

**ENVIRONMENTAL IMPLEMENTATION AND MANAGEMENT PLAN FOR THE
MANGAUNG METROPOLITAN MUNICIPALITY (Volume 1 of 4)**

**MANGAUNG METROPOLITAN MUNICIPALITY
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Environmental Impact Management Plan for the Mangaung Metropolitan Municipality

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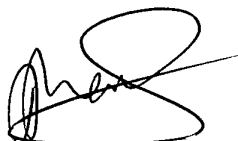
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EXECUTIVE SUMMARY

This Environmental Implementation and Impact Plan (EI&MP) is the first environmental management plan (EMP) for the Mangaung Metropolitan Municipality. The EMP adopted in 2004 was for the Mangaung Local Municipality. The scope of the EI&MP covers the extended MMM, including Soutpan and Naledi.

This EI&MP (2016) is Volume 1 of 4 related documents. The other volumes are:

- Volume 2 of 4: The MMM environmental policy (2016);
- Volume 3 of 4: The MMM environmental legal compliance report (2016); and
- Volume 4 of 4: The MMM Environmental law register (2016)

The EI&MP is an operational level framework environmental management plan. Some municipalities adopt and use the EI&MP (or an EI&MP like document) as a stand-alone framework environmental sector management plan that is informed by the mandatory environmental media specific management plans such as the biodiversity-, climate change-, waste-, water services-, or air quality management plans. Some local governments on the other hand adopt the EI&MP (or EMP like documents) as an official sector plan in terms of the IDP suite of mandatory and voluntary management plans.

This EI&MP should also be read in association with the other environmentally related documents of the MMM:

- The MMM environmental management framework (EMF) (2016);
- The MMM state of the environment report (SoER) (2016);
- The MMM climate change response strategy (2016);
- The MMM integrated waste management plan (IWMP (2016);
- The metropolitan open space system (MOSS), 2016; and
- Environmentally related IDP sector plans.

The purpose of the EI&MP is to inform the environmental duties of the MMM in general and specifically those defined in the Integrated Development Plan (IDP) as well as the environmental layer of the spatial development framework (SDF) of the MMM.

The EI&MP operationalises the Section 2 principles of the NEMA (107 of 1998) and other applicable environmental law within the local government context. It also differentiates between the different environmental roles of a metropolitan municipality, i.e. the municipality as a(n):

- Custodian of the natural environment in association with the other spheres of government;
- Environmentally regulated authority;
- Regulated local government entity;
- Organ of state with a co-operative government function;

- Organ state with government governance fiduciary duties; and
- Organ of state with environmental governing functions.

The IE&MP has nine chapters:

- Chapter 1 provides an introduction and overview of the structure of the EI&MP, with a description of the methodologies adopted and used to generate the EI&MP;
- Chapter 2 of the EI&MP describes the environmental conditions and cross-cutting environmental issues of concern for the MMM;
- Chapter 3 focuses on the MMM as an environmentally regulated entity.
- Chapter 4 provides for the in depth analysis into MMM as a regulated entity with regards to direct and indirect environmental applications through local government law and programmes;
- Chapter 5 of the EI&MP describes the MMM and co-operative government;
- Chapter 6 unpacks the fiduciary duties of the MMM;
- Chapter 7 focuses on the powers and arrangements of the MMM to govern others in terms of environmental mandates and authorities;
- Chapter 8 provides an overview of integrated environmental management and spatial tools;
- Chapter 9 of the EI&MP sets commitments to be achieved by the MMM, classified into ten key performance areas (KPAs). The ten KPAs are unpacked as objectives, strategies, key performance indicators, measurement units, targets and specific projects to assist the MMM in managing the environment within their area jurisdiction, in a responsible manner.

ACRONYMS AND ABBREVIATIONS

Table 1. Abbreviations and acronyms

Abbreviation, Acronym or Symbol	Description
AEL	Atmospheric emissions licence
AIA	Approved inspection authority
AIMP	Alien invasive management plan
APA	Animal Protection Act (71 of 1962)
AQMP	Air quality management plan
AQO	Air quality officer
BEPP	Built environment performance plan
BMP	Biodiversity management plan
BPEO	Best practicable environmental option
CBD	Central business district
CEM	Centre for Environmental Management
CO	Carbon monoxide
CoGTA	Co-operative Governance and Traditional Affairs
COP	Conference of the Parties
CUT	Central University of Technology
CWP	Community work programme
DAFF	Department of Agriculture, Forestry and Fisheries
D-MOSS	Durban Metropolitan open space system
DoE	Department of Energy
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EA	Environmental authorisation
EC	Electrical conductivity
ECI	Environmental condition indicators
EI&MP	Environmental implementation and management plan
EIA	Environmental impact assessment
ELI	Environmental law indicator
ELU	Existing lawful use

Abbreviation, Acronym or Symbol	Description
EMF	Environmental management framework
EMI	Environmental management inspector
EMP	Environmental management programme/plan
EOI	Environmental operation indicator
EPWP	Extended public works programme
FEPAs	National Freshwater Ecosystem Priority Areas
FSGDS	Free State Growth and Development Strategy
FSH	Free State Heritage
GA	General authorisation
GDP	Gross domestic product
GG	Government Gazette
IBA	Important bird area
IDP	Integrated development plan
IEEAP	Integrated environmental education and awareness programme
IEM	Integrated environmental management
IPTN	Integrated public transport network
ISMCEP	Alien invasive species monitoring, control and eradication plan
ITP	Integrated transport plan
IUCN	International Union for Conservation of Nature
IUDF	Integrated urban development framework
IWMP	Integrated waste management plan
KPA	Key performance area
KPI	Key performance indicator
LED	Local economic development
LGMSA	Local Government: Municipal Systems Act (32 of 2000)
LGTAS	Local government turnaround strategy
LUMS	Land use management scheme
MAP	Mean annual precipitation
masl	Metres above sea level

Abbreviation, Acronym or Symbol	Description
MASP	Municipal audit support programme
MFMA	Municipal Finance Management Act (56 of 2003)
MHI	Major hazard installation
MHSP	Municipal human settlements plan
MIG	Municipal infrastructure grant
MISA	Municipal infrastructure support agent
MLM	Mangaung Local Municipality
MM	Municipal manager
MMM	Mangaung Metropolitan Municipality
MOSS	Metropolitan open space system
MSP	Municipal service partnership
MTSF	Medium-term strategic framework
NBRBSA	National Building Regulations and Building Standards Act (103 of 1997)
NDP	National development plan
NEM:AQA	National Environmental Management: Air Quality Act (39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act (10 of 2004)
NEM:PAA	National Environmental Management: Protected Areas Act (57 of 2003)
NEM:WA	National Environmental Management: Waste Act (59 of 2008)
NEMA	National Environmental Management Act (107 of 1998)
NHRA	National Heritage Resources Act (25 of 1999)
NLTTA	National Land Transportation Transition Act (22 of 2000)
NO	Nitrogen monoxide
NO ₂	Nitrogen dioxide
NPAES	National protected areas expansion strategy
NRM	Natural resources management
NSSD	National strategy for sustainable development
NWA	National Water Act (36 of 1998)

Abbreviation, Acronym or Symbol	Description
NWMS	National waste management strategy
NWRS	National water resource strategy
NWU	North-West University
ODS	Ozone depleting substance
PCO	Pest control officer
PDCA	Plan-do-check-act
PDCAR	Plan-do-check-act-report
PM	Particulate matter
PMS	Performance management system
PPP	Public private partnerships
PV	Photo-voltaic
RDP	Reconstruction and development programme
REIPP	Renewable Energy Independent Power Producer
RSA	Republic of South Africa
SAEDES	South African Energy Demand and Efficiency Standard
SAHRA	South African Heritage Resources Authority
SALGA	South African Local Government Agency
SAMOAC	South African Manual for Outdoor Advertising Control
SANAS	South African National Accreditation Service
SANBI	South African National Biodiversity Institute
SANS	South African National Standard
SDBIP	Service delivery and budget implementation plan
SDF	Spatial development framework
SDG	Sustainable development goals
SEA	Strategic environmental assessment
SEMA	Sector environmental management acts
SO ₂	Sulphur dioxide
SoER	State of the environment report
SPLUMA	Spatial Planning Land Use Management Act (16 of 2013)
SWMS	Storm water management system

Abbreviation, Acronym or Symbol	Description
TNA	Training needs assessment
TOD	Transport-orientated development
UNFCCC	United Nations Framework Convention on Climate Change
WfW	Working for water
WHO	World Health Organisation
WMA	Water management area
WML	Waste management licence
WMO	Waste management officer
WPEM	White paper on environmental management policy
WQI	Water quality index
WSA	Water Services Act (108 of 1997)
WSA	Water Services Authority
WSP	Water safety plan (related to water)
WSP	Work skills plan (related to training)
WSPA	Water services provider authorisation
WTP	Water treatment plant
WTW	Water treatment works
WUL	Water use licence
WWTW	Waste water treatment works
YES	Youth Environmental Services
YJW	Youth Jobs in Waste

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1 INTRODUCTION, METHODOLOGY AND STRUCTURE OF THE MMM EI&MP

1.1 Introduction

Chapter 1 introduces the reader/user of this Environmental Implementation and Management Plan (EI&MP) to an overall and well-structured understanding of the context of, the methodologies used in, and the structure of this report. This chapter begins with a brief profile of the Mangaung Metropolitan Municipality (MM) that includes among other matters the size, composition, and location of the Mangaung Metropolitan Municipality (MMM).

This section has the following sub-sections:

- An overview of the environmental governing, governance and management functions of the MMM;
- The environmental powers and roles of South African municipalities;
- The policy and legal context that frames this EI&MP;
- An analysis and succinct description of the environmental governing and management tools and their interactions that are available to local government;
- The methodology adopted and used to generate this report;
- The structure of the MMM EI&MP;
- The relationship between this EI&MP and other related instruments;
- Recommended management principles of the EI&MP;
- The assumptions and limitations that influence the contents of this report; and
- A conclusion.

1.2 The purpose of this EI&MP

The purpose of the EI&MP is to inform the environmental duties of the MMM in general and specifically those defined in the Integrated Development Plan (IDP) as well as the environmental layer of the spatial development framework (SDF) of the MMM.

The EI&MP operationalises the Section 2 principles of the NEMA (107 of 1998) and other applicable environmental law within the local government context. It also differentiates between the different environmental roles of a metropolitan municipality, i.e. the municipality as a(n):

- Custodian of the natural environment in association with the other spheres of government;
- Environmentally regulated authority;
- Regulated local government entity;
- Organ of state with a co-operative government function;
- Organ state with government governance fiduciary duties; and
- Organ of state with environmental governing functions.

1.3 The legal basis for the EI&MP

Local government and environmental law and provide the context within which any municipal EI&MP must be developed, managed and governed.

The EI&MP is an instrument that aligns and integrates a diverse suite of constitutional and legislative duties with the management processes of a municipality.

The national law and policy framework that frame this EI&MP includes a range of sources such as, but not limited to the :

- Constitution of the Republic of South Africa, 1996;
- National Development Plan (Vision 2030);
- White Paper on Local Government, 1998;
- Local Government: Municipal Systems Act 32 of 2000;
- National Environmental Management Act 107 of 1998; and the related sector legislation; as well as
- Intergovernmental Relations Framework Act 13 of 2005.

This law and policy framework is also supported by decided court cases on local government and environmental matters including, for example:

- *Le Sueur and Another v Ethekeeni Municipality and Others* (9714/11) [2013] ZAKZPHC 6;
- *Government of the Republic of South Africa and Others v Grootboom and Others* (CCT11/00) [2000] ZACC 19; 2001 (1) SA 46;
- *Mazibuko and Others v City of Johannesburg and Others* (CCT 39/09) [2009] ZACC 28; and *Maccsand (Pty) Ltd v City of Cape Town and Others* 2012 (7) BCLR 690 (CC).

Read together, the law and policy framework consistently postulates that every municipality in South Africa has:

- The duty to respect, protect and promote an environment that is not harmful to people's health or well-being and to protect the environment for the benefit of present and future generations;
- The duty to comply to applicable environmental law;
- The power to govern others; and
- A developmental mandate pursuant to the principles of sustainable development when delivering municipal services and other functions.

Every municipality has a general and a number of more specific legally entrenched environmental functions given the scope of sections 24 and 27(1)(b) of the Constitution read together with Schedules 4B and 5B. The fulfilment of the constitutional environmental right (section 24) and the right of access to sufficient water (section 27(1)(b)) is a joint duty of all three spheres of government. More specific environmentally relevant areas of competence outlined in Schedules 4B and 5B include air quality management, the control of noise and municipal waste management, for example.

The functions, duties and objectives of local government outlined in chapter 7 of the Constitution, reinforce these environmental duties and competencies. One of the section 152 'objectives' of local government is to promote a safe and healthy environment'. This said, chapter 3 of the Constitution reminds that all duties and functions of all government institutions must be executed in the spirit of cooperative government and good intergovernmental relations.

An EI&MP is a governance instrument that fits the executive authority of a municipality. Considering the gist of the outcomes of the NDP and the description of 'developmental local government' in the White Paper on Local Government, the environmental mandate is as much focused on socio-economic imperatives (especially poverty alleviation) as on environmental protection. However, for purposes of the EI&MP, the focus is on the protection of the health and well-being of people and on environmental protection – areas that are extensively covered in environmental and local government law.

