PRINCE ALBERT MUNICIPALITY
AIR QUALITY MANAGEMENT PLAN

DRAFT

November 2025

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AQF – Air Quality Forum
AQMP – Air Quality Management Plan
AQO – Air Quality Officer
CKDM – Central Karoo District Municipality
EHP – Environmental Health Practitioner
IDP – Integrated Development Plan
MERO – Municipal Economic Review and Outlook
NEM: AQA – National Environmental Management: Air Quality Act 39 of 2004
NOx – Nitrogen Oxide
PM – Particulate Matter
SDF – Spatial Development Framework

AIR QUALITY MANAGEMENT: PRINCE ALBERT MUNICIPALITY

FOREWORD

The Prince Albert municipal area spans approximately 8,153 square kilometres along the southern edge of the Great Karoo, bordering the Eastern Cape to the east (Figure 1). Strategically positioned for accessibility, the municipality is located approximately 400 km north of Cape Town and 170 km south of Beaufort West along the N1. The town of Prince Albert serves as the economic hub, while smaller settlements like Leeu-Gamka and Klaarstroom add to the region's character.

Renowned for its outdoor activities and thriving agricultural sector, the area boasts sheep, olive, and fruit farms. Prince Albert Municipality is one of three local municipalities within the Central Karoo District, encompassing the scenic town of Prince Albert and the settlements of Leeu-Gamka, Klaarstroom, Prince Albert Road, Seekoegat, and surrounding rural areas (MERO 2020).

To enhance efficient service delivery, the municipal area is divided into four wards namely:

Table 1: Different wards in the Prince Albert Local Municipality

Ward No	Area
1	Leeu-Gamka & Prince Albert Road
2	Prince Albert South & Klaarstroom
3	Prince Albert North-End
4	Prince Albert North End – Portion of South End

- Location/ study Area (Prince Albert Municipality)

The Prince Albert Municipality (WC052) is one of three Category B municipalities in the Central Karoo District Municipality of the Western Cape Province. It lies on the southern edge of the Great Karoo, a semi-desert region. The municipalities within the Central Karoo District are Beaufort West Municipality, Laingsburg Municipality and Prince Albert Municipality *(see Figure 1 below*.

