REVIEW OF THE
AIR QUALITY MANAGEMENT PLAN

STATUS QUO ASSESSMENT
and
MUNICIPAL RESOURCES

Progress Report No. GRDM-2019 PR.2
Final Report
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COMPILED BY

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ABBREVIATIONS AND DEFINITIONS

AEL	Atmospheric Emissions Licence
AQA	Air Quality Act, Act 39 of 2004
AQM	Air Quality Monitoring
AQMP	Air Quality Management Plan
AQO	Air Quality Officer
CO	Carbon Monoxide
CO_2	Carbon Dioxide
DEADP	Department of Environmental Affairs and Development Planning
DEA	Department of Environmental Affairs
EIA	Environmental Impact Assessment
GRDM	Garden Route District Municipality
H_2S	Hydrogen Sulphide
IDP	Integrated Development Plan
mg/ton	Milligrams per Ton
MSA	Municipal Systems Act
MSW	Municipal Solid Waste
NAEIS	National Atmospheric Emission Inventory System
NO	Nitrogen Monoxide
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
PM10	Particulate Matter with aerodynamic diameter smaller than 10 micron
SAAQIS	South African Air Quality Information System
SAWS	South African Weather Service
SO_2	Sulphur Dioxide
SO_3	Sulphur Trioxide
THC	Total Hydrocarbon Content
tpa	Tons per Annum
TPM	Total Particulate Matter
USEPA	United States of America Environmental Protection Agency

INTRODUCTION

An air quality management plan (AQMP) was compiled for the Garden Route District Municipality (GRDM) in 2007 and included in GRDM's Integrated Development Plan (IDP) shortly thereafter.

As is required by law, the AQMP must be revised on a 5 to 6-yearly basis to ensure that it remains current. As a result it was revised in 2012/13 and the revised plan was also included in GRDM's IDP.

The process of revision of the 2012/13 version of the AQMP commenced early in 2019 after Lethabo Air Quality Specialists (Pty) Ltd (LAQS) was awarded the contract to do so. The following items are included in the Service Level Agreement (SLA) entered into between GRDM and LAQS:

1 Assessment of compliance with the existing AQMP

2 Status quo assessment

3 Compile an emissions inventory

4 Assess the level of air quality monitoring and modelling in the district

5 Assess the relevant municipal resources in the district

6 Review the air quality duties, functions and responsibilities within Garden Route District Municipality

7 Conduct a public participation process

8 Review and compile an AQMP for the Garden Route District Municipality

LAQS's findings of the first item are contained in its report No. GRDM-0291 Progress Report No. 1 of April 2019.

As the two items are interlinked, LAQS assessed the air quality status quo and municipal activity as a single investigation and its findings are contained in this report.

SECTION 1:

STATUS QUO ASSESSMENT

The second task listed in the SLA is an assessment of the baseline conditions that prevail in the District with special emphasis on the following:

-- The geography and demographics of the district aligned with IDP and census data.

-- Future developments in the region with specific focus on industrial activities nearby residential areas.

-- Existing climate conditions throughout the district.

-- Existing air quality activities

-- The relevant Government policies and legislation must be identified and establish specific requirements.

-- Priority sources

-- Identification of priority pollutants for each local authority.

-- Priority areas

-- Use atmospheric dispersion modelling and the associated results of the provisional health risk assessment studies to determine communities affected by air pollution and recommend and agree on action items to address the issues via the AQMP review and planning process.

-- Existing air quality management practices in the district.

-- Analysing existing air quality By-laws of the 7 municipalities and Garden Route D.M. and recommendations on specific measures, improvements.

-- Existing AQMP`s that will influence the AQMP.

The baseline assessment is to be followed by the compilation of an emissions database for the District Municipality. As can be seen from the activities listed above, some relate to both the baseline assessment and the emissions database and were addressed accordingly.

This progress report gives LAQS's interpretation of the current state of air pollution and related activities within GRDM.

1 GEOGRAPHY, DEMOGRAPHICS AND CLIMATE

The Garden Route District is located in the south-eastern part of the Western Cape, covering the regions known as the Garden Route and parts of the Little Karoo. It stretches to the Breede River mouth and the Langeberg Mountains on the west, where it abuts the Overberg District Municipality and (for a short distance) the Cape Winelands District Municipality. To the north the boundary with the Central Karoo District Municipality runs along the Swartberg Mountains. In the east the municipality runs up to the Eastern Cape provincial boundary.

The Garden Route municipal district covers an area of approximately 23 330 km^2 and has a total population of approximately 574 300 according to 2011 statistics. According to Statistics South Africa the average population growth in the country is 3.6% per annum. However, GRDM's 2015 Integrated Waste Management Plan (IWMP) gives different population growth rates in each of the municipalities. This annual growth is shown in the table below and it was used to calculate the current population in each municipality.

Municipality	Area, km^2	Growth rate, %	Population, approximate
Bitou	992	3.80	57 404
Knysna	1 106	2.77	85 430
George / Uniondale	5 191	2.59	237 650
Mossel Bay	2 011	2.24	106 760
Hessequa	5 733	1.77	60 580
Kannaland	4 758	0.33	25 430
Oudtshoorn	3 537	1.25	105 940
Total population			**679 194**

Table 1: Estimated population of each municipality

Figure 1 below shows the location of the seven municipalities in the District.

Figure 1: Garden Route District Municipal Region

Climatic conditions vary substantially in the Garden Route District and include the rain forests of Knysna, coastal weather patterns, mountains that received snow from time-to-time and the dry conditions of the Klein Karoo.

Annual rainfall varies from approximately 1 200 mm in parts of the Knysna forests to 170 mm in Oudtshoorn.

Maximum and minimum temperatures vary across the district and can vary from 40 °C on occasion to close to freezing point during mid-winter.

The demographics and climatic conditions of each of the municipalities are discussed in brief below.

1.1 BITOU

Based on the 2011 Census and the estimated population growth statistics, the population of Bitou is estimated to be 57 404.

The Municipal Service Areas are set out as follows:

Urban:	Plettenberg Bay, New Horizons, Krantzhoek,
Dense settlements:	Bossiesgif, Kwanokuthula
Villages:	Natures Valley, Covie, Kurland, Keurbooms River, Keurboomstrand, Wittedrit, Green Valley, Kranshoek, Goose Valley, Kwanokuthula, New Horizons, Qolweni, Bossiesgif, Piesang Valley , Whale Rock Ridge, Plettenberg Bay, Kranshoek
Rural:	Crags

Bitou climate is typified by an extremely mild maritime temperate climate with very few rainfall or temperature extremes. It is located within the Knysna Afromontane Forest biome, containing temperate gallery forest, supported by the mild temperatures and high, even distributed rainfall. The average maximum and minimum temperatures are typically 23 °C and 17 °C respectively. Annual rainfall is approximately 945 mm.

Prevailing weather conditions in Plettenberg Bay are given in the graphics below.