The National Environmental Management Act (NEMA) is South Africa's framework environmental law. Chapters 2 and 5 of the Act apply to all three spheres of government as they define the principles and instrumentation for (integrated) environmental management in South Africa. Chapter 3 of NEMA reiterates the constitutional demand for co-operative government.

Local government's involvement in environmental management and the design and adoption of an environmental governance instrument such as an EI&MP must however also be informed by framework local government law. The Local Government: Municipal Systems Act (LGMSA) determines in chapter 2 that the duties of municipal councils include to:

- Promote and undertake development in the municipality; and
- Promote a safe and healthy environment in the municipality and to contribute together with other organs of state to the progressive realisation of the constitutional environmental and water rights, for example.

The LGMSA further extensively deals with matters such as public participation and the development, revision and implementation of integrated development plans (IDPs), all of which creates the context and regulatory framework within which an EI&MP must be developed.

The development of an EI&MP typically embodies a municipality's efforts to execute its environmental functions and to comply with its environmental duties. The importance of efforts like these has recently been judicially confirmed in the case of *Le Sueur and Another v eThekweni Municipality and Others*. In this case, the court also reminded that municipalities have much more conservation related governing power than what may be immediately clear from the Constitution (see: *AA du Plessis and A van der Berg "RA Le Sueur v eThekweni Municipality: An Environmental Law Reading" 2014 (3) Stellenbosch Law Review 580-594.*)

1.4 The Mangaung Metropolitan Municipality

The Mangaung Local Municipality was established in 2000, and in 2011 it was elevated from a Category B local municipality to a Category A metropolitan municipality that included the Bloemfontein, Mangaung, Botshabelo and Thaba Nchu areas. This elevation to a metropolitan municipality has significant implications for environmental management and governance, as additional functions, powers and mandates were added to its portfolio of powers and mandates as a local municipality.

The geographical scope of the MMM was also extended to include the Naledi Local Municipality and Soutpan (see Figure 1) in August 2016. The size of the MMM has been extended from 6863 km² to 9879.3 km². The amalgamated metropolitan municipality has seven urban centres¹, with an extensive rural area (Figure 1).

Extended Mangaung Metropolitan Municipality Boundaries - 2016

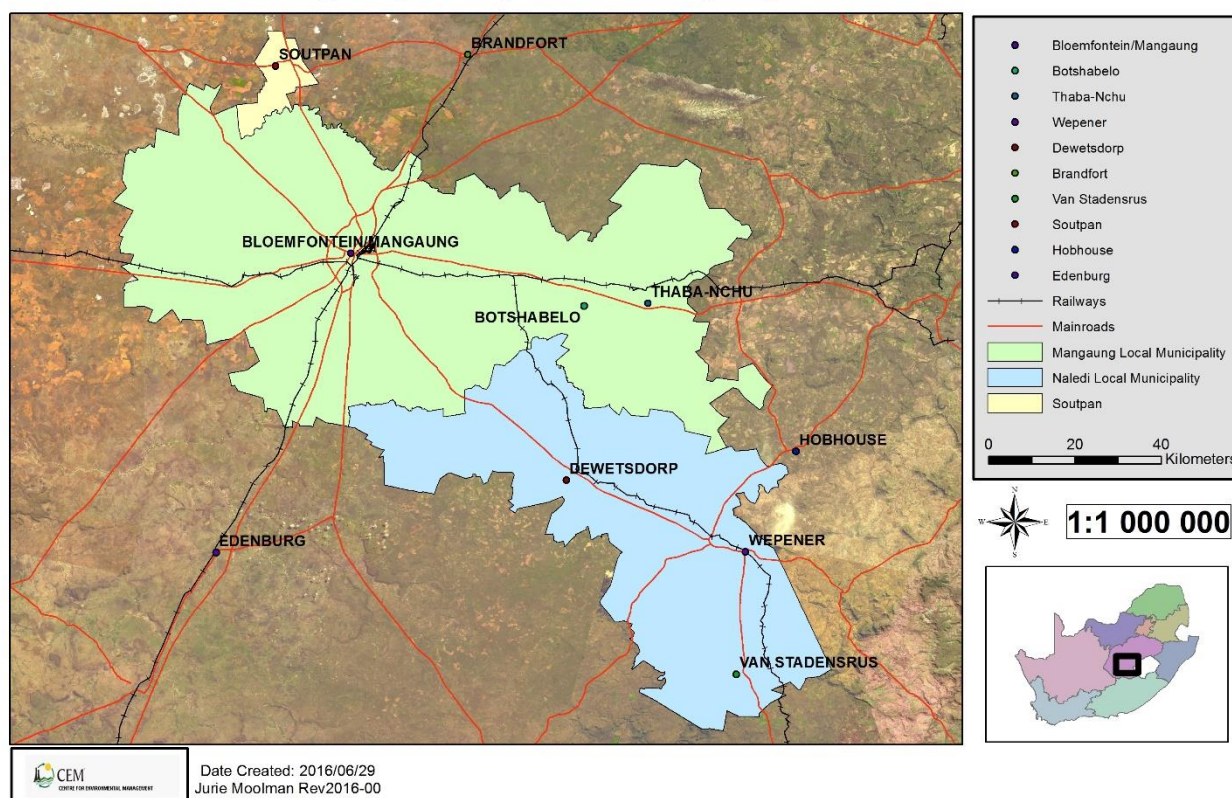


Figure 1. The extended Mangaung Metropolitan Municipality

Bloemfontein, the largest of the urban centres of the MMM, is the sixth largest city in South Africa and the administrative capital of the Free State Province. Bloemfontein is also the judicial capital of South Africa and it represents the economic hub of the regional economy. The largest economic sectors are the service and government sectors.

People settled in Thaba Nchu, 67 km to the east of Bloemfontein, in the 1830s, while the town was officially established in 1873. Thaba Nchu is co-managed by the metropolitan council and the Barolong baa Seleka Traditional Council. Communal rural areas and thirty-seven smaller rural villages surround Thaba Nchu. Small-scale farmers farm the surrounding rural areas. Each household has access to two to four ha of arable land as well as grazing rights on the communal grazing lands, and there are also privately owned farms. Thaba Nchu has two industrial areas and around thirty-eight factories.

Botshabelo was established in the 1980s, 55 km to the southeast of Bloemfontein. Botshabelo is primarily a residential town, while a range of factories and warehouses provides employment

¹ Bloemfontein, Botshabelo, Thaba Nchu, Dewetsdorp, Wepener, Soutpan and Vanstadensrus.

opportunities for around six thousand people. With an unemployment rate of 56%, the town depends on Bloemfontein for employment. Communal land is extensively grazed.

The urban centres of Dewetsdorp, Wepener and Vanstadensrus are small service centres that serve the surrounding rural and farming communities.

Soutpan/Ikgomotseng is a very small urban settlement that was established due to the salt mining activities in the salt pans. The two villages of Soutpan and Ikgomotseng are five kilometres apart.

The rural areas surrounding the urban centres are communal farmland and privately owned agricultural land. The former is characterised by small and subsistence farmers, while the latter is characterised by extensive commercial farming in the west and intensive farming along the lower drainage area of the Modder River in the north-west and the west.

The population distribution is listed in Table 2.

Table 2. Demographics of the extended Mangaung Metropolitan Municipality (2011)

Area	Number	Percentage
Bloemfontein/Mangaung	483 689	62.7
Botshabelo	181 712	23.5
Thaba Nchu (Town)	70 118	9.0
Tribal villages (Thaba Nchu)	11 913	1.5
Dewetsdorp	9 498	1.2
Wepener	9 553	1.2
Vanstadensrus	1 745	0.2
Soutpan/Ikgomotseng	3 439	0.5
Total	771 667	100

1.5 Connectivity

The MMM has a central location in both South Africa and the Free State Province. The MMM has a radial road network consisting of three Class 1 national roads. They are: a) the N1 (which links Gauteng with the southern and Western Cape), b) the N6 (which links Bloemfontein with the Eastern Cape), and c) the N8 (which links Lesotho in the east and with the Northern Cape in the west via Bloemfontein). The MMM has a series of Class 2, arterial roads that link Bloemfontein with smaller towns.

The passenger railway network connects the MMM with Johannesburg, Port Elizabeth and East London, while the freight railway network links the MMM with Johannesburg, East London, Port Elisabeth, Durban and Maseru via Thaba Nchu. Transnet also has a major inland freight terminal in Bloemfontein. The MMM has no metropolitan train service.

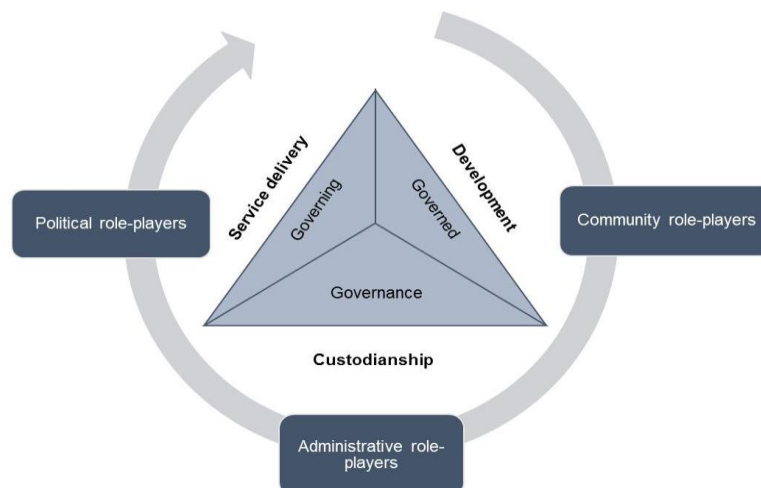
A short- and long-haul taxi service and a bus network provide an extensive transport network.

An international airport (Bram Fischer) with direct flights to Johannesburg, Durban, Cape Town, George, and Sishen, as well as a civil/military airport at Tempe, also service the metropolitan municipality.

1.6 Environmental governance, governing and management powers and functions at the municipal level

Local government in South Africa has a complex suite of environmental governance,² governing³ and management⁴ functions, powers and roles (Figure 2). The role-players, i.e. the administrative sector, the community, or civil society and political role-players must collectively execute their functions effectively to ensure good environmental governance, governing and management. Municipalities must further execute their executive and legislative powers to govern local communities within their functional and spatial areas of jurisdiction. They are also 'governed' by the other two spheres of government insofar as some of their actions and operations are controlled and regulated by national and provincial laws and policies.

Municipalities are also duty-bound to perform their own internal function and processes in accordance with the progressive principles of (good) corporate governance as defined in the King IV report. They must also: a) render services to communities in a sustainable manner; b) fulfil a developmental duty, i.e. to promote the economic and social development of communities and to participate in national and provincial development programmes; and c) act as custodians or guardians of infrastructural, natural and social assets.



Source: Adapted from Du Plessis, AA and Nel, JG 'An Introduction' in Du Plessis, AA 'Environmental Law and Local Government in South Africa' (Juta, 2015) p.30.

Figure 2. The complex environmental governing and management functions, powers and roles of local government

The complexity of these functions, powers, and roles for the EI&MP is that the EI&MP must provide for at least the following:

² The term *environmental governance* as used in this report refers to the governance of MMM's own processes in accordance with the requirements of the concept of corporate governance.

³ The term *environmental governing* as used in this report refers to the mandate of the MMM to govern specific environmental mandates in association with the other spheres of government.

⁴ The term *environmental management* as used in this report refers to arrangements by the MMM to a) manage the impacts of its activities and processes, b) manage compliance as demanded of a regulated entity and c) manage the natural resource base of the area.

- The MMM as an environmental regulated entity;
- The MMM as an environmental regulator or governing entity;
- The MMM as co-custodian of the natural environmental resource base;
- The MMM governing its own environmental management and governance affairs in terms of government governance principles and processes;
- The MMM and corporate governance;
- The MMM and asset management;
- The MMM and local economic development (LED);
- The MMM and environmental competence training and awareness making;
- The MMM and co-operative environmental government; and
- The MMM rendering sustainable services.

1.7 The policy and law contexts underpinning the environmental implementation and management plan

1.7.1 The policy context

Policies and strategies are statements of intent, which may inform subjective and objective decision-making and the development of management actions. Section 3.2 of this document explains the environmental policy and programme context which needs to be considered when drafting the EI&MP.

The implications of these framing strategies, policies and programmes at international, national, and provincial levels need to be considered when planning and implementing the EI&MP. Examples of such strategies and policies include amongst others the sustainable development goals, the Medium Term Strategic Framework: 2014 – 2019 (2014), the Provincial Climate Change Response Strategy, etc. These documents provide strategic direction, which should direct, inform and drive the actions of the MMM.

1.7.2 The legal context

The law context of environmental governing, governance and management by the local sphere of government is unpacked in more detail in Chapters 3,⁵ 4,⁶ 5⁷ and 7⁸ of this report. The nature and extent of the wide-ranging environmental duties, mandates and powers of South African municipalities must be understood against the backdrop of the provisions of the *Constitution of the Republic of South Africa, 1996* (the Constitution), environmental law and general local government law.