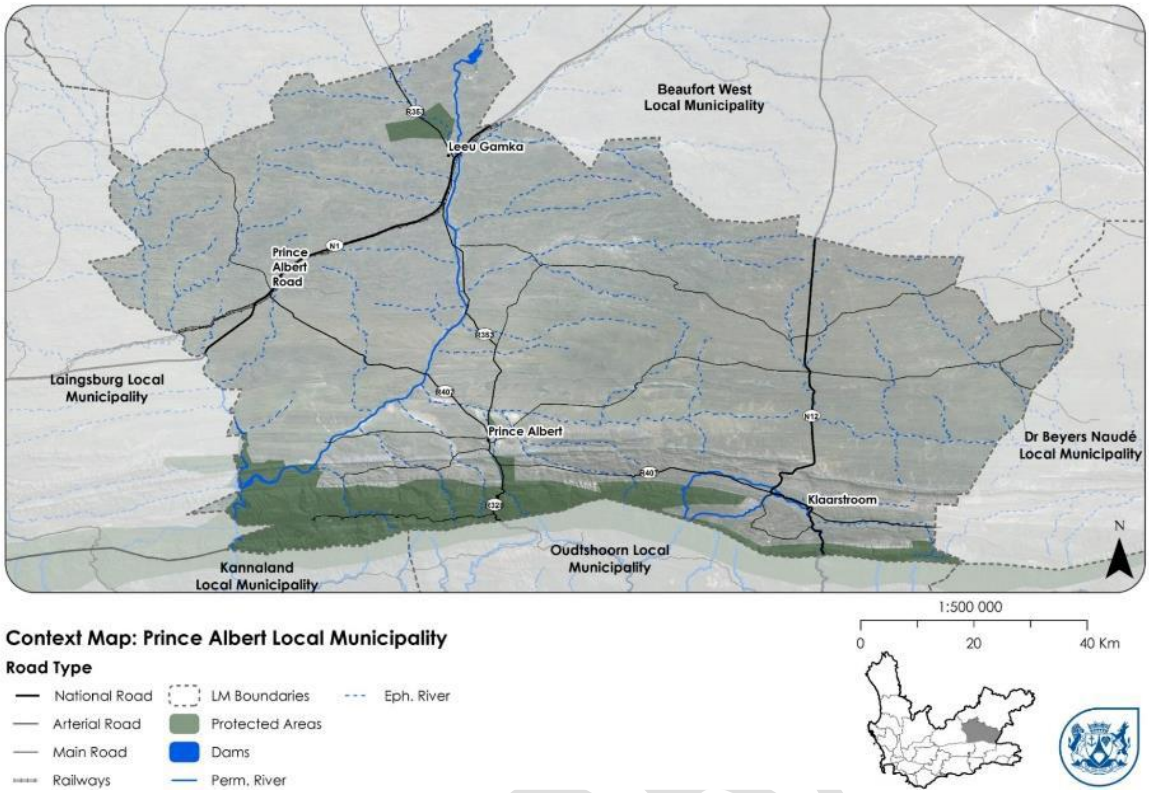

Figure 1: Map of Prince Albert Local Municipality

1. BACKGROUND OF PRINCE ALBERT MUNICIPALITY

a) Population size

The Prince Albert municipal area, with an estimated population of 17,836 according to the latest Census 2022 data, experienced a growth of 3.1% between 2011 and 2022. The population is projected to continue growing at a relatively rapid pace, with an anticipated average annual increase of 1.3% between 2022 and 2027—surpassing the district's forecasted growth rate of 0.7%. (SEP 2023).

b) Housing and household services

According to the 2022 Census, the Prince Albert municipal area comprises approximately 4,760 households, with 98.1% having access to formal housing. Meanwhile, 1.6% of households reside in informal dwellings, and 0.1% in traditional dwellings.

c) Energy usage

In Prince Albert Municipality, 97% of households have access to electricity for lighting. When it comes to cooking, 73.2% rely on electricity, while 23.4% use gas, and 2.4% depend on wood (Census, 2022).

Mobility and access to services and facilities (between settlements – particularly from Leeu-Gamka, Klaarstroom and Prince Albert Road to Prince Albert, Oudtshoorn and Beaufort West) is extremely limited by expensive and poorly developed public transport services.

Leeu- Gamka and Bitterwater is currently pursuing a very undesirable growth and development path in that new development areas are largely disconnected from one another and straddle both sides of the N1 – posing safety issues for pedestrians. This new housing development is also largely low income in nature and not connected to any real growth in economic development or job creation. The risk is that this area becomes a pocket of poverty and future unrest because of its very low economic growth.

As tourism appeal and heritage preservation are closely interlinked, future development (e.g. residential or business) must respect and adhere to the Karoo architectural heritage and seek to create vibrant, higher density and mixed-use areas that are serviced by adequate open space, services and facilities. New development should enhance and not detract from the character of the towns. Local vernacular Karoo-style housing typologies should be used for subsidy housing roll-out. There are examples of low-income housing proposals in McGregor and on the West Coast that are able to produce beautiful yet simple houses within the housing subsidy envelope.

Mobility and access to services and facilities is a key socio-economic development lever, and therefore the implementation of the Central Karoo Mobility Strategy and Integrated Public Transport Network is critical to improving regional access to facilities, opportunities and socio- economic development.

Klaarstroom is located in an advantageous position between Beaufort West and the garden route towns, along a beautiful stretch of road and just before the Meiringspoort Mountain Pass. It therefore must focus its attention to accessing opportunities that are presented by this location, such as service stops, tourism facilities and information.

At present the main employment drivers are agriculture, tourism, heritage and local government. The first three drivers have high barriers to entry (too high) and are relying on cheap labour, hampering any opportunity for newcomers, especially for those graduating from the bottom. It is high capital industries and primary in nature. The fourth driver, local government is also only creating unsustainable part time opportunities, with low remuneration. The municipal area however offers many assets. Assets such as land, sunshine, wind etc. must be maximized and converted into some sort of cash flow for the benefit of the town and creation of employment.

Despite its significant agricultural and tourism advantages, economic development remains a significant challenge for Prince Albert Municipality. Low population density, distance from large markets and an arid climate translate into fewer development opportunities as compared to other parts of the Western Cape. An analysis of the Prince Albert economy indicates that a significant portion of the local community, especially those in Prince Albert Road, Leeu-Gamka and Klaarstroom remains marginalized, with limited access to employment and wealth creation opportunities. It is therefore critical that participation in the economy is broadened to include marginalized communities and address poverty, while not compromising on the things that attract people to Prince Albert such as a positive environment, clean and healthy with low pollution.

Figure 2 below demonstrates the demographics of Prince Albert Municipality and its associated socio-economic status.