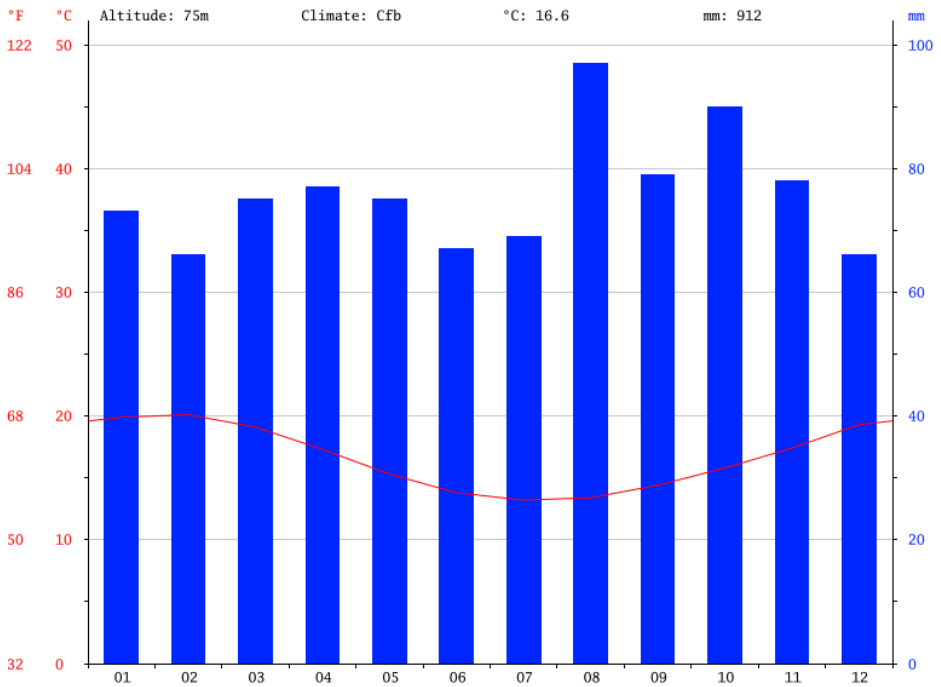

Figure 2: Monthly average temperature and rainfall

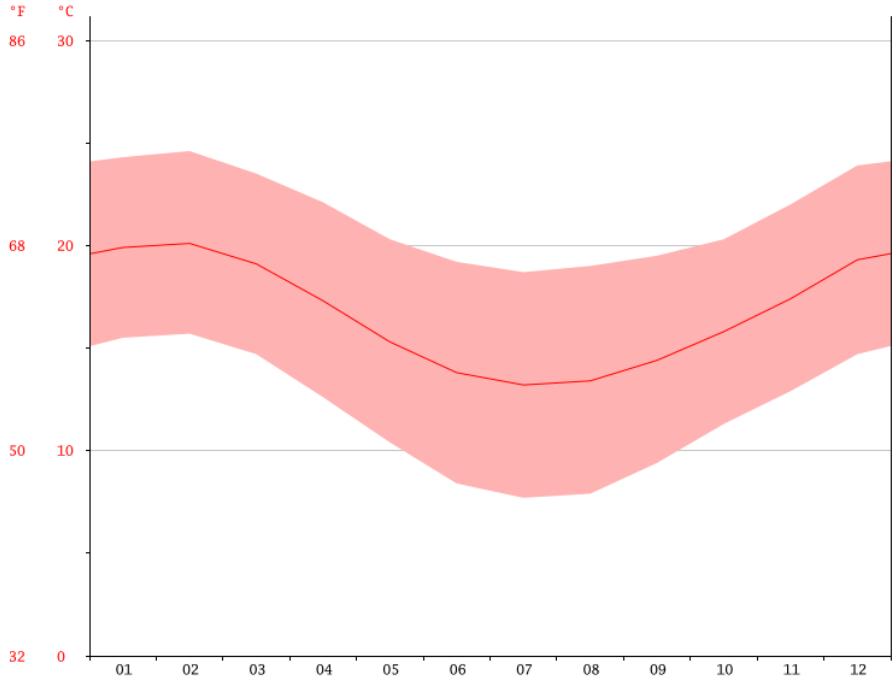

Figure 3: Monthly variations in temperature

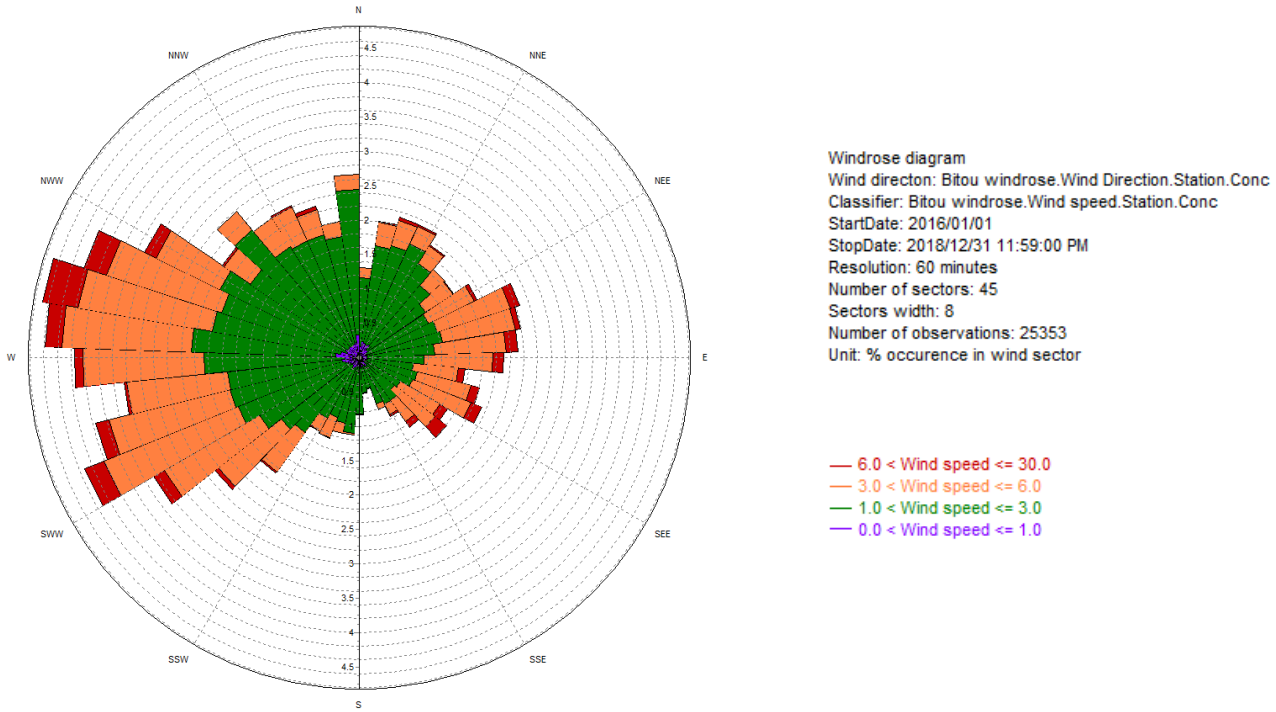

Figure 4: Distribution of winds

1.2 KNYSNA

Based on the 2011 Census and the estimated population growth statistics, the population of Knysna is estimated to be 87 740.

The Municipal Service Areas are set out as follows:

Urban:	Knysna and Sedgefield.
Villages:	Buffelsbaai, Brenton-on-Sea, Brenton-on-Lake, Belvidere, Karatara, Noetzie and Rheenendal

Knysna's climate is moderate with daytime high temperatures varying from 18 ºC to 25 ºC. Overnight minimum temperatures vary between 8 ºC and 16 ºC. On average rain may occur on 8 to 10 days per month and annual rainfall is approximately 850 mm.

Prevailing weather conditions in Knysna are given in the graphics below.

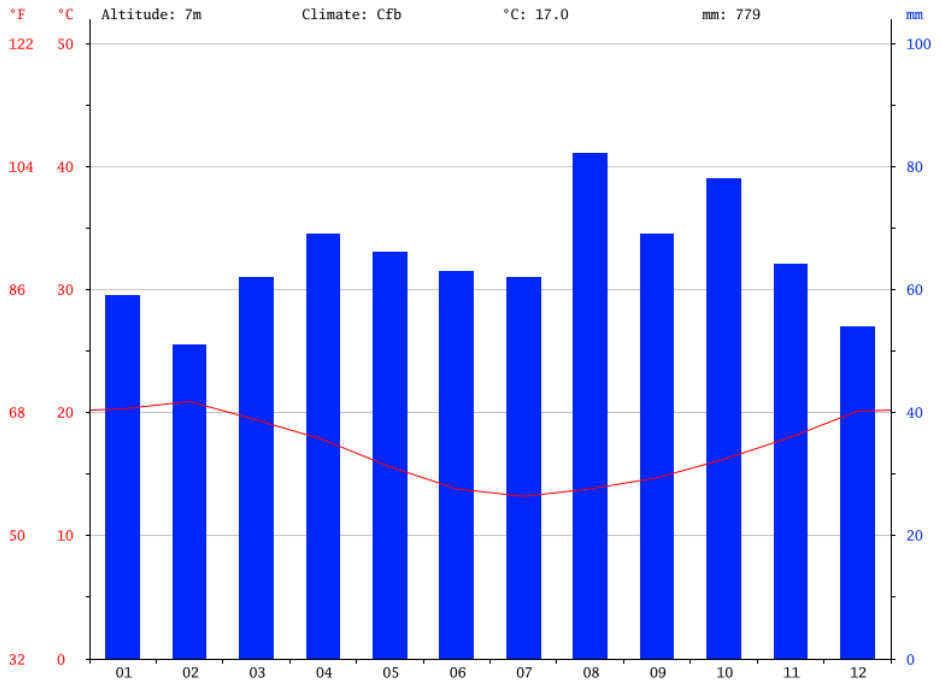

Figure5: Monthly average temperature and rainfall

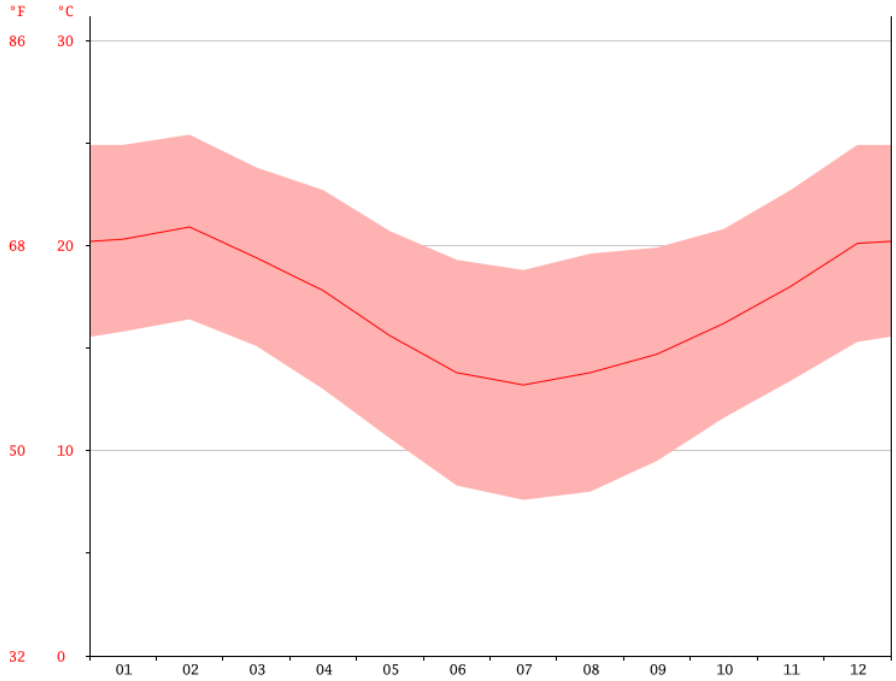

Figure 6: Monthly variations in temperature

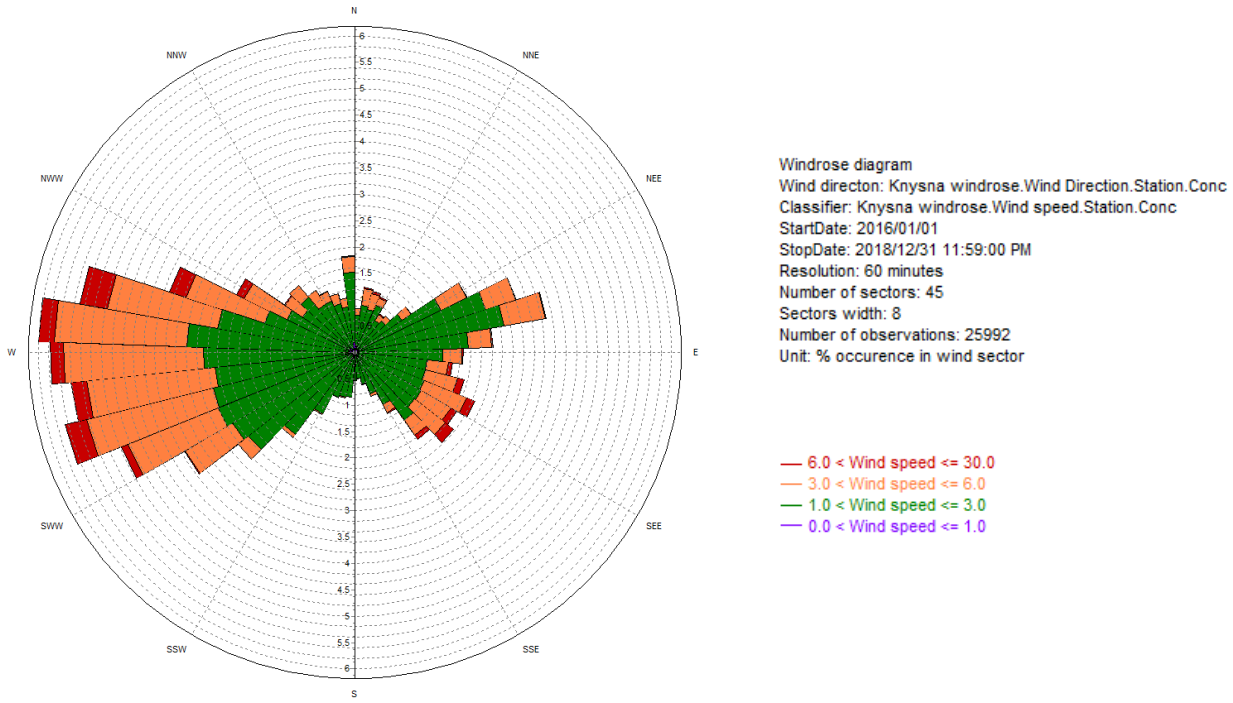

Figure 7: Distribution of winds

1.3 GEORGE

Based on the 2011 Census and the estimated population growth statistics, the population of George and Uniondale is estimated to be 248 450.