An understanding of the law context that frames the environmental duties, mandates and powers of South African local government is imperative for comprehensive and effective environmental

⁵ Chapter 3: The MMM as an environmentally regulated entity.

⁶ Chapter 4: The MMM as a local government regulated entity.

⁷ Chapter 5: The MMM and co-operative government.

⁸ Chapter 7: The MMM as a governing entity.

governing, governance and management, as environmental management, governing and governance by South African municipalities are comprehensively regulated.

Applicable environmental law can be classified into:

- Constitutional provisions;
- Law with a direct environmental implication for local government and
- Dedicated law that governs local government.

1.7.2.1 The Constitution of the Republic of South Africa, 1996

Given the scope of sections 24⁹ and 27(1) (b)¹⁰ of the Constitution read with Schedules 4B and 5B¹¹ as well as a plethora of other laws, South African municipalities have a complex and wide-ranging suite of original and delegated environmental functions, mandates, and powers. The functions, duties and objectives of local government outlined in chapter 7 of the Constitution reinforce these environmental duties and competencies.¹² Chapter 3 of the Constitution reminds public servants that all of the duties and functions of all government institutions must be executed in the spirit of co-operative government and good inter-governmental relations.

1.7.2.2 Environmental law

The *National Environmental Management Act* 107 of 1998 (NEMA) is South Africa's framework environmental law. Chapters 2 and 5 of the NEMA apply to all three spheres of government as they specify the principles and instrumentation for (integrated) environmental management in South Africa. Chapter 3 of the NEMA reiterates the constitutional demand for co-operative government. A range of sector environmental management acts (SEMAs) as well as other legislation with an environmental application supports the NEMA.

1.7.2.3 Dedicated local government law

Local government law must inform the involvement of local government in environmental governing, governance and management and the design and adoption of an environmental governing, governance and management instrument such as an EI&MP.

The *Local Government: Municipal Systems Act* 32 of 2000 (LGMSA) determines in chapter 2 that the duties of municipal councils include: a) to promote and undertake development in the municipality; b) to promote a safe and healthy environment in the municipality and c) to collaborate with other organs of state to realise the constitutional environmental and other rights. The LGMSA also deals extensively with matters such as public participation and the development, revision and implementation of integrated development plans (IDPs), all of which create the context and enabling framework within which an EI&MP should be developed. The LGMSA must also be read in

⁹ S 24 of the Constitution contains the environmental right.

¹⁰ S 27(1)(b) of the Constitution contains the right to access to sufficient water.

¹¹ Schedules 4B and 5B of the Constitution specify environmentally relevant areas of competence such as air quality management, the control of noise, and municipal waste management.

¹² Section 152 of the Constitution specifies that one of the objectives of local government is to promote a safe and healthy environment.

conjunction with a plethora of other legislation that has a direct or indirect bearing on municipal environmental governing, governance and management.

A thorough understanding of applicable environmental and other law is a key imperative to ensure successful environmental governing, governance and management by South African municipalities. See Chapter 4 for more detail.

1.8 The context of environmental governing, governance and management tools¹³

Local government officials in South Africa have access to a complex suite of instrumentation or tools that they can use to ensure effective environmental governing, governance and management. The adoption and use of some of these tools are mandatory and they must be used, while the others are optional.

It is important to understand the nature and performance capabilities of environmental management tools and their various uses for the following reasons:

- No one environmental management tool is capable of addressing all the needs of a municipality, as they all have very specific applications;
- Some environmental management tools are strategically based, while others are operationally or spatially based;
- More than one environmental management tool needs to be adopted, implemented and used to assure effective environmental management; and it is necessary to
- Understand the relationship between the EI&MP and other instruments.

The toolbox of available tools for effective environmental governing, governance and management can be classified into four principal groups of tools: a) the information or discovery-based tools; b) the general local government-based tools, c) the spatial tools, and d) the general environmental management tools (Figure 3).

It is important that officials and politicians alike understand the specific purpose and performance areas of each instrument so as to ensure that the correct instrument is selected for the correct purpose and that the most optimum suite of instruments is adopted and used to ensure effective and efficient environmental governing, governance and management.

¹³ Read this section with Chapter 8 of this report.

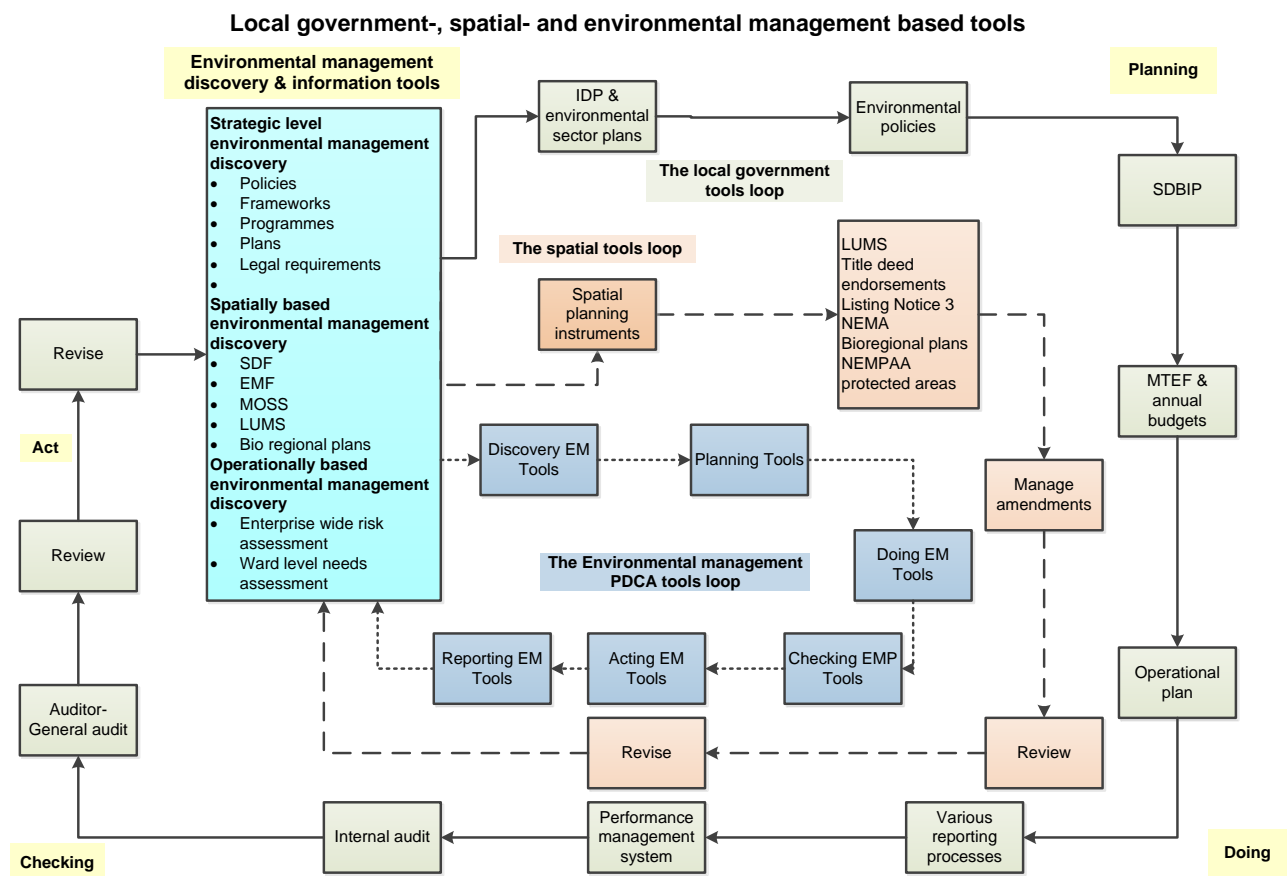


Figure 3. The three principal groups of environmental governing, governance and management tools

1.8.1 The local government based tools

General local government-based tools are those tools that are almost exclusively used by local government. They are, among others, the Spatial Development Framework (SDF), the Integrated Development Plan (IDP) and environmental sector plans, environmental policies and the service delivery and budget implementation plan (SDBIP), as discussed in Chapter 8.

The SDF is the spatial format of the IDP and the IDP, with its sector plans, is implemented in terms of the SDBIP and budgets, while performance is tracked by means of the performance management system (PMS), internal auditing and reporting mechanisms.

The IDP/SDF and their related down-stream tools such as the SDBIP, PMS, budgeting and reporting tools are the tools of choice for South African municipalities as far as project-related commitments are concerned, while municipal policies direct and drive cohesive behaviour throughout municipalities.

1.8.1.1 The relationship between municipal policies and the IDP

The challenge is that the IDP family of instruments is fundamentally objective and project-based.

It is not the tool of choice, however, where sustained and recurring actions or behaviour patterns are required. The tool of choice to drive sustained conformity with requirements remains the municipal policy.

It is therefore imperative that the environmental provisions in the IDP and its sector plans are supported by an aligned environmental policy to ensure that environment-related projects are identified, implemented and managed, while the environmental policy ensures that the behavioural patterns of the MMM's staff are sustained.

The Mangaung Local Municipality (MLM) commissioned an environmental policy in 2004. This policy must be reviewed and revised as an integral part of this EI&MP.

It is therefore imperative to read this EI&MP¹⁴ with the environmental policy¹⁵.

1.8.2 Spatial and land use planning-based implementation tools

Spatially-based environmental management tools include, *inter alia*, the spatial development framework (SDF), the environmental management framework (EMF) and the metropolitan open space system (MOSS) etc. They are explored in Chapter 8.

Land use planning-based spatial tools include, among others, the land use management scheme (LUMS), title deeds and activities contained in GNR 985 in GG 38282 of 4 December 2014 (Listing notice 3) under sections 24(5) and 44 of the NEMA as discussed in Chapter 8. The EMF, the SDF, and the MOSS on the other hand, are fundamentally spatially-based information or discovery tools, which are not readily used for implementation purposes.

The LUMS and title deed registrations can be used to attach specific land use characteristics as identified in terms of the EMF, the SDF, or the MOSS, as the former require a process to be amended. Information-based tools such as EMFs, SDFs and MOSSs can be amended administratively while they do not offer any protection to environmentally valued spaces

The provisions of listing notice 3 made in terms of GNR 985 of 2014 also protect specific categories of land as a basic assessment and an environmental authorisation are required should the characteristics of these categories of land be changed..

1.8.3 General environmental management tools

General environmental management tools are categorised into discovery, planning, doing, checking, acting, and reporting tools. These tools are also known as the PDCA&R tools.

1.8.3.1 Discovery or information-based tools

Discovery or information-based tools are further classified into strategic level, spatially-based and operationally-based environmental governing, governance and management discovery tools (see Chapter 8). Strategic level environmental governing, governance, management and discovery tools include, among others, overarching environmental policies and programmes etc (see Chapter 3).

Operationally-based environmental management discovery tools include enterprise-wide risk assessment and ward level needs assessment as considered in Chapter 6.

¹⁴ The actual EI&MP is published at the end of this document as Part 1 of 4 documents.

¹⁵ The environmental policy is published as Part 2 of 4 documents.

1.8.3.2 Operational planning tools

Operational planning tools include, among others, environmental impact assessments, environmental risk assessments and heritage impact assessments, while doing tools comprise, *inter alia*, of management plans, policy implementation instruments, and standard operating procedures (see Chapter 8).

1.8.3.3 Checking tools

Checking instruments are, for example, monitoring, analysis, inspection, measurement, and others, while acting tools include the implementation of performance and plan tracking and performance improvement (see Chapter 8).

1.8.3.4 Reporting tools

Reporting tools are amongst others the series of mandatory performance reports, legal compliance reports, statutorily required emergency reporting and so on as discussed in Chapters 4 and 8.

It is imperative that the MMM selects, adopts and uses a range of these environmental instruments that are complementary to ensure effective environmental governing, governance and management.

1.8.4 The relationship between the key environmental governing, governance and management tools of the MMM

1.8.4.1 General

Local government adopts and uses a range of environmental governing, governance and management tools that provide decision makers with a) the requisite knowledge to make informed decisions, b) tools to plan action, c) tools to execute plans, d) tools to track performance, e) tools to report performance and finally f) tools to improve environmental performance.

These tools range from information or discovery-based tools to planning, implementation and checking-based instruments. The information-based tools inform local government planning-based tools that again initiate local government implementation and performance management, checking and reporting tools (Figure 4).

The package of environmental information tools includes the State of the Environment Report (SoER), or the Environmental Outlook, the Environmental Management Framework (EMF), the Metropolitan Open Space System (MOSS) and other conservation plans (CPs). These tools inform the local government-based management planning tools, such as the SDF, the IDP and the environmentally related IDP sector plans. Law requires the adoption and use of some of these sector plans, while others are generated, adopted, and used on a voluntary basis.

This EI&MP is such a voluntary IDP sector plan. It is supported and informed by a suite of other sector IDP plans, such as the air quality management plan, disaster management plan, integrated waste management plan etc.

The sector IDP plans can also inform the Land Use Management Scheme (LUMS) that can be effectively used to protect sensitive and valued environmental attributes and resources.