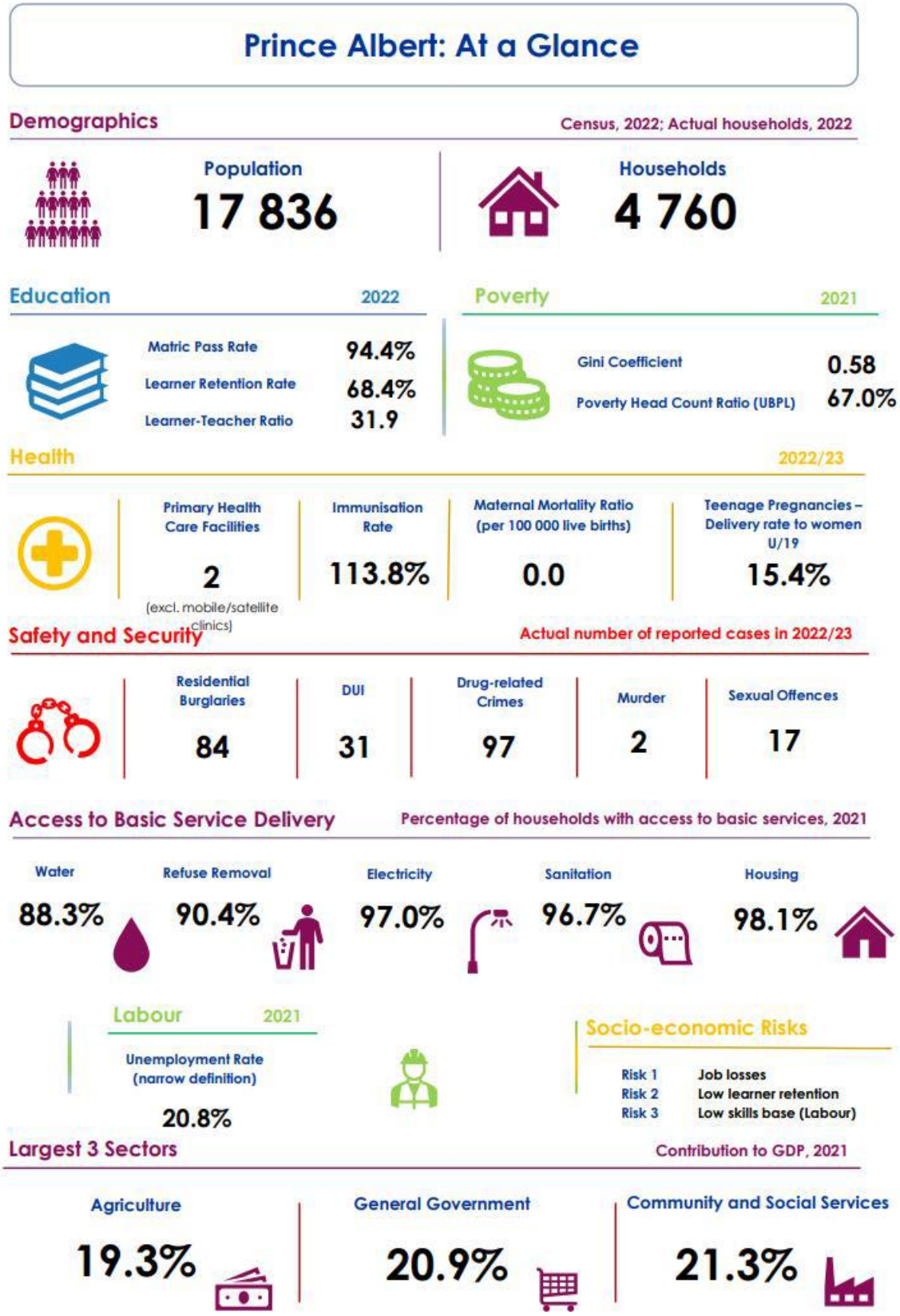

Figure 2: Demographics of Prince Albert

i. Climate conditions

According to the Prince Albert Municipality 2019 Disaster Register, drought, fire, flooding, and disruption to water supply are the most severe climate change related impacts for the municipality.

Meteorology plays a vital role in the dispersion of air pollutants and how they interact in the atmosphere and assist in identifying the possible sources of elevated concentration events or episodes. Prince Albert records an average temperature, over the summer months, of about 23°C with about 14°C in the winter months. Dry heat may spike up to 40˚C on a few days in the summer with an average of 33 – 35˚C, and 17˚C in the winter months (Source: eco impact environmental practitioners, 2018).

The average precipitation in the area ranges between 44 mm to 23 mm for different times of the year. Furthermore, the area is characterized by light to moderate predominantly easterly, east-south-easterly, and westerly winds.