The Municipal Service Areas are set out as follows:

Urban:	George
Villages:	Wilderness and Herold's Bay
Resorts:	Victoria Bay, Kleinkrantz and the Wilderness National Park
Rural:	Wilderness East, Geelhoutboom, Herold and Waboomskraal

George has a temperate climate. Summer temperatures can reach highs of 38° and winter temperatures fall to about 18º C. Sporadic snowfalls on the higher Outeniqua peaks during winter may result in minimum temperatures that are lower than normal.

Berg winds during winter and cold fronts during spring and autumn further contribute to a very equitable climate.

Annual average rainfall is 770 mm. The average annual relative humidity is 88 %.

Prevailing weather conditions in George are given in the graphics below.

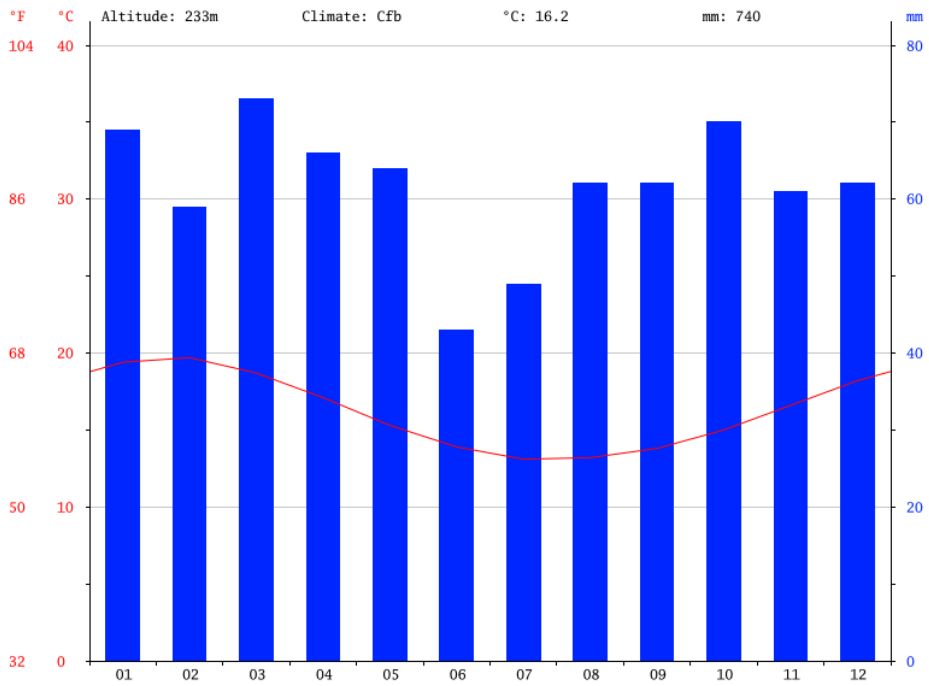

Figure 8: Monthly average temperature and rainfall

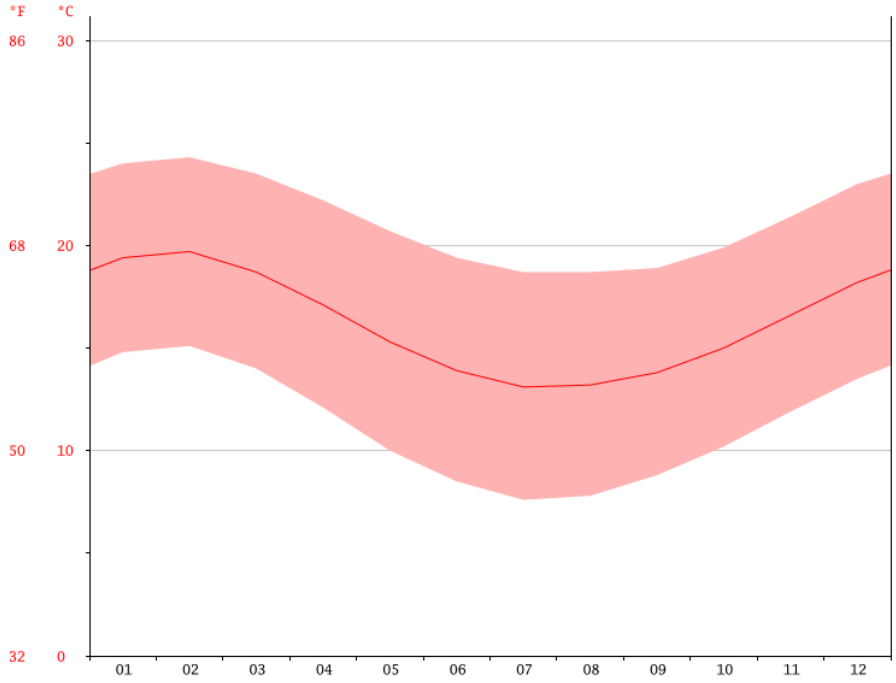

Figure 9: Monthly variations in temperature

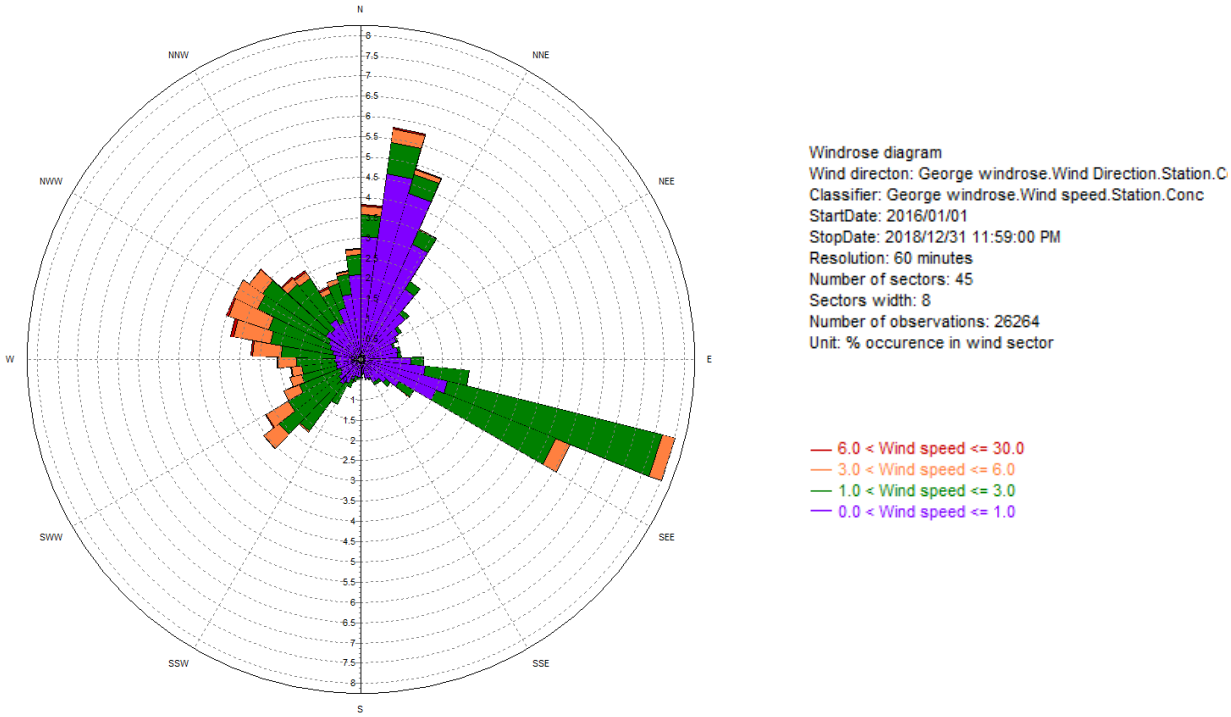

Figure 10: Distribution of winds

1.4 MOSSEL BAY

Based on the 2011 Census and the estimated population growth statistics, the population of Mossel Bay is estimated to be 114 880.

The Municipal Service Areas are set out as follows:

Urban: Mossel Bay (including Kwa Nonqaba, Asla, Hartenbos, Hartenbos Heuwels, Seemeeu Park, Menkenkop D'Almeida, Danabay, Joe Slovo, Civic Park, Highway Park, Protea Park, Tarka, Island View and Da Nova), Glentana, The Brak River areas, Suiderkruis

Rural: Brandwacht, Toekoms, Ruiterbos, Vleesbaai, Buisplaas, Herbertsdale, Great Brak River, Friemersheim, Jonkersberg, Bartelsfontein, Kleinberg, Rietvlei

Mossel Bay's climate is mild throughout the year as the town is situated in the area where the winter rainfall and all-year rainfall regions of the Western Cape Province meet. Its weather is influenced by the Agulhas Current of the Indian Ocean to the south, and by the presence of the Outeniqua Mountains to the north. Mossel Bay receives 80 % of its rainfall at night.

Frost is rare or almost absent and snow has never been recorded on the coastal platform. Prevailing winds are westerly in winter and easterly in summer and rarely reach storm- or gale-force strength. The average days of sunshine are 320 days per year.

Prevailing weather conditions in Mossel Bay are given in the graphics below.