It is important, however, to note that the environmental governing, governance and management instruments are not readily adopted and used by local government to drive environmental performance. In most instances they need to inform the statutorily provided local government

implementation and checking tools such as the SDF, the IDP, the SDBIP, and PMS, as performance is planned for, driven, and verified in terms of the latter.

Environmental information, local government and management plans local government implementation and checking tools

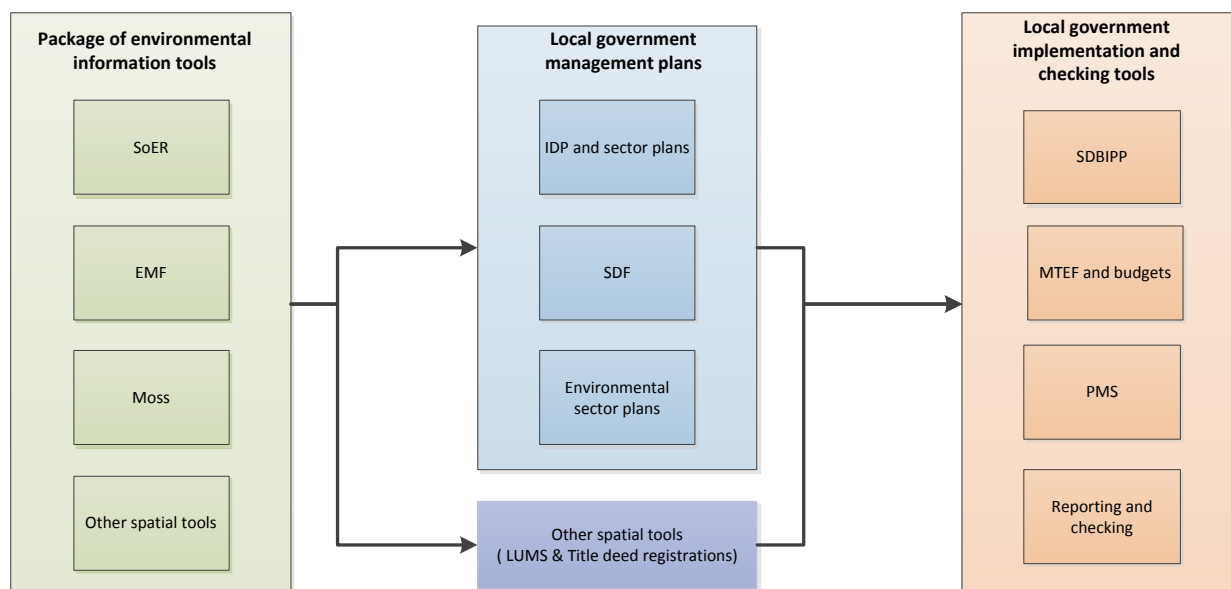


Figure 4. Relationship between environmental information and local government tools

1.8.4.2 The environmental management framework (EMF)

An EMF is a spatially-based environmental management information and decision support tool that provides for the spatial delineation of sensitive environmental attributes. EMFs inform project-level decision making that relates to the listed activities published in terms of sections 24(5) and 44 of the NEMA, while they also inform strategic level instruments such as SDFs.

The Mangaung Local Municipality (MLM) commissioned an EMF in 2006 and the MMM commissioned a new EMF in 2015/16. The EMF informs the EI&MP and SDF. Sensitive environmental attributes identified in terms of the EMF may need to be protected by using other implementation-based instruments such as the LUMS, title deed restrictions, the IDP, the SDBIP etc.

1.8.4.3 The state of the environment report (SoER)

The SoER, or the environmental outlook, is a strategy-level environmental condition information tool for a specific area. This information tool provides decision makers with accurate, credible, relevant, and up-to-date information related to current environmental conditions, or changes in environmental conditions or trends, the likely future state of the environment, as well as potential strategic responses to achieve the desired future state of the environment.

The SoER is a high-level information document that should raise awareness of the environmental issues in an area, while it should also stimulate discourse about these issues and potential strategies to address them.

The outputs of the SoER partly inform the EMF, the SDF, and the EI&MP.

The initial SoERs were generated in terms of an initiative of the then Department of Environmental Affairs and Tourism. Numerous SoERs were generated at the national and provincial levels, while a number of these reports were also generated for metropolitan and local municipalities during this period. The MLM generated a SoER in 2003, while the Free State published an environmental outlook report in 2009.

Provision is made for environmental outlook reports in terms of section 31 of the NEMA. The national department and all provinces must generate environmental outlook reports while metropolitan municipalities may do so.

The Free State has also published the following strategy-level documents that indicate the state of the environment, elements, or environmental management and performance profiles in the province:

- Strategic Environmental Assessment for the Management of Provincial Nature Reserves;
- Provincial Conservation Plan (2008);
- State of Rivers Report in the Free State (2003);
- Free State Provincial Spatial Development Plan (2013);
- Free State Integrated Waste Management Plan (IWMP) (2010);
- Air Quality Management Plan 2009;
- Free State Environmental Outlook Report 2008; and
- Free State Air Quality Management Plan 2009 (Draft).

Key issues identified in terms of the SoER may need to be planned for and managed in terms of other instruments such as the LUMS and especially the risk assessment, the SDF, IDP, the SDBIP, the PMS and the suite of reporting instruments.

1.8.4.4 The metropolitan open space system (MOSS)

The MOSS is a rationalised network of open spaces aimed at complementing the built fabric by providing the urban environment with natural open spaces for the following purposes:

- Recreation purposes;
- Protecting biodiversity in urban areas;
- Providing animal and plant species with habitats;
- The protection of heritage or cultural sites; and
- The rendering of eco-system services.

Sensitive or valued environmental attributes or areas identified in terms of the MOSS and the EMF may need to be protected by using other instruments such as the LUMS, title deed restrictions, the SDF, IDP, the SDBIP etc.

The MOSS should also be supported by an open-space policy.

1.8.4.5 The IDP sector plans

IDP sector plans are an integral part of the IDP and they need to be managed in terms of the downstream instruments such as the SDBIP, budgets, performance management and reporting. It

is imperative that the commitments and duties made in terms of the IDP sector plans are indeed operationalised and managed, as is the case with the principal IDP document.

IDP sector plans can be classified into two sub-groups: a) IDP sector plans that are principally dedicated to an environmental sector and b) IDP sector plans that have an incidental environmental interface.

1.8.4.6 Environment-based IDP sector plans

1.8.4.6.1 Integrated waste management plan (IWMP)

The IWMP is a mandatory IDP sector plan. IWMPs are generated in a tiered fashion for provinces, metropolitan municipalities, district municipalities and local municipalities. IWMPs profile the waste streams of a municipality, and are supported by waste management strategies, targets, and approaches.

The IWMP informs the EI&MP and the measures provided for by the IWMP should be operationalised through the EI&MP, SDF, IDP, SDBIP, and PMS. The IWMP should also be supported by a waste management policy that is aligned with NEM:WA.

The MLM commissioned an IWMP in 2011 that was updated by the MMM in 2015/2016.

1.8.4.6.2 Air quality management plan (AQMP)

Municipalities are required to generate AQMPs as sector plans to their IDPs to ensure compliance with the requirements of NEM:AQA and to give effect to the National Framework for Air Quality Management in South Africa.

The MLM had a draft air quality management plan (May 2005) and at the time of writing this plan no evidence was found that the MMM had commissioned any revision of this draft document.

A municipal AQMP should inform the EI&MP and the measures provided for by the AQMP should be operationalised through the EI&MP, SDF, IDP, SDBIP, and PMS. The AQMP should also be supported by an air management policy that is aligned with NEM:AQA.

1.8.4.6.3 Climate change adaptation and mitigation strategy (CCAMS)

The MMM commissioned a draft climate change adaptation and mitigation strategy in 2015. This strategy can also be deemed an IDP sector plan. The CCAMS should inform the SDF, the IDP, the SDBIP, the EI&MP and other plans and policies of the MMM.

1.8.4.6.4 Biodiversity management plan (BMP) and the alien invasive species monitoring, control and eradication plan (ISMCEP)

The MMM is required in terms of the NEM:BA to generate an ISMCEP, while it may also generate a BMP. At the time of generating this EI&MP the officials of the MMM were aware of the need to commission an ISMCEP, while no evidence was found of any BMP for the MMM.

The BMP and the ISMCEP should inform the SDF, IDP, SDBIP, the EI&MP and other plans and policies of the MMM.

The MMM does not have a BMP. It has commenced with the process to commission an ISMCEP, however.

1.8.4.6.5 Water safety plan (WSP)

A water safety plan is a plan to ensure the safety of drinking water with a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer.

In 2015 the MMM commissioned a WSP for its own water treatment facility at Maselspoort and for Bloem Water.

1.8.4.6.6 The environmental implementation and management plan (EI&MP)

The EI&MP is an operational level framework environmental management plan that is amongst other sources, informed by the SoER, the EMF and IDP sector plans.

Some municipalities adopt and use the EI&MP (or an EI&MP-like document) as a stand-alone framework environmental sector management plan, while others adopt the EI&MP (or EMP-like documents) as an official sector plan in terms of the IDP suite of mandatory and voluntary management plans.

The MLM generated an integrated environmental management plan (EIP) in 2004, while this document, the EI&MP (2016), is the second revision of the EIP.

1.8.4.6.7 IDP sector plans with an implied environmental application

IDP sector plans with an implied environmental implication include amongst others: the disaster management plan, water services plan, integrated transport plan, housing plan, local economic development (LED) plan; financial sustainability plan; health plan, governance, infrastructure and services plan, energy plan, etc.

1.9 Methodologies adopted and used

The following methodologies were adopted and used to generate the MMM EI&MP:

- Desk-top review of data, information, and reports that were: 1) available in the public domain; 2) generated by the three spheres of government; and 3) provided by the MMM
- Data, information, and reports that were generated by the provincial sphere of government include amongst others the:
 - Provincial air quality waste management plan;
 - Provincial conservation plan;
 - Provincial IWMP;
 - Provincial SDF;
 - The provincial SoER or environmental outlook report; etc.
- Data, information, and reports that were provided by the MMM include amongst others the:
 - MMM IDP;
 - MMM land use management scheme;
 - MMM environmental performance reports; etc.
- Environmental legal compliance verification process;
- Interviews with MMM personnel;

- Peer review of the MMM EI&MP chapters by MMM staff and specialists;
- Stakeholder engagement
 - Stakeholder engagement was provided for through two rounds of workshops held in Bloemfontein, Botshabelo, and Thaba Nchu.
 - The first round of engagements introduced stakeholders to the project, whilst also serving as a platform from which to distil stakeholder knowledge of environmental conditions and environmental management issues.
 - The second round of engagements provided an overview of the information recorded in Chapter 10 of the MMM EI&MP.
- MMM EI&MP training and community awareness creation programmes
 - Two training programmes (for councillors, officials tasked with environmental management and senior management) and one community awareness creation programme (for the communities of Bloemfontein and Botshabelo) were conducted.

1.10 The structure of the Mangaung Metropolitan Municipality's environmental implementation and management plan

The MMM EI&MP has three principal foci: a) an explanation, b) an analysis, and c) a synthesis. These three focal areas are thematically integrated.

The purpose of the explanation is to inform the user of both the basic theoretical underpinnings of each chapter as well as the linkages between the various component parts. The analysis part focuses on profiling the *status quo* at the MMM, while the synthesis is all about making recommendations for the EI&MP.

This EI&MP is sub-divided into the following ten chapters that are bound into this volume (volume 1 of 4) as well as a number of documents that are issued as stand-alone documents:

- Chapter 1: Introduction, methodology and structure of the MMM EI&MP;
- Chapter 2: Environmental conditions and cross-cutting environmental issues: a profile;
- Chapter 3: MMM as an environmentally regulated entity;
- Chapter 4: MMM as a local government regulated entity;
- Chapter 5: MMM and co-operative government;
- Chapter 6: MMM and government governance;
- Chapter 7: MMM as a governing entity;
- Chapter 8: Integrated environmental management and spatial tools;
- Chapter 9: The environmental impact and management plan (EI&MP); and
- Chapter 10: Bibliography.

1.11 The related documents

This EI&MP consists of four separate but related documents. They are:

- Volume 1 of 4: The Mangaung Metropolitan Municipality EI&MP (2016);
- Volume 2 of 4: The Mangaung Metropolitan Municipality Environmental Policy (2016);
- Volume 3 of 4: The Mangaung Metropolitan Municipality environmental legal compliance verification report (2016);
- Volume 4 of 4: The Mangaung Metropolitan Municipality Environmental Law Register (2016).

1.12 Other supporting environmental documents

This EI&MP should be read with the following supporting environmentally-related documents:

- The MMM Environmental Management Framework (EMF) (2016/2017);
- The MMM State of Environment Report (SoER) (2016/2017);
- The MMM Metropolitan Open Space System (MOSS) (2016/2017); and
- The Integrated Waste Management Plan (IWMP) (2016).