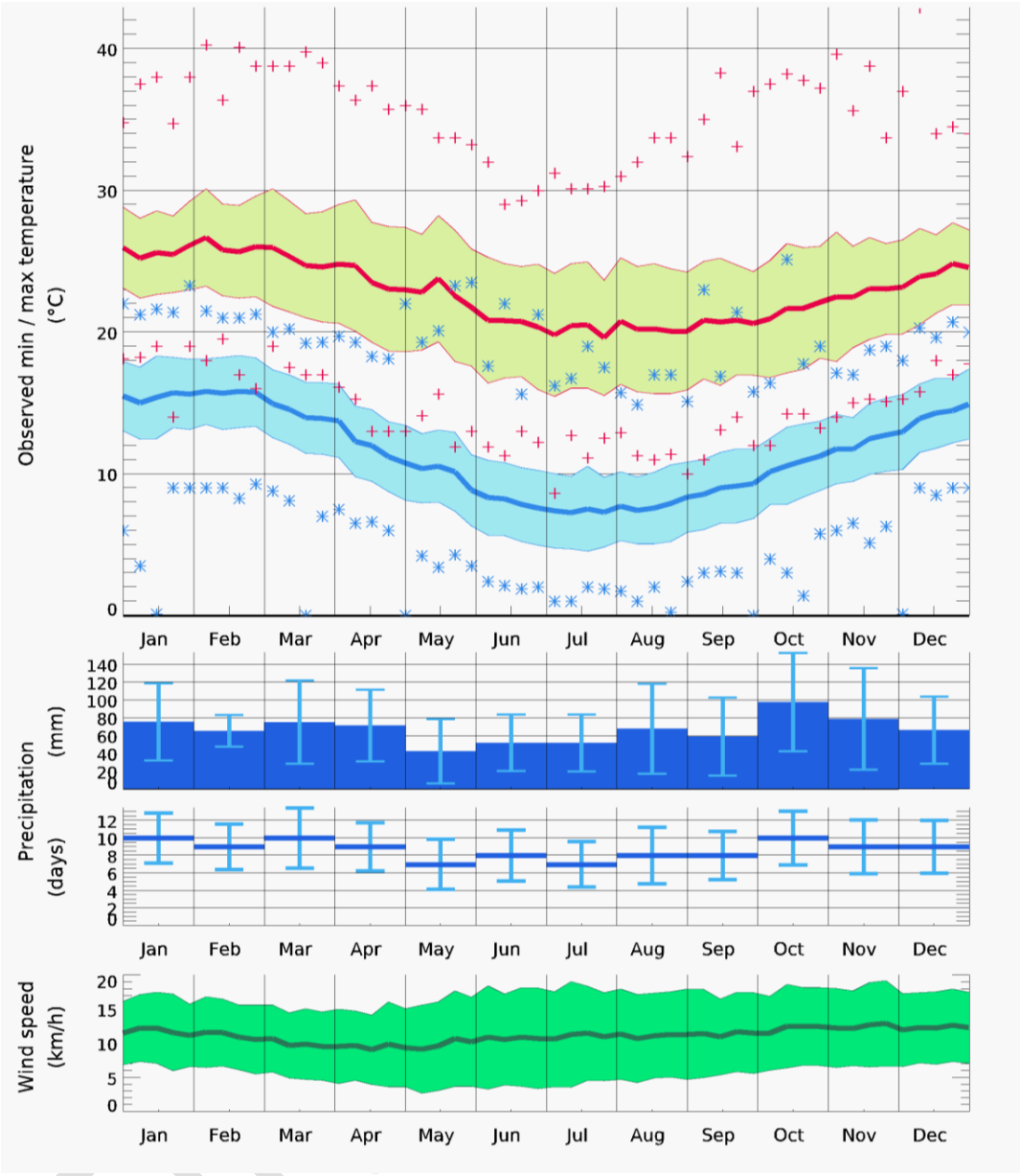

Figure 3: Climatic conditions typically observed in the Prine Albert Local Municipality (Meteoblue, 2024)

