipality	Establishment of By-law in Matzikama Local Municipality	Matzikama Local Municipality	Short term

7 EVALUATION OF AQMP

Ongoing evaluation is an essential element of the second generation AQMP implementation as it allows for a thorough assessment of the Second Generation, including the shortcomings and strengths evident in implementation.

The evaluation process will assess the second generation AQMP implementation outcomes, which are based on the indicators as defined on the implementation and intervention plan in section 6. This evaluation is done on a continuous basis each year to assess the progress on the identified intervention strategies. After 5 years, the AQMP will be revisited and the goals realigned and the process of developing an AQMP repeated.

The evaluation process should be undertaken with the help of the WCDM Manager Air Quality. Annual reporting of the Second Generation AQMP implementation is recommended as a minimum timeframe and will be incorporated into the Annual State of Air Quality Management Report WCDM.

8 REVIEW, MONITORING AND REPORTING

8.1 Review Process

The second generation WCDM AQMP 2019-2024 will be subjected to a 5 year review period as per the DEA AQMP Manual (2012). The review process will entail assessing the performance of the second generation WCDM AQMP 2019-2024 focusing on the successes and failures of the implementation process. The review process will also evaluate the effectiveness of the air quality management tools in terms of validity and reliability. Following the review process, the goals and objectives of the second generation WCDM AQMP 2019-2024 will be amended and subjected to an internal review, followed by 30 days public participation.

8.2 Monitoring and Reporting Process

Section 7.2 of the National Framework highlights the requirements of the Air Quality Officers' annual report and the reporting requirements in terms of the AQMP. Further to this, section 5.3.2.4 of the National Framework notes the timeframes for submission of the annual reports at each level of government, i.e. municipal and Provincial.

During the reporting and monitoring of the second generation AQMP for annual reporting, a number of actions will be undertaken such as:

- Development and operations of monitoring programs.
- Reporting and assessment of changes in air quality.
- Preparing and updating action plans.
- Updating actions and control options.
- Arranging workshops and seminars.
- Involving stakeholders.
- Identifying gaps and challenges.
- Informing the public.

In addition to the above, reporting on the AQMP could also form part of the input to the "State of the Air Report" for the West Coast District Municipal area.

9 CONCLUSION

The baseline assessment of the air quality management for the WCDM was reviewed. The results indicated that sufficient monitoring is being done by the WCDM, Saldanha Bay Municipality and province. The monitoring results show considerable evidence that the air quality within WCDM is below the acceptable NAAQS. Although the monitoring results are below the NAAQS, the National Framework for Air Quality Management (2017) shows that WCDM has poor air quality. The poor air quality can be substantiated by the overwhelming complaints received from the public within West Coast Municipal area. It is therefore recommended that a health impact assessment within the Saldanha Bay municipality be conducted. This could be performed together with the iron ore dust and manganese toxicity assessment to assess any potential health impact associated with air pollution in the area.

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