



Knysna

Municipality Munisipaliteit uMasipala

inclusive · innovative · inspired

Air Quality Management Plan

Council presentation

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Chemical engineer
40+ years experience in air quality issues

2nd Generation air quality management plan
Also compiled previous generation



Why an AQMP?

World Health Organisation:

9 out of 10 people world-wide do not have access to clean air

4.2 million deaths per year due to poor ambient air

3.8 million deaths per year due to poor indoor air quality

National Environment Management: Air Quality Act (2004) (as amended):

AQMP compulsory

Must comply with National Framework for AQ management in SA

Defines areas of primary responsibilities for “B” and “C” municipalities

Some overlapping responsibilities

Must comply with provincial AQMP

Must be included in IDP



Background studies

Compliance with 2012/13 AQMP

Comply more or less, hampered by budgetary constraints

Status Quo Assessment

Prevailing weather conditions, municipal capacity, etc.

Emissions Inventory

Assessment of all emissions in the district

Dispersion Modelling Study

Impact of emissions on air quality

Monitoring and Modelling Requirements

Need for monitoring / modelling or air quality



EMISSIONS INVENTORY

Types of sources included:

Industrial sources:

chimney stacks, area sources

Residential sources

Line sources:

Roads, harbour, airport

Other sources:

Landfill sites, WWTWs, farm animals, forest fires



POLLUTANTS INCLUDED

Criteria Pollutants:

TPM, SO₂, NO_x, CO

Others:

CO₂, HF, VOCs, THC,

Odours (including H₂S, TMA, mercaptans, naphthalene)