1.13 Assumptions and limitations

The following assumptions were made regarding the MMM EI&MP:

- The MMM EI&MP was generated by interpreting information that is readily available in the public domain and which was gleaned from:
 - Interviewing the staff of the MMM;
 - Reviewing available reports, plans and studies commissioned or issued by the MMM;
 - Reviewing environmental licences, permits and authorisations issued to the MMM by other organs of state;
 - The information gleaned from the legal compliance verification process;
 - In some instances also a review of raw data that were collected by monitoring processes;
 - Observations made by CEM staff during a series of field visits; and
 - Information gathered during public participation processes.

Care was taken by CEM staff to ensure that the information recorded in this report is correct insofar as verification could show that it was reasonably accurate.

Gaps in the knowledge base of this report are also the result of a failure by the researchers to secure interviews with some key staff members, or to source key documents in a timely manner to inform this report.

Reliable ground water, surface water, air quality and biodiversity data and/or information restricted a comprehensive analysis of the environmental conditions of the study area.

Reliable information and data for Naledi and Soutpan are furthermore not readily available in the public domain, while attempts to source information and data from the local municipalities prior to the formal merger with the MMM were also not always successful.

1.14 Conclusion

This chapter frames this EI&MP by providing the context, the scope and the structure of this report, as well as the methodologies used to generate this report.

The context framing this document covers themes such as:

- A profile of the MMM,
- A brief overview of the environmental governing, governance and management functions of the MMM,
- The environmental powers and mandates of metropolitan municipalities,
- An overview of the policies and programmes that frame this EI&MP,
- An illustration of the available instruments or tools that must or can be used by the MMM to discharge its environmental role, duties and functions,
- The methodologies adopted to generate this EI&MP, as well as
- Assumptions and limitations that could influence the approach to and contents of this report.

2 THE ENVIRONMENTAL CONDITIONS AND CROSS-CUTTING ENVIRONMENTAL ISSUES: A PROFILE

2.1 Introduction

Chapter 2 of the EI&MP profiles the environmental resource base elements of the region as well as crosscutting environmental functions, mandates, initiatives and elements that are pertinent to environmental governing, governance and management.

These environmental resource base elements and cross-cutting issues are profiled in terms of their *status quo*, matters that require attention, and their status in the official planning documents of the MMM such as the IDP and the SDBIP. Each sub-section of this chapter concludes with recommendations for this EI&MP.

2.2 The environmental resource base, conditions, *status quo* and issues

This section provides a broad overview of the status of the environment in the MMM's area of jurisdiction.

2.2.1 Climate

The MMM is located in the Highveld summer rainfall region with the rainfall averaging between 600 mm and 750 mm per annum. Frost occurs throughout the metropolitan area (particularly in the higher-lying areas) from May to early September. Annual temperatures range from a maximum of approximately 35°C in mid-summer to a minimum of -5°C in mid-winter, with a mean temperature range between 15-30°C in summer and 0-15°C in winter.

2.2.2 Topography

The MMM area is largely a vast, flat and open plain that is interspersed with low hills. The altitude range is between 1 200 m above sea level (masl) and 2 120 masl. The city of Bloemfontein is located at an altitude of 1 390 masl. The Thaba Nchu Mountain, located in the east of the metropolitan area, is the highest point in the MMM.

2.2.3 Geology and soils

The MMM area is underlain by a bedrock formation and lithology of mudstone and shale of the Ecca and Beaufort group that is partially covered by wind-blown sand and surface limestone. Dolerite dykes and sills intrude the sedimentary rocks. The MMM area is underlain by shale in the west and by mudstone in the east. The dominating rock type of the MMM is siliciclastic rocks with very few pockets of fine-grained felsic rocks.

The siliciclastic rocks are sedimentary rocks formed by quartz and feldspars, which include sandstone/shale and mudstone, respectively. Dolerite generally weathers to clayey or vertic soils such as the Arcadia and Rustenburg soil forms. The mudstone is overlain by typical red-brown, sandy loam to sandy clay loam soils of the Glenrosa and Mispah soil forms. The fine-grained sedimentary rocks, such as shale, mudrock, and siltstone, weather to clay minerals, which have a tendency to swell and shrink. The mudstones from the Beaufort Group cover most of the eastern parts of the MMM area, from Bloemfontein eastwards to Thaba Nchu and south-eastwards to Dewetsdorp, Wepener and Vanstadensrus.

The soils of the MMM area are generally shallow, with the deepest soils found in the in the south of the municipality.

2.2.4 Agricultural and grazing potential

The bulk of the land to the west of Bloemfontein has a high agricultural potential. Most of it is suitable for intensive cultivation. The southeast of the metropolitan area has soils with a moderate agricultural potential that is suited for grazing, while the southwest has soils with a low agricultural potential that is mostly suited for grazing and wildlife management practices.

The agricultural land to the east of Bloemfontein is communally owned and farmed, with the balance being privately owned farms.

Large areas of the municipality have a grazing capacity of 11-17 ha/Animal Unit (AU). There are areas of the municipality with a higher grazing capacity, however. These areas include the subsistence farming areas of Rooifontein/Thaba Nchu and Gladstone in the east of the metropolitan area.

Irrigation farms along the Modder, Tierpoort Rivers are extensively cultivated.

2.2.5 Water

2.2.5.1 Hydrology and water resources

The MMM is located in one of South Africa's pivotal water management areas – the Upper Orange management area. The MMM area of jurisdiction is located in two tertiary catchments or drainage regions: a) the Modder and b) the Caledon River catchments. Smaller sections of the MMM area extend to the Vet and Riet River catchments. Several dams have been constructed in the area, primarily as sources of potable water for the urban areas and for agricultural purposes, while a number of pans also occur in the north-western part of the MMM area.

2.2.5.1.1 Surface water

The northern parts of the MMM around Bloemfontein, Botshabelo, Thaba Nchu and Dewetsdorp are located in the Modder River catchment, while the south-eastern parts around Wepener and Vanstadensrus are located in the Caledon river catchment.

The surface water resources of the MMM area are extensively developed and the utilisation of surface water resources exceeds the local yields. Water needs to be transferred between catchments to meet demand. There are three main transfer schemes in the Modder and Riet catchments: a) the Caledon–Bloemfontein Scheme, b) the Orange–Riet scheme, and c) the Caledon–Modder (Novo) Scheme.

2.2.5.1.1.1 The Modder-Riet catchment

The catchment of the Modder-Riet system covers an area of about 35 000 km², most of which is semi-arid. The mean annual precipitation (MAP) is between 300 and 500 mm per annum, except in the extreme east where the MAP increases to 500-600 mm per annum. Only about 70% of the catchment contributes water to the river network. The balance drains to pans and enclosed drainage basins (DWA, 2009).

2.2.5.1.1.2 The Modder River catchment

The Modder River catchment is about 17 400 km² large. The Modder River, with its source at an altitude of 1 600 metres in the hills near Dewetsdorp, is the main tributary of the Riet river. It flows in a north-westerly direction before turning to a westerly direction before the Krugersdrift Dam. It joins the Riet River just upstream of Ritchie. Up-stream from the Rustfontein Dam several small tributaries join the Modder River. Down-stream of the Rustfontein Dam, the tributaries that originate in the densely populated areas around Botshabelo are the Klein Modder River, Sepane Spruit, Koring Spruit, and Koranna Spruit (DWA, 2009).

The bulk of the natural runoff into the Modder River is from areas located above the confluence of the Modder and Klein Modder Rivers. The rest of the Modder River catchment is relatively flat and very little runoff enters the system. Numerous pans are found in the low-gradient western half of the Modder river catchment. Rain fills these pans in the summer, but they hardly ever overflow (DWA, 2009).

Dams in the Modder River include: a) the Rustfontein, b) Mockes, c) Groothoek and d) Krugersdrift dams. The Rustfontein Dam, located on the Modder River to the west of Botshabelo, is the major storage reservoir in the Modder River. It was commissioned in 1954 to be a major water source for the Bloemfontein area. It currently provides the bulk of the water supplied to Bloemfontein from Maselspoort. Water from the dam is released into the Modder River, which flows into the Mockes Dam between Bloemfontein and Botshabelo. The Mockes Dam is primarily a balancing dam to ensure a constant supply of water to the purification works at Maselspoort weir.

Bloemfontein receives the bulk of its water from the Caledon-Modder transfer scheme, as well as from the Mockes Dam, from where it is abstracted and treated at the Maselspoort water treatment works. The Rustfontein water purification works was commissioned at the end of 1998 and supplies Botshabelo and Thaba Nchu with purified water that is abstracted from the Rustfontein Dam. Botshabelo can also be supplied via the Caledon-Modder transfer scheme. The Groothoek Dam is located south of Thaba Nchu on the Kgabanyane River, a tributary of the Modder River that supplies water to Thaba Nchu. The Krugersdrift Dam is also located on the Modder River north-west of Bloemfontein, but supplies water for irrigation purposes to the downstream Modder River Government Water Scheme. (DWA, 2009 and DWA, 2012).

Domestic, agricultural, and industrial water users are heavily reliant on the Modder River. In the headwaters of the Modder River (upstream of the Rustfontein Dam), the areas of scheduled and diffuse irrigation are supplied from run-off river abstractions and from the numerous farm dams in the area. The middle Modder River catchment is highly developed in terms of agriculture and urbanisation. Botshabelo and Thaba Nchu are located in the upper reaches of this region, with Bloemfontein further downstream. The Middle Modder River and Upper Riet River sub-catchments deliver large volumes of good quality water, mainly for irrigation purposes, where lucerne is the major green feed under irrigation. Intensive irrigation upstream of the Krugersdrift Dam is supplied from run-off and river abstractions and farm dams. The Modder River Government Water Scheme serves most of the lower Modder river catchment (the area between the Krugersdrift Dam and Twee Rivier). The water scheme receives water from the Krugersdrift Dam and numerous farm dams. According to some estimates, the Modder River is already exploited to the limits of its sustainable yield (DWAF, 2004 and DWA, 2009).

2.2.5.1.1.3 The Riet River catchment

The Riet River originates in the hilly areas to the east of Dewetsdorp and flows in a northwesterly to westerly direction to the confluence with the Vaal River. The Tierpoort Dam is located upstream of the Kalkfontein Dam on the Tierpoort River, which is a tributary of the Riet River. The Tierpoort River is not a reliable source of irrigation water and irrigation water is often pumped from farm dams and underground sources

2.2.5.1.1.4 The Caledon River catchment

The Caledon River, which forms the border between South Africa and Lesotho, is the largest tributary of the Orange River in the Upper Orange water management area.

Major dams of the Caledon catchment that are located in the MMM area of jurisdiction are: a) the Welbedacht, b) Knellpoort, and c) Egmont Dams. The Welbedacht Dam is located on the Caledon River and it supplies water to urban users in Bloemfontein, Botshabelo, Dewetsdorp, and various smaller users, as well as irrigators downstream of the Welbedacht Dam.

The irrigators downstream of the Welbedacht Dam have no rights to the water in the Welbedacht Dam and only the normal inflow is released for irrigation purposes. The Welbedacht WTW supplies water via the Caledon-Bloemfontein pipeline to Bloemfontein, Botshabelo, and some smaller consumers (DWA, 2012).

The Knellpoort off-channel storage dam was constructed to mitigate the impact of the decreasing yield of the Welbedacht Dam. Lower yields are caused by siltation and the increasing demand for water from The Caledon-Bloemfontein Regional Water Supply Scheme. The Knellpoort Dam receives water from the Caledon River via the Tienfontein pump station. The water that is diverted from the Caledon River to the Knellpoort Dam is then released back into the Caledon River. Bloem Water then abstracts the water from the Welbedacht Dam (DWA, 2012).

The Egmont Dam is an arch type dam on the Boesmankop Spruit, a tributary of the Caledon River near Vanstadensrus. The dam was constructed primarily for irrigation purposes in 1937.

2.2.5.1.2 Wetlands

A total of 18,735 wetlands have been mapped for the Free State. They are estimated to cover about 2,129 km² (about 1.7% of the total surface area of the Free State Province). All of these identified wetlands are classified as threatened. Limited information is available on the status of the wetlands within the MMM area of jurisdiction, however. See Figure 5 for an indication of the wetlands located in the MMM area of jurisdiction.