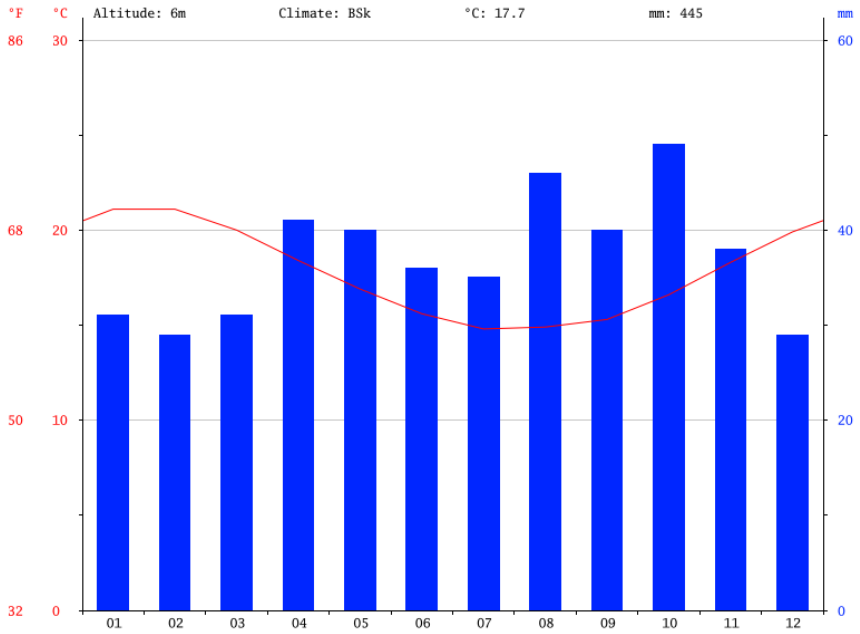

Figure 11: Monthly average temperature and rainfall

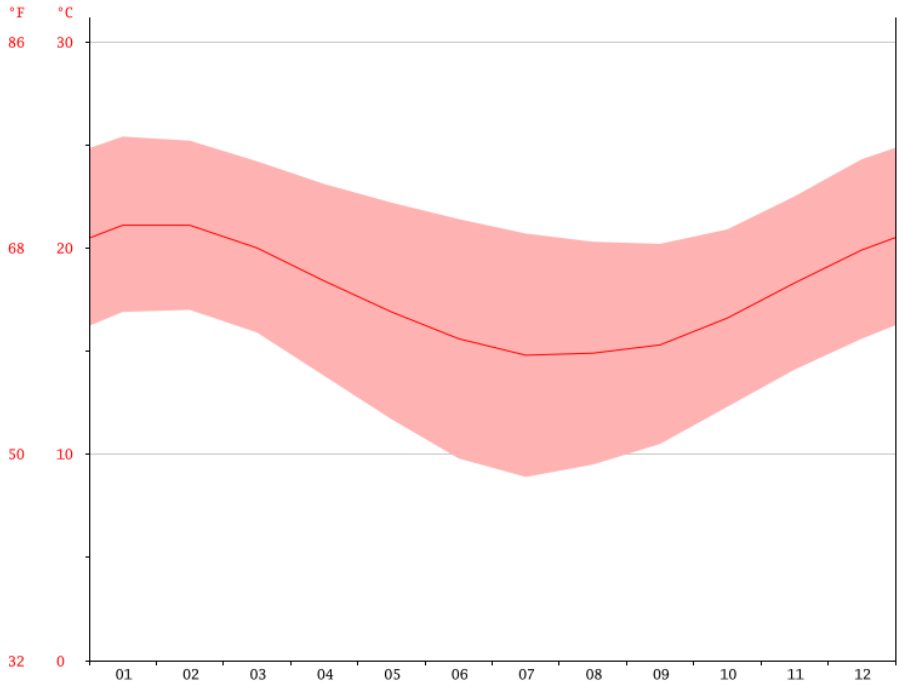

Figure 12: Monthly variations in temperature

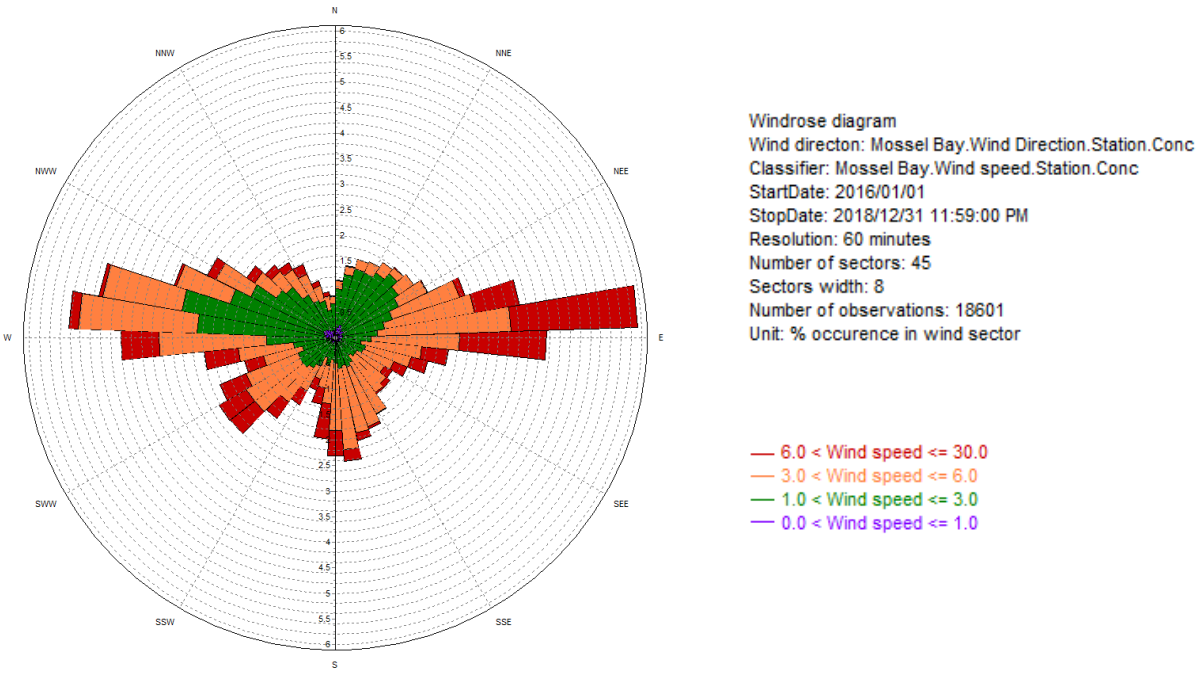

Figure 13: Distribution of winds

1.5 HESSEQUA

Based on the 2011 Census and the estimated population growth statistics, the population of Hessequa is estimated to be 68 030.

The Municipal Service Areas are set out as follows:

Urban:	Albertinia, Heidelberg and Riversdale.
Villages:	Melkhoutfontein, Gouritsmond, Jongensfontein, Slangrivier, Stilbaai and Witsand.

Hessequa's average maximum and minimum temperatures are 28 ºC and 15 ºC respectively. Most rain falls during May and August.

Prevailing weather conditions in Riversdale are given in the graphics below.

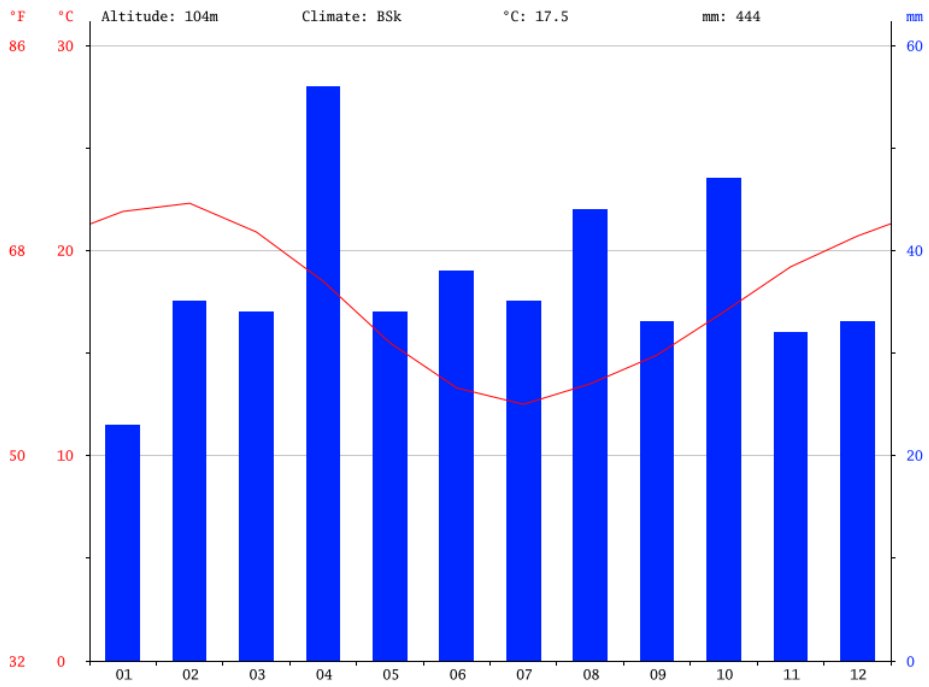

Figure 14: Monthly average temperature and rainfall

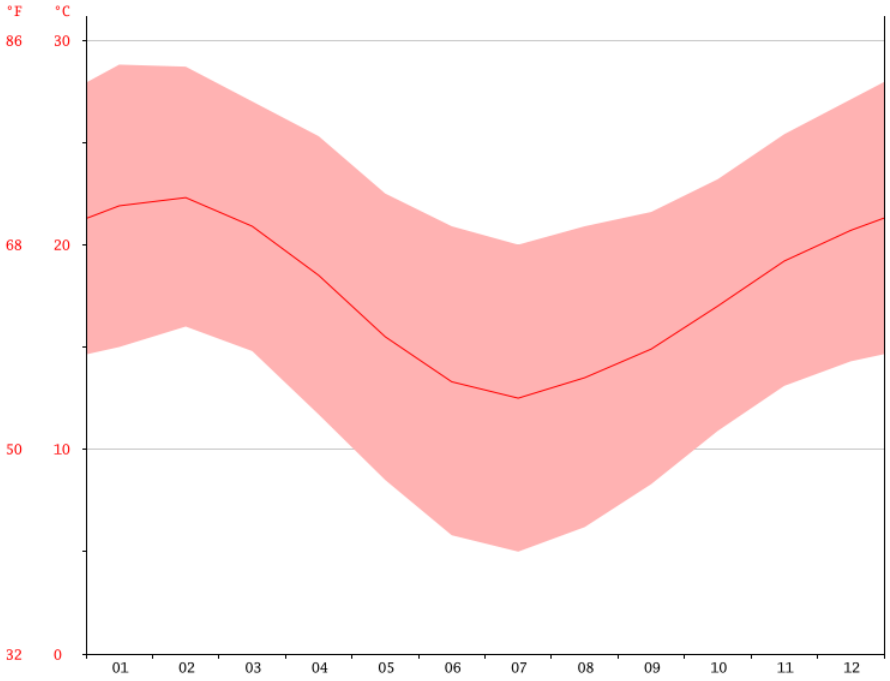

Figure 15: Monthly variations in temperature

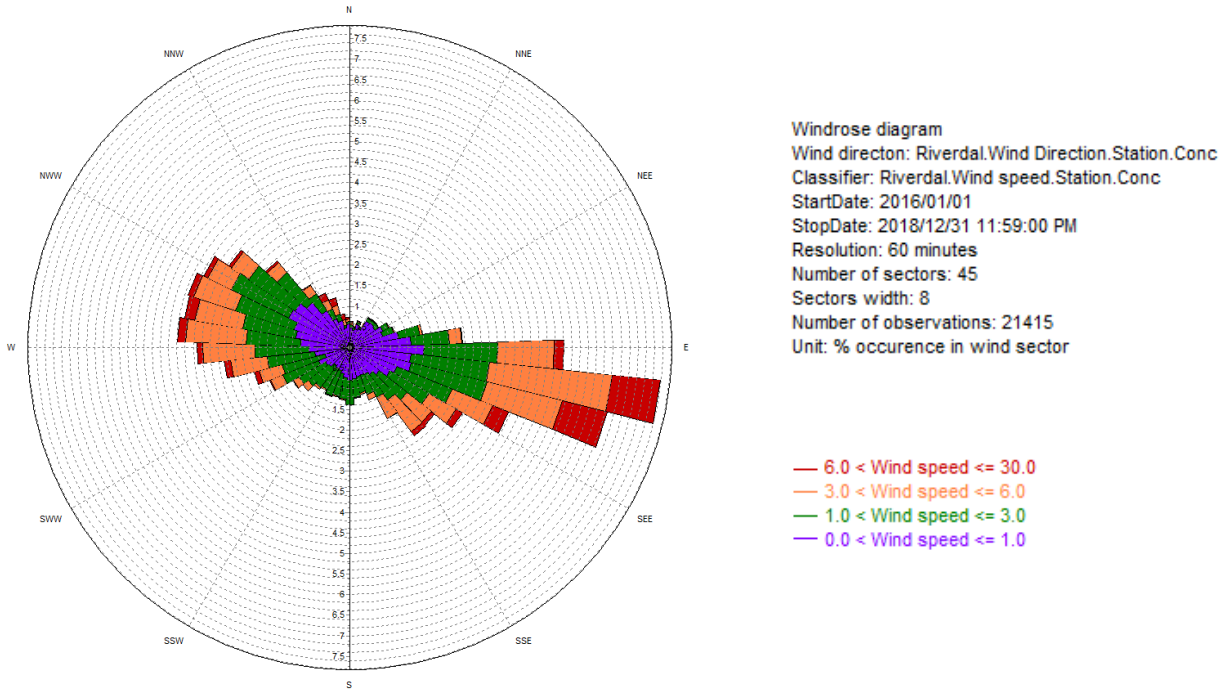

Figure 16: Distribution of winds

1.6 KANNALAND

Based on the 2011 Census and the estimated population growth statistics, the population of Kannaland is estimated to be 31 190.