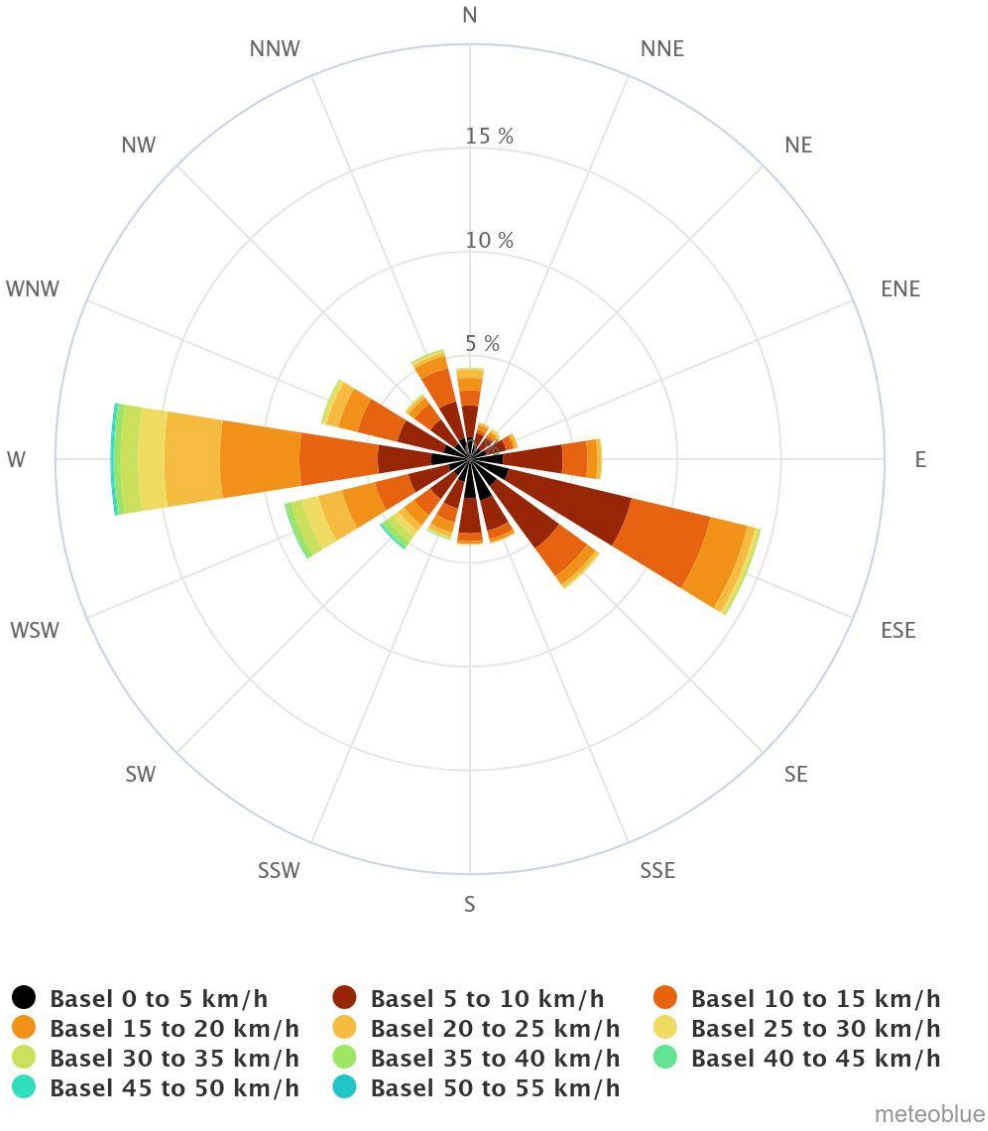

Figure 4: Prince Albert Local Municipality wind rose for 2024 (Meteoblue, 2024)

1. INTRODUCTION

Purpose of the plan

The Air Quality Management Plan for Prince Albert Municipality has been developed to comply with the National Environmental Management: Air Quality Act 39 of 2004 (NEM: AQA). The NEM: AQA requires Municipalities to introduce Air Quality Management Plans (AQMP) that set out what will be done to achieve the prescribed air quality standards. Municipalities are required to include an AQMP as part of its Integrated Development Plan (IDP). This plan provides a logical and holistic approach for communities, industry, government to manage air quality in the Prince Albert Municipal area.

As detailed in the NEM: AQA a local municipality has two primary statutory obligations with which it must comply and these obligations are: -

- designate an Air Quality Officer (AQO)
- incorporate an Air Quality Management Plan in its IDP

The Air Quality Management function within the Prince Albert Municipality resolves under the Department of Corporate and Community Services, with the Manager: Corporate and Community Services. Before the promulgation of the Air Quality Act 39 of 2004 permits used to be issued by the National Government in terms of the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965). The district and the local municipalities had little or no input in relation to the issuing of these permits. In the district and local municipalities air quality issues were restricted to the investigation of complaints and dealing with the complaints in terms of local by - laws and land – use planning. This resulted in a lack of skills in the field of air quality management at municipal level. The Air Quality Management Plan must acknowledge these shortcomings and objectives, identified within the plan, and will focus on addressing issues of capacity building.

This Air Quality Management Plan for Prince Albert Municipality has thus been developed to comply with the National Environmental Management: Air Quality Act, 39 of 2004 and more specifically to provide guidance on Air Quality Management in the municipal area. Air quality is defined to include noise and Oduor and addresses all sources of air pollution, i.e. point, area and mobile sources.

THE AQMP DEVELOPMENT PROCESS

Public participation and cooperative governance are essential for the development of an AQMP development process. It is suggested that an Air Quality Management Forum must be established between the district municipality and the three local municipalities to provide technical guidance and a sharing of knowledge and challenges on Air Quality Management in

the Central Karoo District.

2. VISION AND MISSION OF AIR QUALITY MANAGEMENT PLAN

2.1 VISION OF THE AIR QUALITY MANAGEMENT PLAN

The following vision for Air Quality Management in Prince Albert Municipality have been agreed upon.

" Clean and healthy air for all"

2.2 MISSION OF THE AIR QUALITY MANAGEMENT PLAN

"To ensure the effective and consistent implementation of sustainable air quality management practices, by progressively achieving and efficiently implementing clean and healthy air in Prince Albert".

3. GOALS OF THE AIR QUALITY MANAGEMENT PLAN

The four goals of the AQMP supports the vision and mission of Prince Albert Municipality as it relates to air quality and are:

1. To ensure effective and consistent air quality management.
2. To continually engage with stakeholders to raise awareness with respect to air quality.
3. To ensure effective and consistent compliance, monitoring and enforcement in respect of air quality.
4. To support climate change protection programmes, including promoting the reduction of the municipality" s, residents" and visitors" carbon footprint.

4. SITUATION ANALYSIS/ STATUS QUO ASSESSMENT

A situational analysis provides the foundation for understanding current air quality conditions in the Municipality and informs the development of targeted interventions. It includes an assessment of local emission sources, socio-economic drivers, environmental pressures, and compliance with national air quality standards.