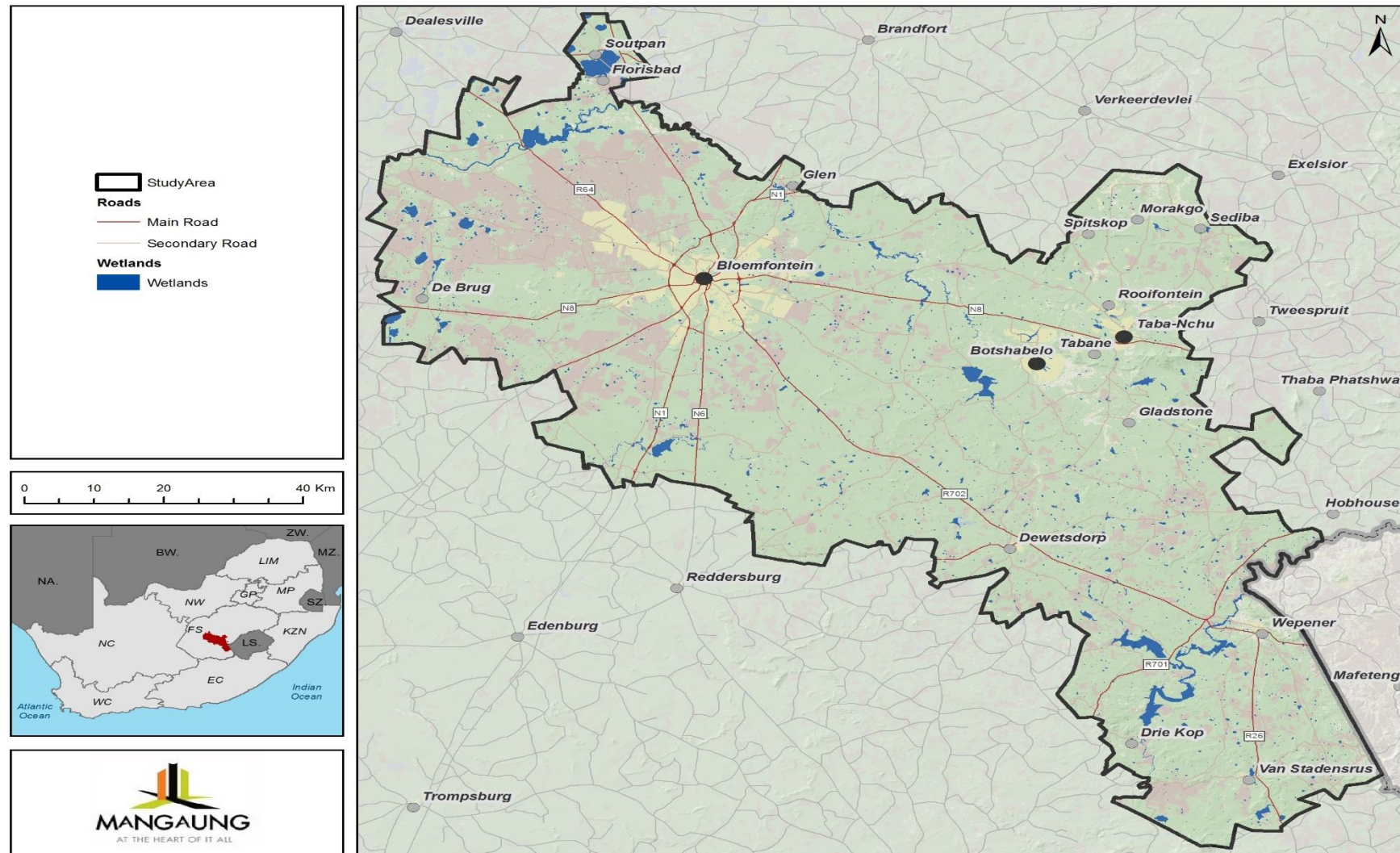


Figure 5. Wetlands of the MMM

2.2.5.1.3 National Freshwater Ecosystem Priority Areas (NFEPAs)

The National Freshwater Ecosystem Priority Areas (NFEPAs) are important for the management of freshwater resources such as rivers, wetlands and estuaries in South Africa that need to stay in a good condition in order to conserve freshwater ecosystems and protect water resources for human use.

2.2.5.1.3.1 River FEPAs

There are a number of river FEPAs scattered across the metropolitan area. The most prominent region is associated with the Koring Spruit, located to the east of the city of Bloemfontein. Each of the individual river FEPAs identified within the municipality must be considered important, and they should therefore be conserved and protected. It should be noted that protecting these areas (as well as the associated wetland systems) supports the sustainability of harder working (or more heavily impacted) rivers within the municipality, such as the Renoster Spruit and the Modder River.

2.2.5.1.3.2 Wetland FEPAs

The wetland FEPAs are like the river FEPAs. A number of identified wetland clusters that occur within the municipality were associated with identified river FEPAs (i.e. Koring Spruit). There is a high density of wetland clusters (including FEPA wetlands) within the western portion of the municipality that are predominantly associated with the Kaal Spruit.

2.2.5.1.3.3 Fish Support Areas

An unnamed tributary of the Mokopu River, in the south-eastern portion of the metropolitan area, as well as the main stem section of the Mokopu River itself, are identified as fish support areas. These identified areas are essential for protecting threatened and near-threatened freshwater fish that are indigenous to South Africa.

2.2.5.1.3.4 Upstream Management Areas

Upstream Management Areas are sub-quaternary catchments in which human activities must be managed to prevent the degradation of downstream river FEPAs and fish support areas. Two areas of the municipality are identified as Upstream Management Areas, namely the source zones of the Leeu Spruit and the Klip Spruit systems associated with the Middle Vaal WMA in the north-eastern region of the municipality, and an unnamed tributary of the Stinkhout Spruit located directly north of the city of Bloemfontein.

2.2.5.2 Surface water quality

This brief analysis of surface water quality covers the water quality of: a) the main rivers of the Mangaung area (the Modder River, the Bloem Spruit and the Riet River), b) some of the major dams and c) the effluent from some of the wastewater treatment works operated by the MMM¹⁶.

¹⁶ Please note: this analysis is limited by the availability of water quality data.

Table 3 lists the water quality monitoring stations considered, while Figure 6 indicates their location. Water quality data for the following water quality parameters were analysed for the period 2012 to 2015 to profile the quality of surface water of the MMM: a) electrical conductivity (EC), b) pH, c) *E.coli* and d) sulphates. This assessment suggests that the surface water quality of the study is generally good.

Table 3. The water monitoring stations

Site number	Description	Type
1	Modder River (Sannaspos)	River
2	Bloem Spruit WWTW	Waste water treatment works
3	Modder River (Glen)	River
4	Modder River (Diep Water)	River
5	Downstream of the Bloem Spruit WWTW (Bloem Spruit)	Waste water treatment works
6	Thaba Nchu WWTW (Sepane)	Waste water treatment works
7	Northern WWTW (Stinkhout Spruit)	Waste water treatment works
8	Sterkwater WWTW (Renoster Spruit)	Waste water treatment works
9	Botshabelo WWTW (Klein Modder River)	Waste water treatment works
10	Bloem Spruit (N8 bridge)	River
11	Modder River (Glen Road Bridge)	River
12	Klein Modder (Botshabelo dam)	River
13	Krugersdrift Dam	Dam
14	Modder River (Soetdoring at R700 bridge)	River
15	Maselspoort Dam	Dam
16	Rustfontein Dam	Dam
17	Sepane (Likatlong/Sannaspos)	River
19	Modder River (DS of Krugersdrift Dam)	River

2.2.5.2.1 Electrical conductivity

The electrical conductivity (EC) of the sampled sites is generally within the ideal to acceptable ranges, taking into consideration the combined fitness-for-use classification limits (DWAF, 1999). Water quality data from 2012 - 2015 indicate that the EC for the Modder River (Soetdoring at R700 bridge) exceeded the unacceptable fitness-for-use level (of 310 mS/m) in some instances during the sampling period.

2.2.5.2.2 pH

The pH of all the sampled water quality monitoring sites was within the water quality objectives/limits (between 6 and 9) as recommended by the Water Quality Guidelines (DWAF, 1996).

2.2.5.2.3 *E.coli*

The levels of *E.coli* measured in the rivers and downstream of the water treatment works are a concern, as the proposed limit of 20 cfu/100 ml is regularly exceeded. The Bloem Spruit (at

the N8 bridge) and the Modder River (Soetdoring at the R700 bridge) were the two worst performers with the highest exceedances recorded for all the tests done. The *E.coli* levels of the Maselspoort- and Rustfontein Dams were generally acceptable (within the 20 cfu/100 ml limit range), with a few exceptions from time to time.

2.2.5.2.4 Sulphates

The sulphate concentration levels measured at the sampled sites were generally below the ideal norm of 200mg/l. The accuracy of the data is questionable, however.

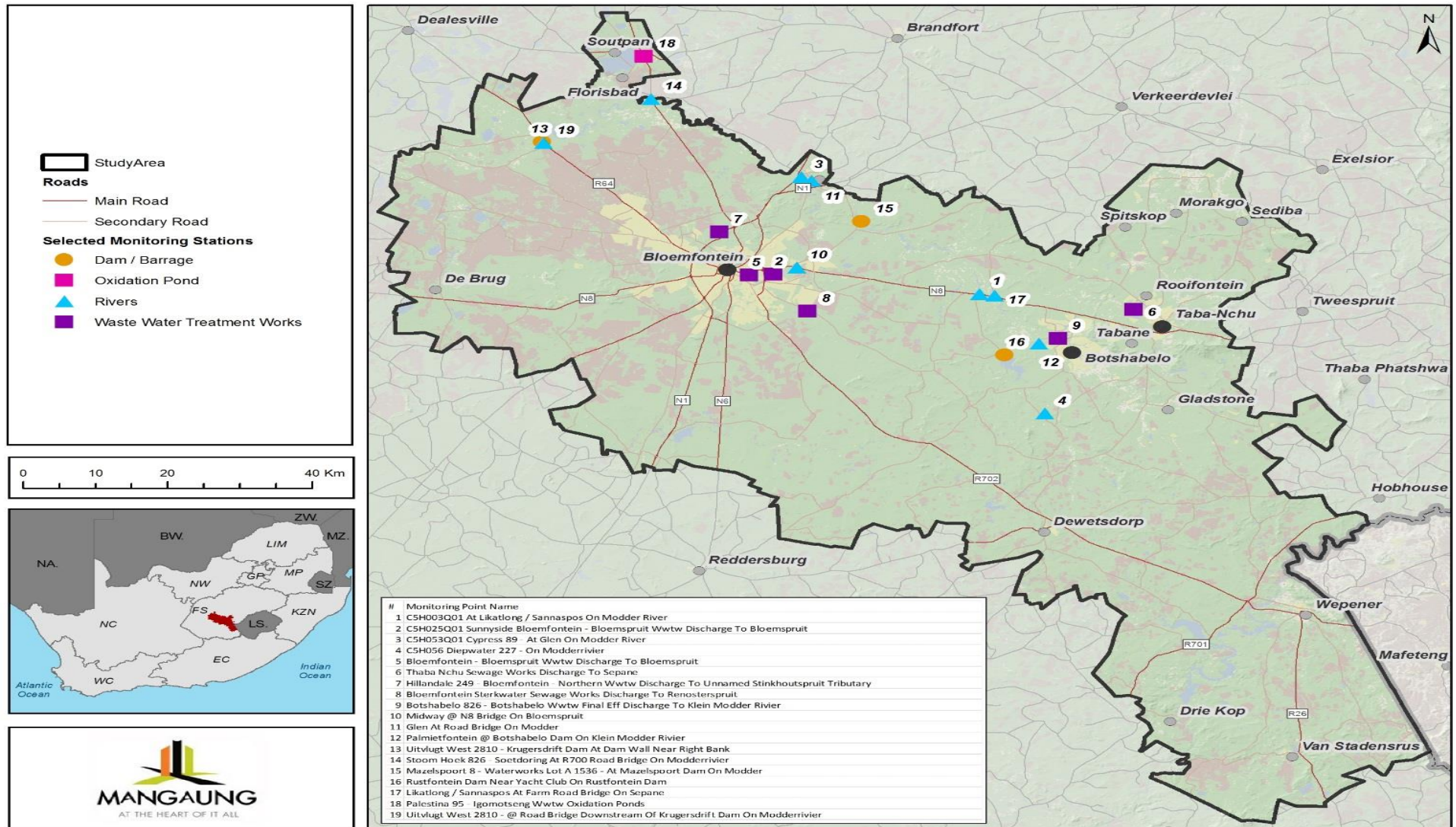


Figure 6. Location of monitoring stations reviewed

2.2.5.3 Ground water resources and quality

The quality of South African groundwater is generally of a potable standard (DWS, 2016). The most common challenges with the quality of groundwater resources are high nitrite/nitrate, fluoride, and *E.coli* concentrations.

The groundwater quality is naturally good in the eastern high rainfall parts of the MMM area, becoming more mineralised and brackish in the drier areas and especially near the salt pans. The groundwater in the area is also generally unpolluted, due to the rural nature and absence of heavy industry and mining. A 2012 study conducted on seventy-five boreholes on dairy farms in the Mangaung area found that the water quality index for ground water in the study area generally ranged from excellent to good. Some of these farms displayed high nitrate (N) and *E.coli* levels, however. In some cases, N levels of seven times greater than the drinking water standard were recorded, while 30% of the sampled boreholes had *E.coli* levels that exceeded the standard.

An assessment of groundwater electrical conductivity (EC) levels was conducted in 2012 for some of the towns in the MMM area (Bloemfontein, Thaba Nchu, Dewetsdorp and Ikgomotseng). The results show that the EC in all the towns is within acceptable ranges, except for Ikgomotseng, where the EC is within unacceptable ranges (DWA, 2012). The area around Ikgomotseng (Soutpan) has a number of salt pans. The high levels of EC in groundwater at Ikgomotseng may be due to elevated potassium and chlorine levels caused by salt mining, where salts leach into the groundwater (DWA, 2012).

Various other factors such as geology, soil, land use and the flow of water (i.e. conductivity increases as water flow decreases) affect the salinity of water, thus influencing electrical conductivity. Furthermore, industrial, chemical, and mining activities as well as irrigation are often the factors that are responsible for elevated salt levels (DWA, 2012).