The Municipal Service Areas are set out as follows:

Urban:	Ladismith, Calitzdorp and Zoar.
Villages:	Van Wyksdorp

Kannaland typically receives approximately 190 mm of rain per year, with rainfall occurring throughout the year.

The average maximum and minimum temperatures are 29.6 ºC and 16.5 ºC respectively. During winter night-time temperatures can drop to approximately 3 ºC.

Prevailing weather conditions in Ladismith are given in the graphics below.

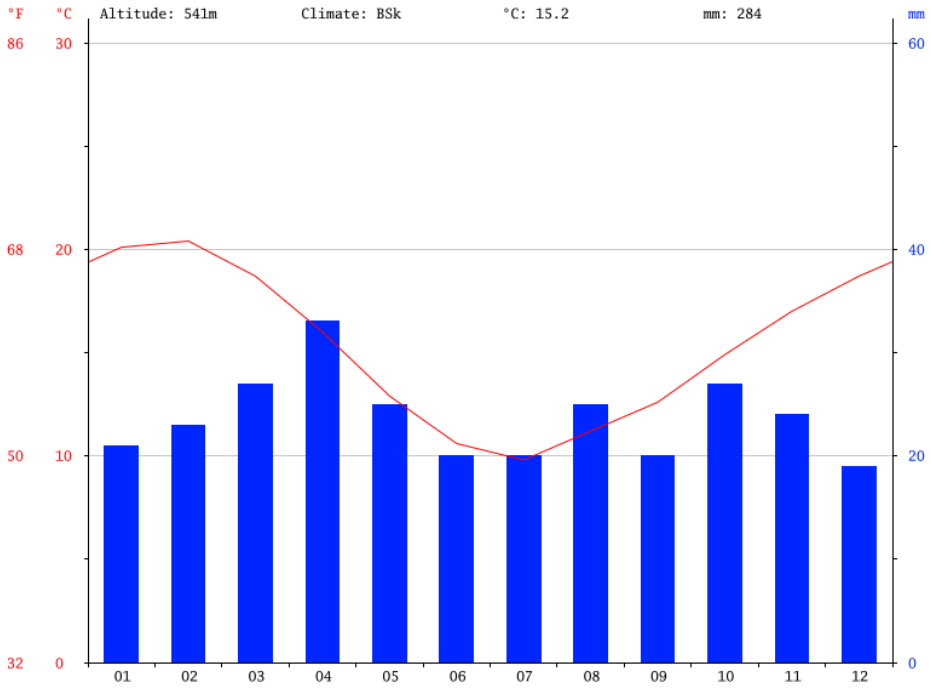

Figure 17: Monthly average temperature and rainfall

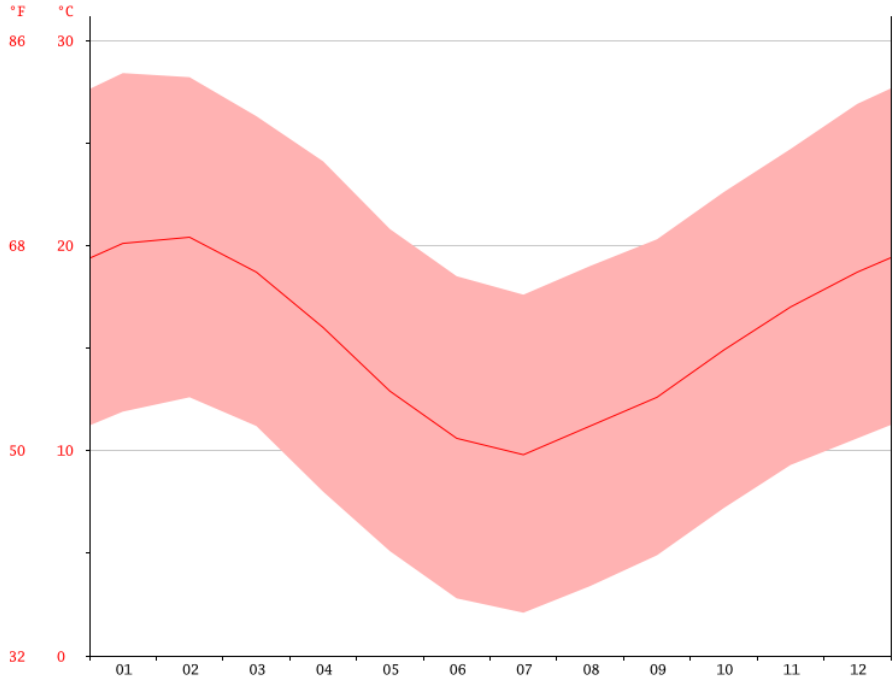

Figure 18: Monthly variations in temperature

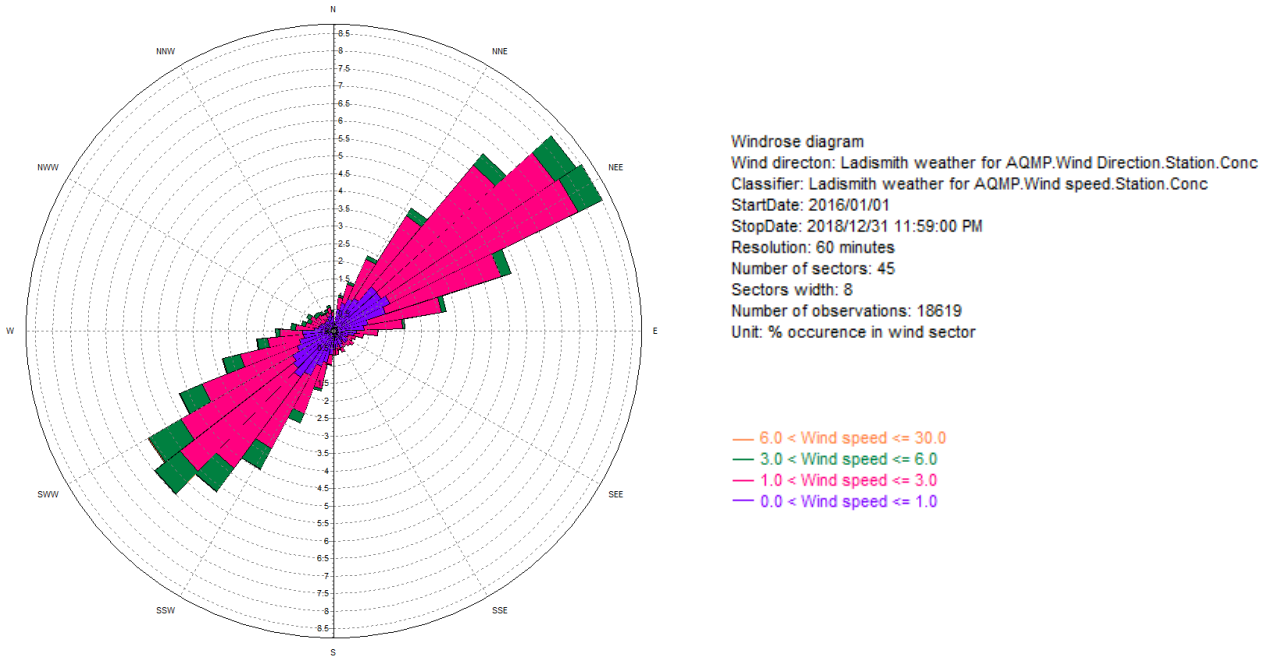

Figure 19: Distribution of winds

1.7 OUDTSHOORN

Based on the 2011 Census and the estimated population growth statistics, the population of Oudtshoorn is estimated to be 123 650.

The Municipal Service Areas are set out as follows:

Urban:	Oudtshoorn
Villages:	De Rust, Dysselsdorp

Oudtshoorn normally receives approximately 172 mm of rain per year, with rainfall occurring throughout the year.

The average maximum and minimum temperatures are 32 ºC and 19 ºC respectively. During summer the maximum temperature may exceed 40 ºC while winter night-time temperatures can drop to approximately 5 ºC.

Prevailing weather conditions in Oudtshoorn are given in the graphics below.