The key components of the situational analysis for the Prince Albert Municipality will include:

- Baseline Air Quality Conditions:

An overview of current ambient air quality, available monitoring data, complaint trends, and identified pollution hotspots.

- Key Emission Sources:

Identification of dominant sources such as domestic fuel burning, transport emissions, waste burning, agricultural practices (including pesticide spraying), and natural sources (e.g., dust).

- Socio-Economic and Environmental Drivers:

Analysis of population distribution, economic activities (e.g., agriculture, tourism), land use patterns, and infrastructure that influence air quality trends.

- Compliance with National Standards:

Assessment of whether the Municipality meets the requirements of the Department of Forestry, Fisheries and the Environment National Ambient Air Quality Standards (NAAQS) and other regulatory frameworks.

- Institutional and Management Capacity:

Review of current air quality management structures, human resource capacity, budget allocations, and partnerships.

The situational analysis will be undertaken as a foundational step during the AQMP review process, prior to finalizing the vision, goals, targets, and implementation framework. This structured approach will enable:

- Better prioritization of interventions,
- More realistic target setting,
- Clear measurement of progress over time, and
- Improved alignment with other municipal planning instruments such as the Prince Albert Municipality IDP.

4.1Current institutional capacity of PAM

At Prince Albert Municipality the Town Planner will be responsible for air quality management. Training needs to be provided to said official to ensure that Air Quality Management enjoys serious priority in the operations and integrated planning of the Municipality. No Air Quality Management Committee have been established in the municipal area. As there is limited capacity within the Municipality it is again suggested that a regional Air Quality Management Forum must be established to ensure peer-learning and the sharing of best

practices. It will also ensure that Air Quality Management remains on the regional agenda.

At present there is no funding set aside to undertake and implement Air Quality Management.

4.2 Air pollution sources in Prince Albert

Generally, there are few air pollutants in the Central Karoo region. Pollutants generally originate from some of the following sources:

Industrial operations especially clay brick manufacturing

Agricultural activities such as crop burning and spraying Biomass burning (veld fires)

Domestic fuel burning (wood and paraffin) Vehicle emissions

Occasional Landfill site fires

Waste treatment and disposal Dust from unpaved roads

Other fugitive dust sources such as wind erosion of exposed areas

Lime dust

Dust from gravel roads

Generator's noise from commercial properties

The potential mining of uranium north of Prince Albert (SDF 2021) poses a significant air quality concern due to the release of air pollutants associated with uranium extraction and processing. These airborne contaminants could impact both environmental and human health, particularly affecting nearby communities and ecosystems.

In addition to the conventional air pollution sources, the Municipality recognizes that noise and odour emissions also pose a significant nuisance to communities. These include:

• Oduors released during the spraying of agricultural pesticides, particularly in areas adjacent to residential communities; and

• Traffic-related noise generated by heavy-duty trucks travelling along the N12 national route, especially through or near town.

Currently, R407 which cut across the town of Prince albert has recently become a short route for trucks to connect to N12. This has resulted into Noise pollution during the day and early housers. This will also increase the emission of Nitrogen oxides (Nox), Carbon and particulate Matter (PM).

Although these sources may not directly release regulated atmospheric

pollutants, they contribute to nuisance emissions and have an impact on quality of life. The Municipality will therefore integrate noise and odour management measures into its air quality management activities. This will include strengthening complaint mechanisms, promoting best environmental practices (e.g., appropriate pesticide application timing, buffer zones), and collaborating with relevant provincial and national departments to mitigate traffic-related noise

There are few sources of air pollutants in Prince Albert. The ambient air quality is generally good. Ambient particulate concentrations are likely to be high in low – income residential areas where wood is used as primary fuel source and activities such as refuse burning occur.

Prince Albert have limited pesticide spraying of crops and some motor vehicle exhaust gasses on the N1 and N12. This leads to elevated ambient concentrations of particulates and NOx during peak holiday periods. Seasonable agricultural a biomass burning also occur but have a low impact on air quality.

4.3 Air quality monitoring

There has been no specific monitoring of air quality management. The Municipality do not have the necessary equipment to monitor air quality and will only do so when there is a visible negative effect or when a complaint is received.

While community-driven complaint mechanisms provide valuable information, they are not sufficient to ensure consistent and equitable air quality monitoring. The Municipality acknowledges that reliance on residents to request testing may create barriers for vulnerable communities and limit the availability of baseline data.

To strengthen air quality monitoring, the Municipality will progressively invest in its own monitoring capacity. This will include:

- Accruing funding to procure basic air quality monitoring equipment over time,
- Exploring partnerships with the Central Karoo District Municipality, provincial departments, and academic institutions to support monitoring activities,
- Identifying priority monitoring locations such as areas near major transport routes, waste sites, and residential zones,
- Using collected data to inform reporting, compliance actions, and long-term planning."