The groundwater quality in the Modder-Riet catchment is generally good, except for localised pollution. This is partly due to the continuing use of pit latrines in some areas like Thaba Nchu, where some of the boreholes are unfit for human consumption due to their nutrients and microbiological levels (DWAF, 2004).

Groundwater is currently not extensively utilised as a water resource to supply potable water to the Bloemfontein/Mangaung area. Some individuals in the urban areas of the MMM use groundwater for irrigation purposes, while farms in the area depend on ground water resources. The situation differs significantly in the smaller towns, such as Soutpan, Dewetsdorp, Wepener and Vanstadensrus, where communities are largely dependent on groundwater resources. Groundwater is an essential resource, specifically for the smaller towns (DWA, 2012).

Agricultural activities in the Bainsvlei/Kalkveld area and the area to the south-west of Bloemfontein depend largely on groundwater resources. Groundwater is also utilised by small industry for bottled water as well as for the micro irrigation of vegetables and nurseries (garden centres) which are in close proximity to the city limits (Interim Strategy Report, 2010).

The extensive irrigation in this catchment also causes the pollution of groundwater resources. The elevated nitrate levels in these areas that exceed the maximum drinking water limit can be attributed to agricultural practices such as the use of fertiliser on cultivated lands and the irrigation of agricultural effluent (DWAF, 2004).

2.2.5.4 Water management

2.2.5.4.1 Potable water supply

The MMM is the Water Services Authority (WSA), while it is also one of the Water Services Providers (WSPs). The MMM treats potable water at its Maselspoort works, while it also purchases treated water from Bloem Water.

The MMM reported in its 2016/17 IDP that it provides potable water to 214 445 households with a backlog of 17 555 households. The provision of quality potable water to all households is an IDP priority of the MMM and the objective of the MMM is to provide potable water to all households by 2020.

Bloem Water is the main supplier of bulk potable water to the urban centres of the Modder-Riet sub-catchment, supplying about 100 million m³/a of treated water to about 580 000 people. The Maselspoort Scheme (the weir and the WTP) on the Modder River supplies approximately 25% of MMM water needs. The MMM purchases approximately two-thirds of its potable water from Bloem Water. In 2011 the volume of bulk water supplied from the Bloem Water System was 56.8 million m³, and that supplied from MMM's own sources, 22.7 million m³. The smaller towns of Wepener, Dewetsdorp, and Vanstadensrus supplement their water supply from local groundwater sources, which in 2011 totalled approximately 2.9 million m³/a.

Water supply to the MMM is severely stressed. Several measures have been identified to supply additional bulk water to the MMM. These measures include:

- Increasing the water pumped from the Tierpoort Dam;
- Improving the capability of the water treatment plant at the Welbedacht Dam to treat water with high turbidity levels;
- Upgrading the facilities of the Maselspoort treatment works to retreat sewage effluent to drinking water standards;
- Implementing water demand management that includes the reduction of losses of revenue water;
- Expanding water harvesting capability;
- Augmenting the Knellpoort Dam with water from the Caledon River; and
- Augmenting water supply to the MMM from the Orange River.

The total current capacity of the reservoirs serving the metropolitan area is 0.425 million m³. The capacity of Bloem Water's bulk reservoirs is 0.278 million m³. The Thaba Nchu and Botshabelo reservoirs have capacities of 0.156 million m³ and 0.052 million m³ respectively (Interim Strategy Report, 2010). Bloem Water together with the MMM owns and operates four WTWs with the associated infrastructure (Table 4).

Table 4. Bulk water supply infrastructure of Bloem Water and the MMM

Infrastructure	Annual capacity (million m ³ /a)	Capacity (Ml/d)	WSP	Area of supply
Welbedacht WTW	51.465	145	Bloem Water	Bloemfontein/Mangaung
Rustfontein WTW	12.045	100	Bloem Water	Bloemfontein/Mangaung
Maselspoort WTW	40.150	110	MMM	Bloemfontein/Mangaung
Groothoek WTW	1.460	18	Bloem Water	Botshabelo/Thaba Nchu

The 2015/2016 IDP for the towns of Dewetsdorp, Wepener, and Van Standensrus have identified several projects to ensure a sustainable supply of water to the towns. Some of these projects include:

- The installation of a 0.5 Ml water tank in Dewetsdorp and Vanstadensrus;
- The development of a Water Master Plan for the towns;
- The drilling of additional boreholes in Wepener and;
- The construction of a new water treatment plant and the associated infrastructure.

2.2.5.4.2 Potable water quality

The two WSPs of the MMM had by 2015 not achieved the coveted Blue Drop award for supplying potable water to the MMM. The MMM achieved a total Blue Drop Score of 84.45% in 2012,¹⁷ slightly down from the 84.69% in 2011 and significantly down from the 95% in 2010. The key challenges identified in 2012 were:

- The training of staff;
- Improvements in water safety planning;
- Improvements in compliance monitoring arrangements;
- A more coherent incident management and communication system;
- The allocation of resources;
- The improvement of relationships between the two WSPs;
- The finalisation of the clarification of roles and responsibilities between the two WSPs and the WSA for water quality monitoring; and
- The inadequate monitoring of chemical water quality in Mangaung West.

¹⁷ The latest publically available Blue Drop Score at the time of writing this report.

The MMM WSA has commissioned an integrated Water Safety Plan (WSP) for both the WSPs. The report was delivered in 2016, while the Water Monitoring Plan was updated in 2014. The Blue Drop performance of the municipalities added to the MMM area of jurisdiction in 2016 are listed in Table 5. A new laboratory was also built by the MMM.

Table 5. Blue Drop scores for local municipalities - 2012¹⁸

Municipality	WSP	Blue Drop score 2012
Dewetsdorp Supply System	Bloem Water	55.82%
Wepener Supply System	Bloem Water	53.66%
Vanstandensrus	WTW	10.65%
Soutpan Supply System	Soutpan System	7.01%

Both the 2016/17 IDP and SDBIP (with the PMS indicators) of the MMM have commitments related to drinking water quality. These commitments are limited to the number of laboratory tests for water quality that need to be conducted per year. The indicators should rather focus on: a) the geographical and temporal representativity of the sampling points, b) the actual performance of drinking water quality with respect to key chemical and microbiological parameters, c) the actual non-compliances to applicable water quality criteria and d) the responses of the MMM to any deviations in water quality that can effect consumers.

2.2.5.4.3 Revenue water losses

The MMM has been losing approximately 315 059 kilolitres of water a month, or around 50% of the water input to the metropolitan municipality. The MMM has responded with a five-year Water Demand Management Programme (2011 to 2016) and it has succeeded in reducing the loss of Non-Revenue water. The Water Demand Management Strategy includes the following strategies:

- Leak detection and a repair programme;
- Pressure management;
- The repair of visible and reported leaks;
- A mains replacement/management programme;
- A reticulation/consumer connection replacement/management programme; and
- The cathodic protection of pipelines.

The 2015/16 Strategic SDBIP of the MMM does not make any reference to commitments related to the loss of revenue water, while the 2016/17 IDP states a commitment to limit non-revenue water loss to 35%.

¹⁸ The latest information available in the public domain at the time of writing this report (2016).

2.2.5.4.4 Waste water treatment

The MMM provides sanitation services to Bloemfontein, Thaba Nchu and Botshabelo. Eight wastewater treatment works (WWTWs) service the three urban areas. The age of the treatment works varies between three and a hundred and two years.

Six of the existing treatment works are activated sludge plants, one is a biological treatment plant, and one an evaporation pond system.

It is estimated that 30 069 (5%) of the population in the MMM has inadequate or no sanitation services. To address this the MMM has indicated that that one of the objectives of the current 2016/2017 IDP is to expand the bulk sanitation infrastructure of the MMM. The following WWTWs are being constructed, upgraded or refurbished at the time of generating the EI&MP:

- North Eastern WWTW (a new plant);
- Botshabelo WWTW;
- Bainsvlei WWTW;
- Thaba Nchu (Selosesha) WWTW and
- Sterkwater WWTW.

The towns of Dewetsdorp, Wepener and Vanstadensrus all have treatment works or settling ponds which serve their needs. The need to upgrade these plants is scheduled in the Naledi IDP (2015/2016), but operationally they remain challenged in terms of:

- Unqualified staff operating sewerage works;
- Booster pumps that are out of order;
- Vandalism of the infrastructure;
- Chlorine dosing systems that are not operational;
- No monitoring of the quality of effluent discharge at several sewerage works; and
- No reporting of water quality results to the Green Drop system.

See Table 6 for a summary of all the WWTWs with an indication of their design capacities, classification, type of authorisation in terms of the National Water Act, and the nature and extent of the upgrades being undertaken at the time when this EI&MP was generated.

Table 6. Waste water treatment works of the MMM

Areas	WWTW	Discharge	Class	Design Capacity (MI/d)	Licensed	Upgrading of infrastructure
Bloemfontein /Mangaung	Bloem Spruit	Vaal, Harts and Skoon Spruit CMA	B	56	Existing Lawful Use (ELU) (permit 842B)	BA for decommissioning submitted
	Sterkwater	Discharge CMA undetermined	C	10	Unlicensed (Exemption 16/2/7/C522/D1/X1) Application for integrated environmental authorisation submitted 24/10/2011	Undergoing extension (doubling of capacity)
	Welvaart	Discharge CMA undetermined	C	6	ELU	
	Bainsvlei	Discharge to Irrigation Ponds	D	5	ELU	Refurbishing in process. Want to install UV pilot system
	Northern Works	Orange, Caledon and Kraai CMA	B	1	General authorisation (GA) 16/2/7/C522/D1	Undergoing expansion
	Bloemindustria	Vaal, Harts and Skoon Spruit CMA	E	<1	GA (No registration certificate available)	
	Seloshesha	Sepane Spruit/Modder-Riet Rivers	D	6	Unlicensed (WULA submitted 16 March 2016)	Undergoing extension
Botshabelo/ Thaba Nchu	Botshabelo	Klein Modder River	B	20	Exemption (1272B referenced in 2013 audit report) Water use registered. Water use application (WULA) submitted 14/05/2012. Initial assessment. Information is incomplete.	Undergoing extension (doubling of capacity)

Areas	WWTW	Discharge	Class	Design Capacity (MI/d)	Licensed	Upgrading of infrastructure
	Selosesha	Sepane Spruit/Modder Riet Rivers	D	6	Unlicensed (WULA submitted 16 March 2016)	Undergoing extension
Dewetsdorp	Dewetsdorp sewerage works	Kareefontein Spruit	C	2	The legal status of the works could not be established at the time of drafting this EI&MP.	Upgrading/extension recommended
Wepener	Wepener sewerage work	Sand Spruit	C	5	The legal status of the works could not be established at the time of drafting this EI&MP	Upgrading/extension recommended
Vanstadensrus	Vanstadensrus sewerage works	Wit Spruit	C	3	The water use registered.	Upgrading/extension recommended
Soutpan	Soutpan sewerage works	Modder-Riet River	E	0.7	In the process of applying for a new licence.	Upgrading/extension recommended

Although several WWTWs are currently being upgraded or are planned to be upgraded to improve performance, the MMM's operation of the WWTWs remains problematic. Some of these problems include:

- The WWTWs exceed the legal limits for key water quality parameters;
- Some of the WWTWs continue to exceed their design capacities;
- The WWTWs do not meet the legal requirements for staffing and staff competencies;
- The WWTWs have interim arrangements in terms of S 21 of the NWA;
- The WWTWs manage poorly the EIA processes and records associated with upgrades;
- The WWTWs manage poorly the records related to environmental authorisations;
- The WWTWs manage water quality data poorly;
- The WWTWs do not translate data into information to inform management in a timely manner; and
- The WWTWS do not have environmental performance objectives and indicators recorded in the IDP and two SDBIPs.

The MMM also failed to obtain the coveted Green Drop Awards for its WWTWs. See Table 7 for a summary of the Green Drop ratings awarded per WWTW in 2014. The risk ratings for MMM's WWTWs increased from 2013 to 2014 for Bloem Spruit, Botshabelo Sterkwater, Bainsvlei, Thaba Nchu, Northern Works, and Welvaart, while the risk rating for Bloemindustria improved.

Not all the WWTWs performed well in terms of the required staff complements and skills requirements, while the deteriorated risk rated for seven of the eight works remained a concern.

Table 7. Green Drop compliance ratings for the WWTWs of the MMM - 2014

Waste Water Treatment Works	Microbiological compliance	Chemical compliance	Physical compliance
Botshabelo	0%	52.6%	30.8%
Thaba Nchu	0%	70.5%	92.1%
Bainsvlei	0%	70.3%	93.1%
Northern Works	0%	100%	84.6%
Bloem Spruit	23.1%	37.8%	26.4%
Bloemindustria	Not applicable	Not applicable	Not applicable

Waste Water Treatment Works	Microbiological compliance	Chemical compliance	Physical compliance
Welvaart	0%	92%	92%
Sterkwater	0%	50%	33.7%

A compliance verification review¹⁹ was conducted for all the WWTWs in the MMM area of jurisdiction in 2016 to support the *status quo* analysis of this EI&MP. See Table 8 for an extract of the recommendations made to improve the environmental performance of the WWTWs of the MMM.