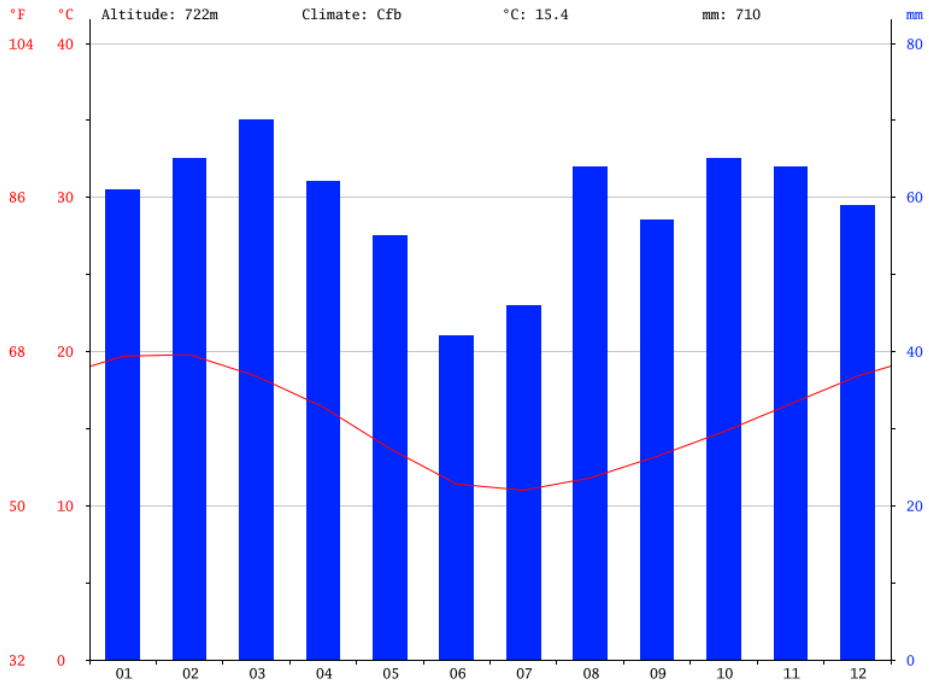

Figure 20: Monthly average temperature and rainfall

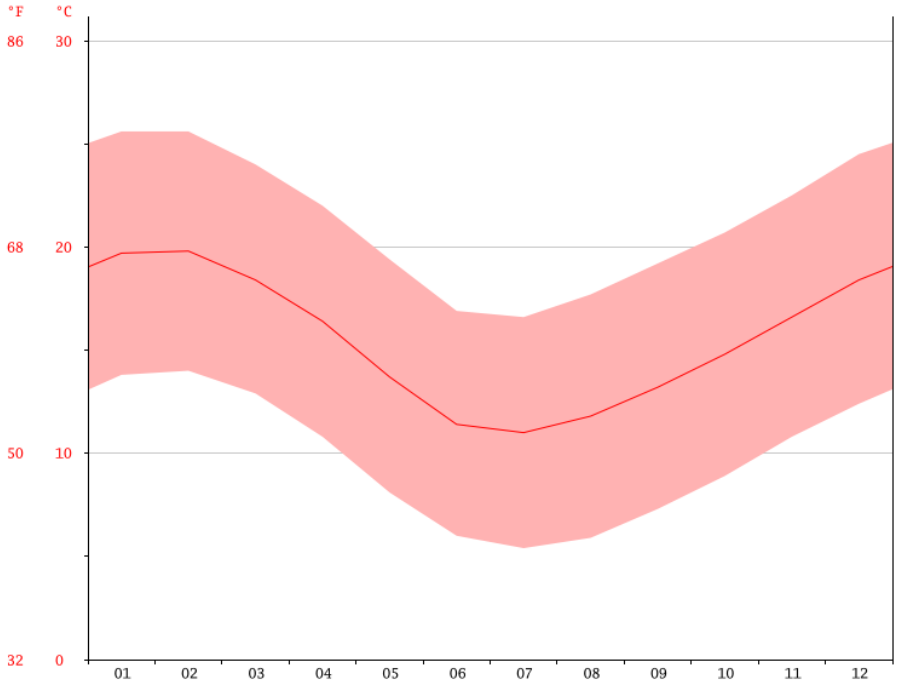

Figure 21: Monthly variations in temperature

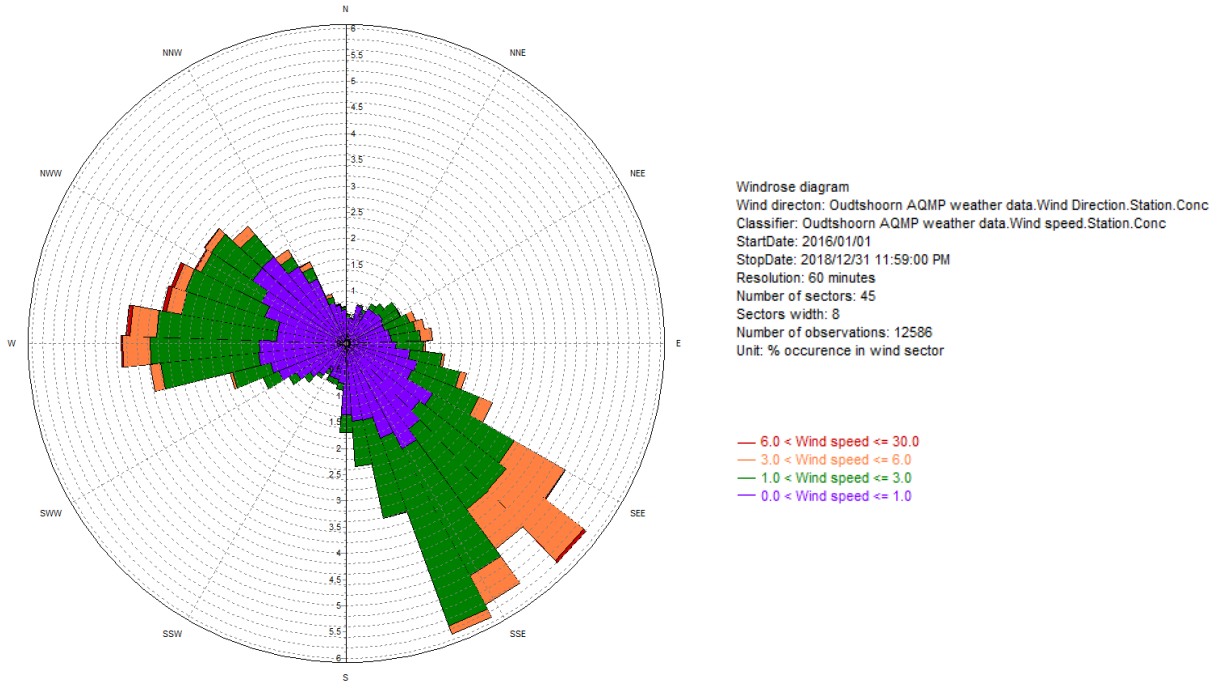

Figure 22: Distribution of winds

2 FUTURE DEVELOPMENTS

Future developments plans in the district are not known, but to date some difficulties have been experienced due to the fact that developments were undertaken at municipal level without obtaining an input from GRDM's AQO.

While each municipality in the GRDM region was provided with an AQMP in 2012, very few of these AQMPs were included in the municipal IDPs. As a result, hardly any air quality input has been sought prior to any development that has taken place in the municipalities during the past six years. In addition, very low budgets for air quality management were provided for by the municipalities.

A key component of the current GRDM AQMP review process is the review of the AQMPs for each of the seven municipalities contained in the Garden Route District. Once finalised and approved, these AQMPs should be incorporated into the relevant municipal IDPs so that no developments are undertaken in future without first obtaining an air quality input from the relevant AQOs.

3 GOVERNMENT POLICIES AND LEGISLATION

3.1 THE AIR QUALITY ACT

The Air Quality Act (AQA) was promulgated in 2004 (Act No. 39 of 2004) and commenced on the 11th of September 2005, thus replacing the previous Air Pollution Prevention Act (APPA) of 1965.

Article 2 of the Act defines its objective as:

(a) to protect the environment by providing reasonable measures for -

(i) the protection and enhancement of the quality of air in the Republic;

(ii) the prevention of air pollution and ecological degradation; and

(iii) securing ecologically sustainable development while promoting justifiable economic and social development; and

(b) generally to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

Article 15(2) (Chapter 3) of the act states the following requirement:

(2) Each municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an air quality management plan.

It is, therefore, a requirement for each municipality to have an AQMP and must include it in its IDP. The Act is very specific in its definition of the goal on an air quality management plan. Of specific importance are the following:

-- The improvement of air quality

-- Reducing negative impacts on human health and the environment

-- Addressing the effects of fossil fuels in residential applications

-- Addressing the effects of emissions from industrial sources and from any point or non-point sources of air pollution

-- Implementing the Republic's obligations in respect of International agreements

-- Giving effect to best practice in air quality management.

There are also various additional stipulations in the Act that impact on municipal air quality management activities, e.g.:

-- The publication of regulations for implementing and enforcing approved priority area AQMPs including, amongst others, funding arrangements; measures to facilitate compliance and regular review.

-- The declaration of controlled fuels and vehicles as controlled emitters, regulating dust and noise pollution and the development of municipal by-laws to regulate air pollution within the area of the municipality's jurisdiction.

-- The declaration and setting of standards for controlled emitters and controlled fuels.

-- Annual reporting on the implementation of AQMPs.

-- The declaration of any appliance or activity as a controlled emitter.

-- The declaration of any fuel used in a combustion process as a controlled fuel.

-- The prescription of measures to control dust and/or noise. (This is yet to be developed.)

3.2 THE NATIONAL FRAMEWORK

The National Framework for Air Quality Management in the Republic of South Africa (the National Framework), as published under Government Notice No. 1144 of 26 October 2018, underpins the Air Quality Act (AQA) by providing national norms and standards for air quality management to ensure compliance with legislation. The National Framework serves as the country's AQMP.

The following is extracted from Paragraph 3.2.3 of the 2017 National Framework:

3.2.3 Municipalities

As with the national department and the provincial departments, municipalities have a number of responsibilities within the governance cycle which is described in Chapter 4 of this document (The National Framework). *However, each municipality has a number of exclusive air quality management powers as summarised below:*

In this regard, the municipality must:

-- *Designate a municipal AQO from its administration.*

-- *Develop an AQMP for inclusion in its Integrated Development Plan (IDP) in accordance with Chapter 5 of the Municipal Systems.*

-- *Prepare an annual report including progress regarding the implementation of the AQMP and compliance with the plan.*

-- *Enforce and ensure compliance with the requirements of the regulations developed in terms of the AQA.*

The municipality may also:

-- *Establish municipal standards for emissions from point, non-point and mobile sources if a municipality, in terms of its by-laws, identifies a substance or mixture of substances in ambient air which through ambient concentrations, bioaccumulation, deposition or any other way, presents a threat to health or well-being or the environment, or which the municipality reasonably believes presents such a threat.*

-- *Require the appointment of an Emission Control Officer in a given company (Article 48 of AQA), thereby extending the powers of the authority by ensuring that the Emission Control Officer is responsible for the company applying the correct measures to minimise emissions.*

In addition, Metropolitan and District Municipalities must:

-- *Implement the atmospheric emission licensing system, and carry out the responsibility for performing the functions of the licensing authority as set out in Chapter 5 of the AQA.*

Note: When appointing and designating air quality officers in terms of Section 14 (1) to (3) of the AQA, all spheres of government must ensure that the person designated is of the calibre and academic qualifications that will enable him/her to perform the duties of the AQO which include among others;

-- *Coordination of matters of air quality within his/her jurisdiction;*

-- *Ensuring representation in meetings with other government officials, industry, NGOs, and other stakeholders;*

-- *Providing input and making decisions on behalf of his/her department on air quality matters at various air quality fora;*

-- *Work with Environmental Management Inspectors on AQA matters;*

-- *Input into the national atmospheric emissions inventory;*

-- *Reporting on the state of air;*

-- *Reporting on implementation of AQMP for the jurisdiction; etc.*

Paragraph 4.2 of the National framework describes the duties and responsibilities of all levels of government involved with air quality management. Those activities that are regarded as the primary responsibilities of individual municipalities are listed below.