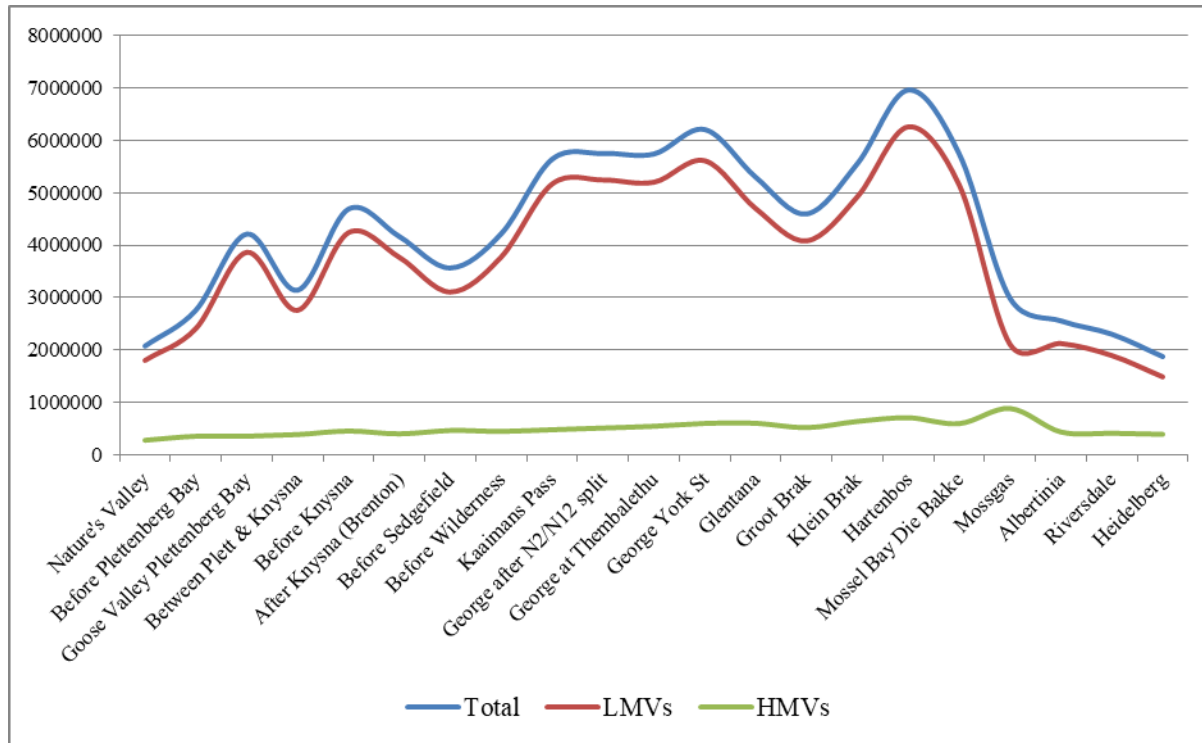


TOTAL EMISSIONS

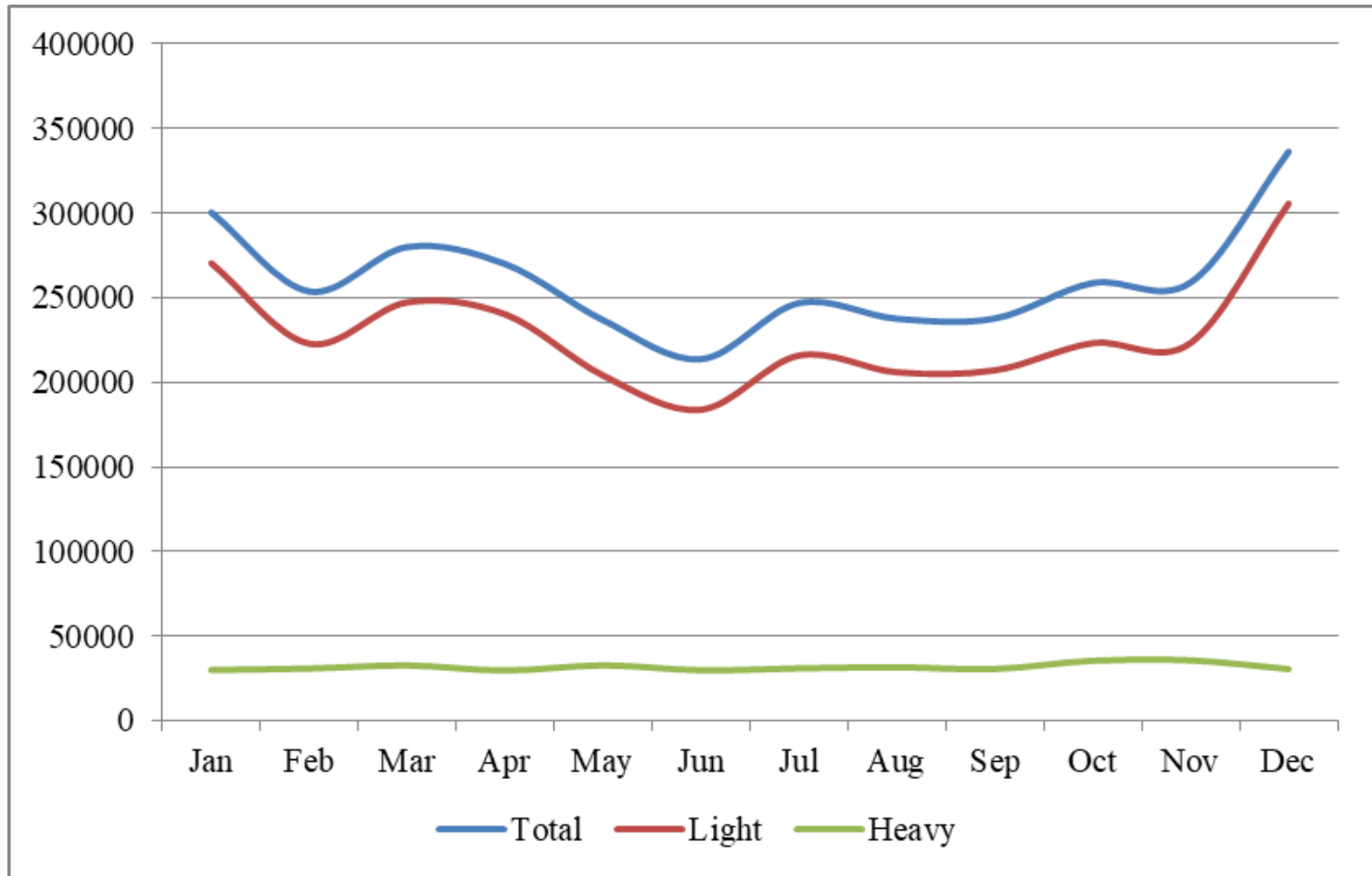
	Emissions, tons per annum						
Source	TPM	SO ₂	NO _x	CO	CO ₂	THC	Odours
Industrial	6.2	0.1	7.3	15.6	1 506		
Residential	17.6	8.6	30.1	26.0	19 710		
Road traffic	11.8		303	342	74 591	20.2	2.6
TOTAL EMISSIONS	35.6	8.7	341	383	95 808	20.2	2.6
GRDM TOTALS	1 091	894	4 292	3 838	1 597 585	3 361	55