5. GAPS AND CHALLENGES

The divisions of roles and responsibilities between local and district municipalities are clearly defined in the 2017 National Framework for Air Quality Management in South Africa. Local Municipalities are responsible for amongst others;

- Municipalities to monitor ambient air quality and point, non-point and mobile sources
- Monitor compliance with the requirements of the National Dust Control Regulations for an activity, in terms of nuisance or disturbance matters;
- Monitor compliance in respect to reasonable steps to prevent the emission of any offensive odour caused by an activity in terms of nuisance or disturbance matters

Monitor compliance in respect to noise caused by an activity in terms of nuisance or disturbance matters

Gaps: The appointed Air Quality Officer needs Air Quality Management Training.

the CKDM will accept responsibility for the licensing of listed activities. and the enforcement of legislation will be the local municipality's responsibilities.

Air quality management requires cooperation from various disciplines within local government which includes amongst others traffic, municipal health, fire and rescue, town planning, engineering, building control etc. The successful implementation of air quality management is thus strongly dependent upon cooperation and communication among all sectors and all local governments within the district.

Inadequate financial provision specifically earmarked for air quality management by all municipalities within the district.

The availability of suitably skilled human resources also remains a challenge.

The idea or perception "Prince Albert's air is clean, so why is air quality management necessary" makes it difficult to gain the attention of decision makers as well as the general public.

No Air Quality by-law has been promulgated. (in progress) Personnel capacity building (EMI course)

Town planning and road planning do not always consider the impact of developments on air quality.

6. GOALS

- Effective and consistent air quality management
- Promote communication in relation to air quality management Effective and consistent compliance monitoring and enforcement
- Develop and maintain institutional arrangement between the district and the local municipalities that support air quality management.
- Achieve and sustain acceptable air quality levels throughout the area
- Minimize the negative impact on human health and well – being and on the environment.

7. OBJECTIVES

7.1 EFFECTIVE AIR QUALITY MANAGEMENT

- Build capacity in air quality management within Prince Albert Municipality
- To strengthen and build capacity in air quality management
- To promote cooperation amongst all spheres of government, business, industry and civil society
- To ensure adequate funding for the implementation of the AQMP
- To develop comprehensive education and communication mechanisms, strategies and programs with respect to air quality
- Develop, implement and maintain an Air Quality Management System
- Establish an annual AQMP review process
- To promote environmental best practices and cleaner development technologies amongst all stakeholders
- To improve compliance monitoring and enforcement
- To promote continuous improvement with respect to compliance
- To ensure that health-based air quality standards are attained and continually met
- To reduce ozone depleting substances and greenhouse gas emissions, in line with national and international requirements Established an Emission Reduction Strategy

- To develop and implement an effective Atmospheric Emissions Licensing System (will be done by CKDM).

7.2 PROMOTE COMMUNICATION IN RELATION TO AIR QUALITY MANAGEMENT

- Establish an Air Quality Forum in order to ensure proper communication between the District Municipality, local municipalities, provincial government, business and industry as well as interested and affected parties in Prince Albert municipality.

7.3 COMPLIANCE MONITORING

- Establish a compliance monitoring system within the Prince Albert municipality.
- Ensure continuous compliance with the Atmospheric Licensing Conditions (CKDM).
- Promulgation of Air Quality by-law is still pending

8. MONITORING

Monitoring and reporting on progress with regard to the implementation of the AQMP is a key factor in maintaining momentum for the roll – out of interventions as well as providing a way to update key stakeholders.

9.EVALUATION

Continuous evaluation is an essential element of the AQMP implementation as it allows for a thorough assessment of the AQMP including the shortcomings and strength evident in implementation. Evaluation is an internal mechanism to measure the performance with regard to the implementation of the AQMP. The evaluation process will assess the AQMP implementation outcomes, which are based on the AQMP indicators. Annual evaluation of the AQMP implementation will be conducted. Monitoring and evaluation will be the responsibility of the Air Quality Management Committee.

10. REVIEW

The AQMP review comprises a review of the AQMP and the implementation and addresses further developments in the science, as well as the management of air quality. The review period will be every five years. The definition of the review period is subject to funding and political cycles, as well as implementation outcomes. Therefore, an element of elastic is necessary. The internal revision is communicated to stakeholders through a limited public participation process, followed by a further iteration and publication.

11. IMPLEMENTATION PLAN

GOALS	**OBJECTIVES**	**TARGETS**	**ACTIVITIES**	**TIMEFRAMES** **Short-term (6-12 months); Medium-term (1-2 years); Long-term (3-5 years)**
Effective Air Quality Management	Effective air quality management	Build capacity in air quality management within the building control section	With continuous training and development in air quality management in the building control section	Continuous
	Develop, implement and maintain an Air Quality Management System	Compilation of an emissions inventory for Prince Albert Municipality	Compile an emission inventory of all line sources	Medium
			Compile an emission inventory of all area sources	Medium
			Compile an emission inventory of all industrial sources	Short
		Air Quality monitoring agreement with Province	Engagements with Province to assist with	Short - Long