Section No.	Title	Responsibilities
4.2.1	Information management	-- Monitor ambient air quality and point, non-point and mobile source emissions. -- Review emissions reports provided by industry in the NAEIS in line with AEL.
4.2.3	Strategy development	-- The development of air quality management plans as a component of integrated development plans as required by the Municipal Systems Act.
4.2.4	Standards setting	-- The setting of municipal standards for emissions from point, nonpoint or mobile sources in the municipality in respect of identified substances or mixtures of substances in ambient air which, through ambient concentrations, bio-accumulation, deposition or in any other way, present a threat to health, well- being or the environment in the municipality.
4.2.8	Compliance monitoring	-- Monitoring 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. -- Monitoring compliance in respect noise caused by an activity, in terms of nuisance or disturbance matters. -- Monitoring compliance with directives to submit an atmospheric impact report. -- Monitor compliance with the requirements of

		the National Dust Control Regulations. -- Monitor compliance with the emission standards set out for activities declared as controlled emitters in terms of section 23 of the AQA. -- Monitor compliance with the requirements of the National Dust Control Regulations for an activity, in terms of nuisance or disturbance matters

The activities that are regarded as the primary responsibilities of district municipalities are listed below.

Section No.	Title	Responsibilities
4.2.1	Information management	-- Monitor ambient air quality and point, non-point and mobile source emissions.
4.2.3	Strategy development	-- The development of air quality management plans as a component of integrated development plans as required by the Municipal Systems Act.
4.2.4	Standards setting	-- The setting of municipal standards for emissions from point, nonpoint or mobile sources in the municipality in respect of identified substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well- being or the environment in the municipality.
4.2.7	Authorisations	-- Issuance of an Atmospheric Emission Licences. -- Transferring of Provisional Atmospheric Emission Licence and Atmospheric Emission Licence if ownership of an activity for which a provisional atmospheric emission licence was issued is transferred. -- Review of Provisional Atmospheric Emission Licence and Atmospheric Emission Licence at intervals specified in the licence, or when circumstances demand that a review is necessary.

		-- Variation of Provisional Atmospheric Emission Licence and Atmospheric Emission Licence. -- Renewal of Provisional Atmospheric Emission Licence and Atmospheric Emission Licence on application by the holder of the licence.
4.2.8	Compliance monitoring	-- Monitoring potential illegal listed activities. -- Monitoring compliance with emission standards in respect of the manufacture, sale or use any appliance or conducting of an activity declared as a controlled emitter. -- Monitoring compliance in respect to reasonable steps to prevent the emission of any offensive odour caused by a listed activity. -- Monitoring compliance in respect noise, caused by a listed activity. -- Monitoring compliance with directives to submit an atmospheric impact report. -- Monitoring compliance with conditions or requirements of an atmospheric emission licence. -- Monitoring any application for an atmospheric emission licence, or for the transfer, variation or renewal of such a licence to ensure that it does not contain false or misleading information. -- Monitoring any information provided to an air quality officer to ensure that it does not contain false or misleading information. -- Monitor compliance with the requirements of the National Dust Control Regulations. -- Monitor compliance with the requirements of the National Dust Control Regulations, for listed activities.

		-- Monitor compliance with the emission standards set out for activities declared as controlled emitters in terms of section 23 of the AQA -- Monitor compliance with the requirements of the National Dust Control Regulations, for listed activities. -- Monitor compliance with the emission standards set out for activities declared as controlled emitters in terms of section 23 of the AQA -- Monitor compliance with the emission standards set out for activities declared as controlled emitters in terms of section 23; for facilities that have been issued with an AEL .

As can be seen from the two tables above, some areas of primary responsibility applies to both district and local municipalities. Effective air quality management can, therefore, only be achieved by close cooperation between the two levels of government.

Section 4.3 of the National Framework states the following:

"It is important that all municipalities that experience air quality issues within their jurisdictions build the necessary organisational capacity to implement these functions in an efficient and effective manner and in a manner that is commensurate with the air quality problems to be addressed. In this regard, organisational capacity refers to the structures (including sustainable funding), systems, skills, strategies, incentives and interrelationships necessary to implement these functions in an efficient and effective manner and in a manner that is commensurate with the air quality problems to be addressed."

In LAQS's opinion this can only be achieved by including AQMPs in municipal IDPs and close cooperation with GRDM.

3.3 ADDITIONAL LEGISLATION

The DEA Manual for Air Quality Management Planning (2008) recommends that, in addition to the AQA, the following legislation be consulted in the goal setting processes of developing an AQMP:

-- South Africa Constitution 108 of 1996

-- National Environmental Management Act (No. 107 of 1998)

-- National Health Act 61 of 2003

-- Municipal Structure Act 117 of 1998

-- Municipal Systems Act 32 of 2000

3.4 AMBIENT AIR QUALITY STANDARDS

The National Ambient Air Quality Standards (NAAQS) were published in Government Notice No 1210 on 24 December 2009. Air quality standards for the following pollutants were specified:

-- Sulphur dioxide

-- Nitrogen dioxide

-- PM10 Particulate matter

-- Ozone

-- Benzene

-- Lead

--- Carbon monoxide

The National Ambient Air Quality Standards (NAAQS) for PM2.5 particulate matter were published in Government Notice No 486 on 29 June 2012.

National dust control regulations were published in Government Notice No R.827 on 1 November 2013.

All three documents are available free of charge on DEA's web site (www.environment.gov.za).

3.5 LISTED ACTIVITIES

Industrial and materials processing activities that are likely to, or currently, result in atmospheric emissions are required to apply for atmospheric emissions licenses (AEL). The activities are classified into ten categories (with sub-categories) in the Government Notice No. 893 which was published on 22 November 2013, as amended. Minimum emission standards for 59 industrial activities exist for the following main categories:

Category 1: Combustion Installations

Category 2: Petroleum Industry (the production of gaseous and liquid fuels as well as petrochemicals from crude oil, gas, coal 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-product recovery

Category 10: Animal Matter Processing

In addition, the following activities were classified as controlled emitters:

-- Small boilers were classified as controlled emitters in Government Notice 831 of 1 November 2013.

-- Small-scale char and small-scale charcoal plants were classified as controlled emitters in Government Notice 602 of 18 September 2015.

-- Temporary asphalt plants were classified as controlled emitters in Government Notice 201 of 28 March 2014.

As is the case with ambient air quality standards, GN 893 is available free of charge on DEA's web site (www.environment.gov.za).

4 PRIORITY SOURCES, POLLUTANTS AND AREAS

The prioritisation of sources of emissions, types of pollutants and critical areas of impact will be discussed in either LAQS's report on the emissions inventory and/or the report dealing with the outcome of the dispersion modelling study.

5 ATMOSPHERIC DISPERSION MODELLING

The modelling of the dispersion of air pollutants in the Garden Route District can only be done once an emissions inventory has been finalised and will be reported on in detail once the work has been completed.

Suffice to state that the modelling will be done for each individual municipality, as well as for GRDM region as a whole. As far as possible, use will be made of locally measured weather parameters in each municipal area.

SECTION 2

MUNICIPAL RESOURCES

6 EXISTING AIR QUALITY MANAGEMENT PRACTICES

An assessment of the existing air quality management practices applied in the Garden Route District Municipality was carried out during the assessment of compliance with the existing AQMP and LAQS's findings were discussed in its Report No. GRDM-2019 PR.1 of April 2019.

The Air Quality Act and National Framework place far-reaching responsibilities on the shoulders of municipalities, as can be seen from the preceding Section.

LAQS assessed the steps that each individual municipality has taken to meet the various obligations imposed by the AQA, the National Framework and the individual AQMPs, as well as their capacities to deal with air quality issues.

6.1 BITOU MUNICIPALITY

Bitou Municipality has not appointed an Air Quality Officer. The air quality function resides in the Community Services Department. Although designated as Bitou's Air Quality Officer, the official has little time to spend on air quality matters as it forms only a minor part of the Officer's duties. It is fortuitous that Bitou does not experience many, if any, air quality issues that require the specific attention of the AQO.

The official charged with air quality issues has 12 years' experience in his field and his level of skills required to manage air quality is adequate. Please see Table 2 below for more details in this regard.

However, the official also serves as Manager: Waste, i.e. waste collection, management of landfill sites, etc., with the result that very little time is available for air quality management functions.

The Bitou Municipality has an Air Pollution Control By-Law with the purpose of avoiding, minimizing or remedying air pollution. It has a formal air quality management budget but has no equipment with which air quality spot checks can be carried out. Its AQMP, developed in 2012/13, has not been included in Bitou's IDP.

While the assessment may indicate that Bitou is failing in its efforts to carry out the responsibilities imposed on it by the AQA, the situation is not regarded as serious due to the very small number of emission sources within its boundary.

6.2 KNYSNA MUNICIPALITY

Knysna Municipality has approved a new structure with Environmental Management falling under the Directorate of Planning and Economic Development. The new structure must still be implemented. Until such time the air quality function resides under the Directorate of Protection.

The designated AQO has a National Diploma in Environmental Management and 10 years' experience in environmental management related activities. Her level of skills required to manage air quality is regarded as adequate for the Knysna area. Please see Table 2 below for more details in this regard.

A draft municipal by-law was prepared for approval by Municipal Management structures. Under the new by-law the designation, powers and function of the AQO is defined. Once approved, this will go to some lengths to strengthen this role within the Knysna Municipality. Knysna's AQM has been included in their IDP.

No budget has been allocated for air quality management as the local council sees this as a secondary function.

Vehicle emissions are identified as a potential risk for Knysna as all of the traffic along the N2 national road pass through the town, yet no vehicle emission testing equipment is available for spot checks.

The assessment indicates that Knysna is not meeting its obligations as imposed by the AQA but, as is the case with Bitou, there are very few emission sources in Knysna other than traffic.

6.3 GEORGE MUNICIPALITY

The George Municipality has appointed an Air Quality Officer. The air quality function resides in the Community Services Department.

The AQO has a National Diploma in Environmental Management and has approximately 14 years' experience in environmental management. Her level of skills required to manage air quality is regarded as adequate for the George area, although her exposure to industry is limited and has had little exposure to dispersion modelling activities. Please see Table 2 below for more details in this regard.

The official charged with air quality duties is also required to carry out the manifold functions associated with environmental health practitioners with the result that she is able to spend only approximately 5% of her time on air quality management functions.

George has air quality by-laws and its AQMP is included in the IDP.

George has a formal air quality management budget, albeit very low (R 8 000 during the current financial year), and this amount is spent as George Municipality's contribution to the development of a District AQMP. George Municipality has a portable industrial

combustion gas analyser and a Minivol with which to carry out air quality spot checks and assists GRDM in its activities to carry out passive sampling campaigns, diesel exhaust emission measurements, etc.

LAQS is of the opinion that George Municipality is not meeting its obligations as imposed by the AQA and National Framework. Substantial room for improvement exists, therefore, and the situation is regarded as serious due to the large number of emission sources in the George municipal area.