LINE SOURCES – SANRAL DATA



Monthly variation in total traffic flows: Knysna



Forest Fires

Pollutant	Inventory	GRDM Fire incidents	
	Tons per annum 2018	Knysna 2017	Outeniqua 2018
Total particulate matter	35.6	19 889	46 968
Sulphur dioxide (SO ₂)	8.7	No reliable emission factors	
Nitrogen oxides (NO _x)	341	1 913	4 463
Carbon monoxide (CO)	383	112 659	260 552
Carbon dioxide (CO ₂)	95808.0	No reliable emission factors	
Total hydrocarbons (THC)	20.2	4 983	11 840
Methane (CH ₄)	2.6	5 631	13 175

2017 Knysna fires

TPM: about 560 times more than all Knysna sources

CO: about 294 times more than all Knysna sources

THC: about 247 times more than all Knysna sources

NO_x: about 5.6 times more than all Knysna sources

CH₄: about 2166 times more than all Knysna sources



DISPERSION MODELLING

Carried out for each municipality

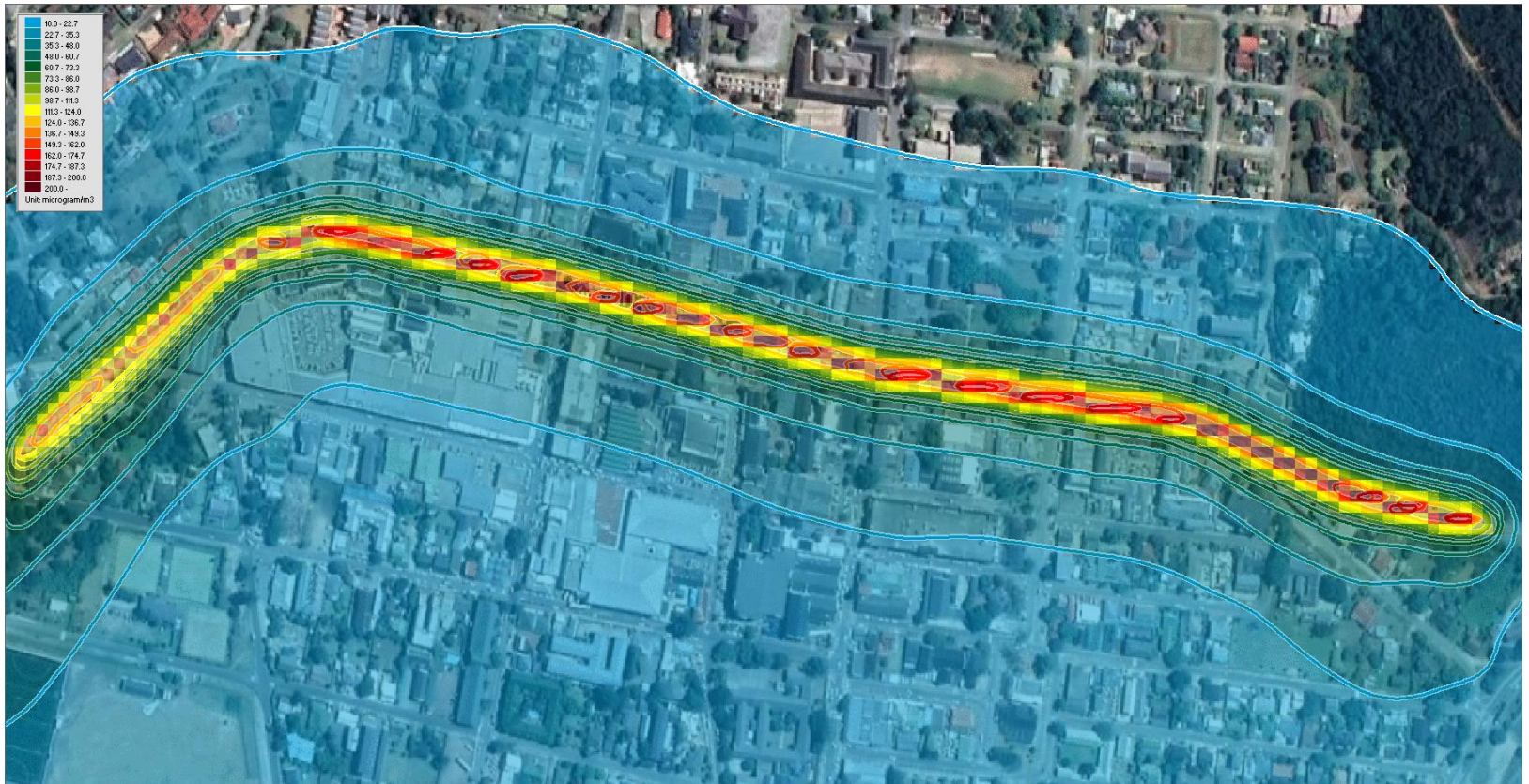
Some potential problem areas highlighted