			air quality monitoring within the district	
	Establish an annual AQMP review process	Review systems, structures and processes to review progress in relation to the AQMP	Establish a committee to review the AQMP	Short – Medium
			Establish a comprehensive complaint register	Short
	Establish an emission reduction strategy	Industries	Electronic database of all small industries to be regularly updated	Short – Medium
			Create awareness campaigns on the negative health impacts of domestic fuel burning	Continuous
			Encourage the distribution of alternative forms of domestic energy such as LPG, LSF, gas, methanol, etc.	Continuous
		Traffic	Review vehicle emissions database with updated traffic count data as these become available	Medium - Long
			Promote comprehensive vehicle	Continuous

			emissions monitoring and diesel vehicle testing programmes in congested areas	
			Compile a detailed assessment of the vehicle fleet in PAM including information on vehicle numbers, type, age and fuel usage.	Long
		Agriculture	Obtain information on the quantity of pesticides used in the district	Continuous
			Promote the safe and responsible use of pesticides throughout the district.	Medium – Long
			Promote safe and responsible agricultural burning practices.	Short – Medium
		Biomass Burning	Liaise with fire services to assist in air pollution control	Short – Medium
			Obtain information from local Fire Departments to maintain and update a	Short- Medium

			database of the locations of veld fires and the extent of the areas burnt	
			Maintain a database for regional scheduled burn areas that are published for agricultural and management fires	Short – Medium
		Waste Treatment and Disposal	Develop an emissions inventory of waste burning sources (incinerators, sewage and waste water treatment works)	Short – Medium
			Ensure all operating incinerators are permitted	Continuous
			Maintain a current database of permitted and non-permitted landfill sites	Continuous
Promote communication in Relation to Air Management	Establish an air quality forum in order to ensure proper communication	A committee/forum at a sub-district level representing all interested and affected parties.	Establishment and management of an Air Quality Officers Committee/ Forum	Short-term

	between the Central Karoo District, local government, business and industry as well as interested and affected parties in the 4 sub-districts of the Central Karoo district municipality.	Clearing up the division of functions between the 4 B municipalities and District Municipality on issues of AQM.	Discussions on the division of functions between the 4 B municipalities and the Central Karoo District Municipality	Short – Medium
		Reporting of AQMP progress	Compile a state of air report at least once every two years, with the aim of moving towards annual reporting as capacity and resources improve. Interim progress summaries may be prepared annually where possible. Dependent on municipal capacity and available funding. The Municipality will seek support from the Central Karoo District Municipality and Department of Environmental Affairs and Development Planning to enable	Biennially Medium - Long

			more frequent reporting in the future	
Compliance Monitoring	Develop an air quality by-law	Build capacity to ensure air quality	Allow EHP's to investigate and maintain a good air quality standard	Medium - Long
Manage Nuisance Emissions	Develop and implement measures to address noise and odour nuisances from pesticide spraying and truck traffic	Integration of noise and odour control in the municipal air quality programme and complaints response system	Environmental Officer / Town Planner to manage the emissions	Medium term
Strengthen Evidence Base for Air Quality Planning	Conduct a situational/status quo analysis as part of the next AQMP review	Comprehensive situational analysis completed and integrated into AQMP	Municipal Air Quality Officer / District Municipality / DEA&DP/Town Planner to conduct the status quo for the next AQMP review	Next AQMP review cycle

12. CONCLUSION

The Prince Albert Municipality Air Quality Management Plan (AQMP) represents a proactive and integrated commitment to achieving clean, healthy air for all residents and visitors, in full compliance with the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). Through a thorough situational analysis, this plan identifies key pollution sources—ranging from domestic fuel burning and agricultural practices to transport emissions and dust—while acknowledging emerging nuisances such as odour and noise. By setting a clear vision of "Clean and healthy air for all," the AQMP aligns air quality objectives with the Municipality's Integrated Development Plan (IDP), Spatial Development Framework (SDF), and broader socio-economic goals, ensuring sustainable development in a region characterized by low population density, agricultural reliance, and tourism potential.

The strategic framework outlined herein—supported by four core goals, targeted interventions, and a phased Implementation Plan—addresses current capacity gaps through institutional strengthening, stakeholder collaboration, and progressive investment in monitoring infrastructure. The establishment of a regional Air Quality Forum, designation of an Air Quality Officer, and pursuit of dedicated funding will enhance enforcement, compliance, and public awareness. By prioritizing best environmental practices, complaint-driven responses, and data-informed decision-making, the Municipality positions itself to mitigate health risks, protect ecosystems, and maintain the Karoo's pristine environmental appeal.

This AQMP is not a static document but a living strategy, subject to biennial progress reporting and five-yearly reviews to adapt to evolving challenges, scientific advancements, and community needs. With cooperative governance across local, district, and provincial spheres, Prince Albert Municipality is poised to deliver measurable improvements in ambient air quality, reduce emissions, and foster a resilient, health-focused future. Implementation success will depend on sustained political will, resource allocation, and active community participation—ultimately transforming air quality management from a regulatory obligation into a cornerstone of municipal excellence and environmental stewardship.