6.4 MOSSEL BAY MUNICIPALITY

The Mossel Bay Municipality has appointed an Air Quality Officer. The air quality function resides in the Waste Management and Pollution Control section of the Parks and Recreation Department. The team is quite large in comparison with other B-municipalities in GRDM, but has a very high workload. The majority of time is allocated to waste management.

The AQO has a BTech degree in Environmental Health and has approximately 13 years' experience in air quality related activities. His level of skills required to manage air quality is regarded as adequate for the Mossel Bay area, although he has limited industrial exposure and none to dispersion modelling activities. Please see Table 2 below for more details in this regard.

Approval was received for an amended structure which will come into effect in July 2019. Waste Management and Environmental Control will be split with a responsible person heading up each unit. Each unit will have support personnel. The AQO will fall under the Environmental Control unit.

All environmental complaints are directed to the AQO. Complaints from license holders are directed to GRDM.

Formal air quality by-laws have been adopted and Mossel Bays AQMP is included in their IDP.

Mossel Bay does not have a formal air quality management budget. Expenses relating to training, consultancy and printing of educational material fall under the Waste Management budget. Mossel Bay owns a vehicle emission monitor, but does not have the skill in-house to make use of the equipment. GRDM assists Mossel Bay to carry out passive sampling campaigns, diesel exhaust emission measurements, etc.

While a suitably qualified and experienced official serves as AQO, he has insufficient time to carry out the duties required of an AQO with the result that the Mossel Bay Municipality is not meeting its obligations as imposed by the AQA and National Framework. Substantial room for improvement exists, therefore, and the situation is regarded as serious due to the large number of emission sources in the Mossel Bay Municipal area and the increasing number of air pollution related complaints received.

6.5 HESSEQUA MUNICIPALITY

Hessequa Municipality has appointed an Air Quality Officer. The air quality function resides in the Environmental Management Department. The AQO is assisted by one additional official.

The designated AQO holds a Master's degree in Environmental Management and has approximately 10 years' experience in air quality related activities. His level of skills required to manage air quality is regarded as adequate for the Hessequa region, although he has limited exposure to industry and dispersion modelling activities. Please see Table 2 below for more details in this regard.

The official also serves as Environmental Officer and is responsible for many duties, e.g. river management, reserve management, parks maintenance, coastal management, etc.

Hessequa Municipality's AQMP is included in its IDP and has entered into a service-level agreement with GRDM with the result that GRDM carries out all air quality management activities on the area. Hessequa has a formal air quality budget aimed at carrying the costs of the service level agreement, although no formal air quality by-laws have been adopted.

This arrangement is regarded as adequate for the area as the number of industrial sources is low, although widely spread through the Hessequa region.

Hessequa Municipality owns a vehicle emission testing kit. Additional budget would be required to provide additional resources for air quality management.

6.6 KANNALAND MUNICIPALITY

Kannaland Municipality has appointed an Air Quality Officer. The air quality function resides in the Community Services Department.

The designated AQO has very limited experience (1 year) and her level of skills required to manage air quality is low as she has little knowledge of the key components and air quality management. Please see Table 1 below for more details in this regard. The official charged with air quality duties is also responsible for waste management, with the result that very little time is available for air quality management functions.

Kannaland has not adopted air quality by-laws, nor has its AQMP been included in the IDP. As a result it does not have a formal air quality management budget and has no equipment with which air quality spot checks can be carried out.

While the assessment may indicate that Kannaland is failing in its efforts to carry out the responsibilities imposed on it by the AQA, the situation is not regarded as serious due to the very small number of emission sources within its boundary. Nevertheless, this capacity should be expanded as some odour related complaints arise from time to time.

6.7 OUDTSHOORN MUNICIPALITY

Oudtshoorn Municipality has appointed an Air Quality Officer. The air quality function resides in the Town Planning Department. The AQO's duty includes noise complaints, waste management and heritage.

The appointed AQO has a good level of experience in air quality (8 years) and holds a BA Degree. His level of skills is not regarded as adequate for the management of air quality as exposure to some of the key functions is limited. Please see Table 2 below for more details in this regard.

Oudtshoorn allocated a budget of R 40 000.00 for Air Quality in the 2019 budget, a first for this town. Oudtshoorn does not have any vehicle or source emission monitoring equipment and relies on the District for this service. The Oudtshoorn Municipality council adopted the first generation AQMP in 2017 and has been included in the Oudtshoorn IDP.

Due to the dedication of the AQO, the current level of air quality management in Oudtshoorn is good, but additional training will be of great value to the AQO. This is regarded as an urgent requirement due to the large number of emission sources in the area.

Skill	Bitou	Knysna	George	Mossel Bay	Kannaland	Hessequa	Oudtshoorn	GRDM
Air quality monitoring	4	4	3	4	1	3	2	5
Dispersion modelling	4	3	2	0	1	2	1	4
Data management	4	4	4	4	4	4	2	5
Emissions inventory	4	4	4	3	1	4	3	5
Health risk assessments	4	4	4	4	1	3	1	5
Statistical data analysis	4	3	2	4	2	4	1	4
Chemical engineering	2	2	2	0	1	2	1	0
Industrial exposure	4	2	2	2	1	2	2	5
Computer literacy	4	4	5	5	4	5	5	5
Management experience	2	3	4	5	1	5	4	5

Scale from 1 to 5 where "1" indicates very little and "5" indicates much.

Table 2: Skills Ranking

For the sake of comparison the relevant skills level in the Garden Route District Municipality is given as well.

7 EXISTING BY-LAWS

According to the Constitution of the Republic of South Africa a local authority may define and administer by-laws for the effective administration of, inter alia, the air quality management. The only criteria for these by-laws are that they should not conflict with national or provincial legislation and thus would need to be more stringent. Since air pollution is listed as a matter in which local government has authority, national or provincial government may not compromise or impede a municipality's right to exercise its powers or perform its functions.

Concept by-laws were developed by the Department of Environmental Affairs (DEA) in an attempt to assist local authorities in the development of their own by-laws.

DEA's set of by-laws was found to be applicable to local and metropolitan municipalities only and did not take into account the special requirements of district municipality functions. GRDM subsequently developed by-laws that are applicable to the functions of district municipalities.

The objectives of the by-law are:

-- To give effect to the right contained in Section 24 of the Constitution by regulating air pollution within the area of the municipality's jurisdiction

-- To provide an effective legal and administrative framework, in conjunction with any other applicable laws, within which a municipality can manage and regulate listed activities and ensure that air pollution is avoided, or in the case where it cannot be avoided, minimised or mitigated.

Mossel Bay and George Municipalities adopted their own air quality by-laws while such by-laws are currently under consideration in Knysna. It is an urgent requirement that the other municipalities in GRDM do so as well.

8 EXISTING AQMPs

Two existing air quality management plans have an influence on GRDM's AQMP, i.e. the Country's AQMP as manifested in the National Framework for Air Quality Management in South Africa, published in 2017, and the Western Cape Province's AQMP which was published in 2010.

Both of these AQMP's place substantial emphasis on cooperative governance, with the National Framework going so far as to defining areas of primary responsibility for each level of government, as can be seen from Section 3.2 above.

Within the Garden Route District this means that GRDM and each individual municipality must cooperate if effective air quality management is to be achieved.

The role of the National Framework in municipal air quality management activities are spelt out in Section 3 above and attention will thus be given to the provincial AQMP.

8.1 WESTERN CAPE PROVINCIAL AQMP

The Western Cape Province published its AQMP during 2010 and it includes a number of categorised priorities for effective implementing the AQMP in the province.

The AQMP made various recommendations, all of which have been met by GRDM, but gaps exist where local municipalities are concerned.

The Provincial AQMP was revised in 2016 and Chapter 5.1 of the AQMP lists various shortcomings that were identified across the Province, many of which also apply to GRDM. Chapter 5.2 lists various recommendations to remedy the shortcomings and many of these also apply to GRDM and the seven individual municipalities within its borders, e.g. lack of air quality by-laws, failure to include AQMPs in IDPs, etc.

The Provincial AQMP, therefore, gives far more direct guidance in AQM matters to all levels of local government. The AQMP is available from DEADP's web site (http://www.westerncape.gov.za).

All of the shortcomings will be addressed in the revised GRDM and municipal AQMPs, thus providing a clear plan for compliance with air quality issues required by the AQA, the National Framework and Provincial AQMP.

9 RECOMMENDATIONS

9.1 COMPLYING WITH MUNICIPAL FUNCTIONS

The activities that are defined as "primary responsibilities" of municipalities in the National Framework are given in Section 3 above. Of key importance in day-to-day air quality management are those associated with information management and compliance monitoring, i.e.:

Paragraph 4.2.1: Information management:

-- *Monitor ambient air quality and point, non-point and mobile source emissions*

Paragraph 4.2.8: Compliance monitoring

-- *Monitoring 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.*

-- *Monitoring compliance in respect noise caused by an activity, in terms of nuisance or disturbance matters.*

-- *Monitoring compliance with directives to submit an atmospheric impact report*

-- *Monitor compliance with the requirements of the National Dust Control Regulations*

-- *Monitor compliance with the emission standards set out for activities declared as controlled emitters in terms of section 23*

-- *Monitor compliance with the requirements of the National Dust Control Regulations for an activity, in terms of nuisance or disturbance matters*

It is accepted that air quality monitoring is an expensive activity, but much can be achieved through the application of screening activities, e.g. passive sampling techniques and much closer cooperation in these activities should be developed between GRDM and the individual municipalities.

Air quality monitoring by means of regulatory methods results in the gathering of huge amounts of data, the interpretation of which is complex, e.g. validation of data. It is recommended that training in the interpretation of such data is given to those AQO in whose areas continuous air quality monitoring activities occur.

Currently, emission test results obtained through regulatory annual survey requirements are submitted to GRDM only. However, as can be seen from the list above, municipalities also have the obligation to monitor compliance with emission standards.

It is, therefore, recommended that copies of annual emission surveys are also provided to the relevant individual municipalities. It implies that these municipalities should receive training in suitable test methods and the interpretation of emission test results.

9.2 AQO FUNCTION

As can be seen from Section 6 above, all B-municipalities have designated air quality officers, but that these officers have little time to spend on air quality matters due to their other duties. This implies that air quality management does not play a very important role in the municipalities.

In LAQS's opinion the emphasis is wrong. Air quality management should be the first responsibility of AQOs and time left over can then be spent on other duties. Should the air quality duties be low, the officials will have more time to spend on other activities, but should an air quality issue arise, e.g. complaints, inter-municipal issues, etc., the AQO should be free to pay primary attention to such matters and not to other duties.

LAQS is of the opinion that all of the municipal AQO require additional training to assist them in carrying out their air quality management functions, e.g. compiling emissions inventories, etc.

To ensure that training is optimally applied it is recommended that a detailed assessment of the requirements of each municipality's needs are done to determine the exact shortage of skills and knowledge required.