One in Knysna



KNYSNA

99-percentile: Maximum NO₂: 216 µg/m³, AQ limit: 200 µg/m³



THE AIR QUALITY MANAGEMENT PLAN

VISION

TO HAVE AIR QUALITY WORTHY OF THE NAME
“THE GARDEN ROUTE”

MISSION STATEMENT

TO MINIMISE THE IMPACT OF AIR POLLUTANT EMISSIONS ON THE
POPULATION AND THE NATURAL ENVIRONMENT OF THE KNYSNA
MUNICIPALITY AND TO MAINTAIN CLEAN AND HEALTHY AIR IN THE
MUNICIPAL JURISDICTION



FOUR AQMP GOALS

GOAL 1: Effective & consistent air quality management

GOAL 2: Effective & consistent compliance monitoring & enforcement

GOAL 3: Raise awareness of air quality management and climate change response (CCR)

GOAL 4: Facilitate reduction of greenhouse gas (GHG) emissions

These goals are based on:

Complying with National Framework

Complying with Provincial and District AQMP

Knysna's unique circumstances

Three key threads: Create awareness, cooperation, monitor / model



GOAL 1 OBJECTIVES

Effective & consistent air quality management

Create awareness of AQMP implications

Present AQMP to Council, workshop with municipal stakeholders, adopt AQMP into IDP

Promote cooperation between municipalities

Discuss at MM level, share expertise, compile inventory of equipment

Strengthen, build AQM capacity, compliance & enforcement

Provide training to AQOs where needs are identified

Develop institutional methods to improve air quality

Implement EIS, create awareness & populate; modify municipal bylaws (if needed)

Develop, implement & maintain AQM system

Initiate AQ monitoring project (support from GRDM)

Ensure adequate funding

Plan budgets timeously; budget for AQ monitoring equipment



GOAL 2 OBJECTIVES

Effective & consistent compliance monitoring & enforcement

Improve compliance monitoring & enforcement

Develop control plans; update emissions inventory; identify future concerns

Continuous improvement in industry compliance

Training in emission test methods & industry inspections

Low key now, but some industrial development may happen in future

Develop and implement regulatory processes

Amend emission limits if needed; Develop emission limits for small FBAs; develop permitting system for FBAs; Develop spot-fines for motor vehicle emissions



GOAL 3 OBJECTIVES

Raise awareness of air quality management and climate change response

Improve residential emissions database

Use data on fuel usage to refine emissions inventory

Develop campaign to educate community in the dangers of air pollution

Coordinate with stakeholders to educate community in the dangers of burning waste, veld fires, etc.

Develop communication channels with fire departments to inform them of air pollution dangers when burning permits are applied for



GOAL 4 OBJECTIVES

Facilitate reduction of GHG emissions

Identify largest GHG contributors from emissions inventory

Engage with the aim of reducing GHG emissions; acknowledge those that do

Modify bylaws to set emission limits on GHG emitters, if needed

Educate community on GHG emissions from household sources and poorly maintained motor vehicles

Develop motor vehicle exhaust test program as a service to motorists

Partner with businesses that run vehicle fleets to do voluntary emission tests on their vehicles



MONITORING & MODELLING

No continuous monitoring needed

BUT

Targeted short-term monitoring in problem area,
coordinated with GRDM but work done by Knysna AQO

Use screening methods

Roadside:

GRDM's Scentinel analyser

Time:

Two sessions: Mid-winter and mid-summer



PUBLIC PARTICIPATION PROCESS

Managed by Cape EA Practitioners

Essentially an electronic process

Emails sent to Cape EA Prac database, including:

Town planning, environmental, MMs of all B municipalities

Environmental, Health, media liaison, MM of GRDM

Cape Nature, WC Dept of Health, DEA&DP

Advertised in all local newspapers

Various articles in local papers, especially dealing with the problem areas

Few comments received, some of which were very weird!

Number of comments not surprising; air pollution not yet perceived as dangerous



THE WAY FORWARD

Air pollution is dangerous, but its impact is not sudden

The AQMP is aimed at effective air quality management

Support from Council

Financial resources (air quality management is not a cheap activity!)

Air quality management is a complex issue and needs:

Specialised tools

Specialised assistance / training

Or

You can ignore it and risk legal action!



Thank you