Table 8. Recommendations in the MMM Compliance Review Report 2016

Reviewed area	Recommendations
Waste water management	<ul style="list-style-type: none"> • Apply for Environmental Authorisations for the following WWTWs (Vanstadensrus, Wepener, Sterkwater and the North Eastern WWTWs) • Address the employment of qualified process controllers at the various WWTWs. • Determine which incidents are environmental incidents in terms of the NEMA and the NWA. The MMM must then report such incidents to the relevant parties. • Water effluent monitoring must be undertaken at Naledi and Soutpan WWTWs.

2.2.6 Air quality

2.2.6.1 Air quality management

The MMM has made provision to regulate air quality matters in terms of the Environmental Health Services By-laws.

In terms of the National Environmental Management: Air Quality Act (39 of 2004), MMM is the designated licensing authority as of 1 April 2015 for listed activities that may have a detrimental impact on the ambient air quality. In line with this authority, MMM issues, receives, considers, and decides on Atmospheric Emissions Licences.

The compliance monitoring and enforcement of these AELs as prescribed by NEM:AQA also falls within the mandate of the MMM. The MMM is also responsible for the regulation of controlled emitters within its area of jurisdiction in terms of Section 23 of NEM:AQA.

At present, the absence of an approved AQMP in the MMM creates several gaps within the regulatory efforts relating to Air Quality Management.

Direct monitoring by way of three monitoring stations has been undertaken by the MMM, but several shortcomings have been reported such as in the consistency of monitoring, the

¹⁹ See the dedicated report Part 3 of 4 of this EI&MP report of 2016.

accuracy of the results, the calibration of the equipment, and the actual locality of the current stations. Currently no indirect monitoring is taking place within the MMM.

The lack of an emission inventory within the MMM further hampers AQ management within the MMM. Such an inventory forms the basis of an AQMP as well as of dispersion modelling exercises. The basis of any inventory within the MMM may be compiled with existing information gathered from the current AELs and AEL applications along with the information gathered from the 523 controlled emitters.

The 2014 Air Quality Officer's Report on Air Quality reported the following regarding air quality and air quality management by the MMM:

- The MMM does have a designated air quality officer (AQO);
- The MMM has received eight applications for atmospheric emission licences (AELs); and
- The MMM has undertaken one special investigation in terms of S 21 of the NEM:AQA.

An interview with the MMM's AQO in 2016 confirmed the following regarding the status of air quality and air quality management at and by the MMM:

- The MMM has issued ten AELs;
- The MMM is in a process of registering 523 emitters;
- The MMM has not yet recommissioned its air quality monitoring stations; and
- The MMM does not have an air quality management plan (AQMP) as required.

2.2.6.2 Air quality monitoring

Three air quality monitoring stations are located in the MMM area of jurisdiction. One station is located at the Bayswater Clinic to the north of the city, and another at the Pelonomi Hospital, while the third is located at the Kagisanong Community Centre to the south of the city centre. Currently none of the air quality monitoring stations is in operation due to the technical failure of the equipment. No air quality monitoring is being undertaken in the towns of Soutpan, Dewetsdorp, Wepener, and Vanstadensrus.

The fact that no air quality monitoring has been done by the MMM since 2011 was highlighted in the 2015 Lekgotla NAQA report. The report urged the MMM to resume air quality monitoring as a matter of urgency.

The four monitoring stations that provided air quality data up to August 2011 (and not thereafter) are listed in Table 9. The Free State Air Quality Report also noted that the air quality monitoring protocol of the MLM was not strictly quality controlled and that the integrity of the data cannot be assured.

Table 9. Air quality monitoring stations in the MMM up to July 2010

Station	Air quality parameters	Weather parameters
Botshabelo	None	Wind speed, wind direction, humidity and temperature
Kagisanong	NO ₂ , NO, NO _x , CO, SO ₂ , PM ₁₀ and PM _{2,5}	Wind speed, wind direction, humidity and temperature
Pelonomi Hospital	NO ₂ , NO, NO _x , CO, SO ₂ , PM ₁₀ and PM _{2,5}	Wind speed, wind direction, humidity and temperature

Station	Air quality parameters	Weather parameters
Bayswater	PM ₁₀ and PM _{2.5}	Wind speed, wind direction, humidity and temperature

2.2.6.3 Air quality performance²⁰

The very last air quality data available for the MMM was recorded for the period August to September 2011. The following results serve as illustrative examples of the status of air quality as measured at the Pelonomi hospital for the period 2009 to 2010 as indicated. The recorded PM₁₀ levels indicated as daily averages (Figure 7) usually exceeded the norm in winter, as was the case for the recorded PM_{2.5} levels recorded as daily averages (Figure 8). Zero exceedances were recorded for SO₂ daily averages (Figure 9), while the norm was generally exceeded throughout the winter into spring for NO_x recorded at Pelonomi and expressed as daily averages (Figure 10). Occasional exceedances of CO levels were recorded (Figure 11).

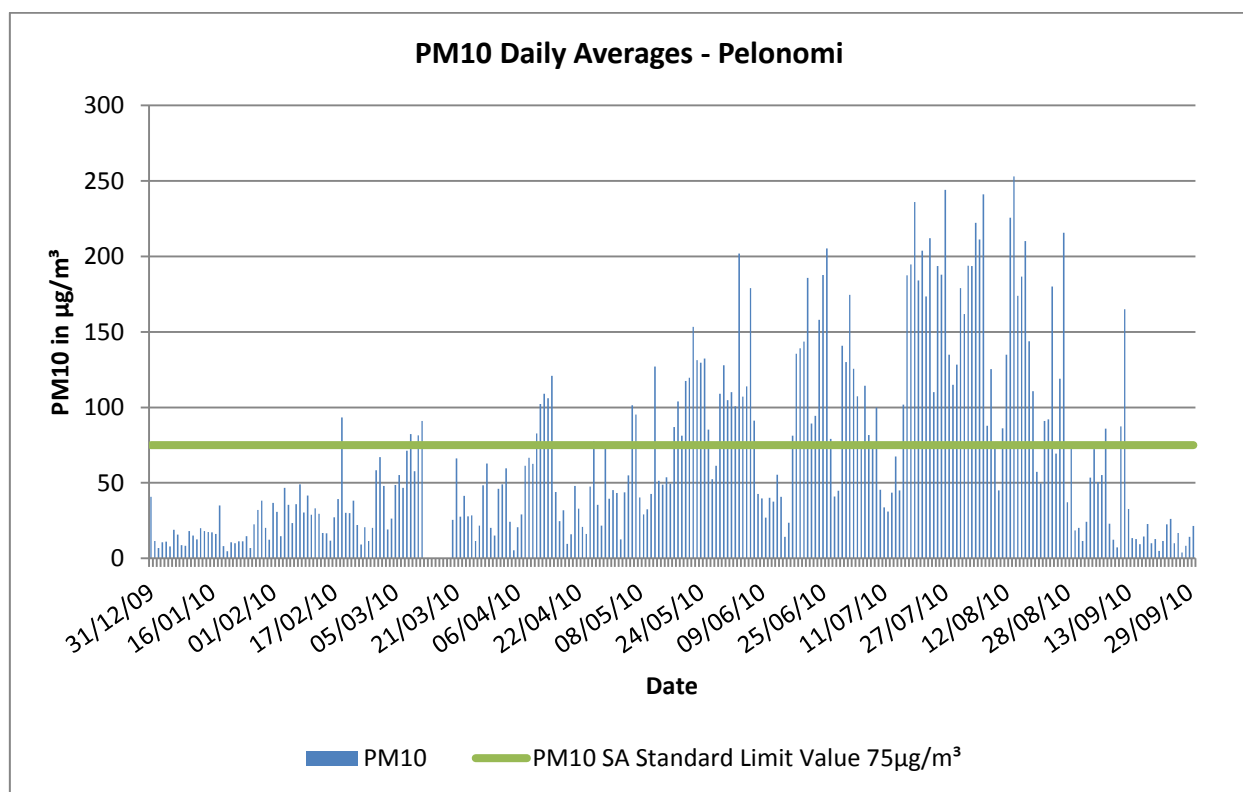


Figure 7. PM₁₀ daily averages measured at Pelonomi Hospital: Dec 2009 to Sept 2010

²⁰ Please note: Reliable and ongoing air quality data are not available for the greater MMM area, as the MMM has for a number of years not monitored air quality.

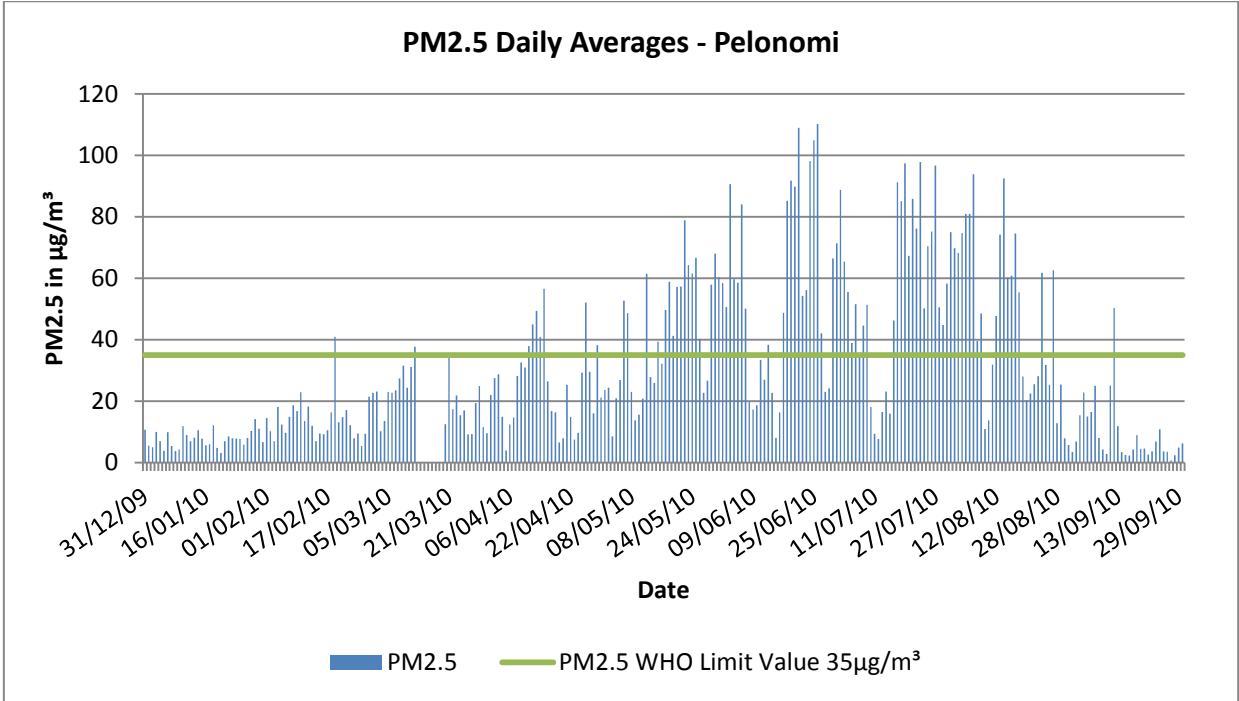


Figure 8. PM_{2.5} daily averages measured at Pelonomi Hospital: Dec 2009 to Sept 2010

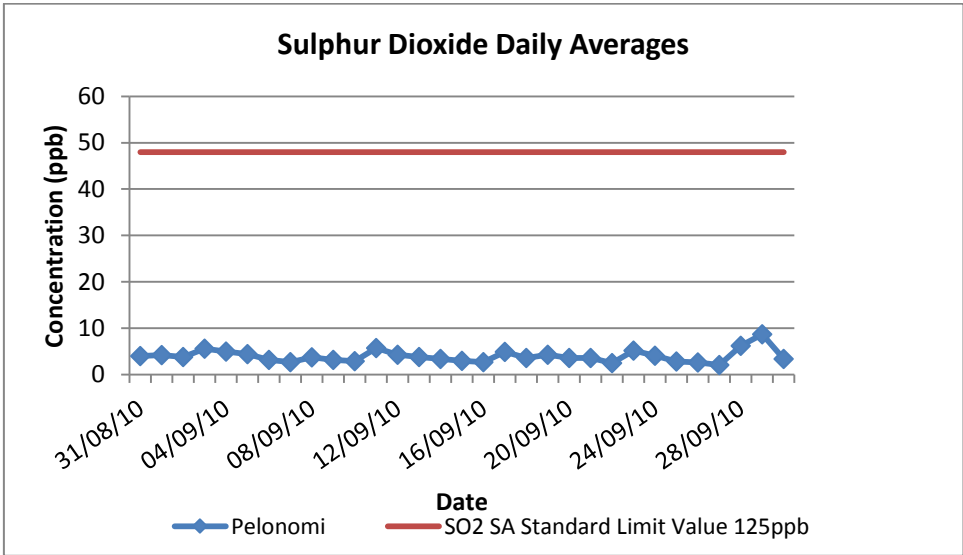


Figure 9. SO₂ daily averages measured at Pelonomi Hospital: September 2010

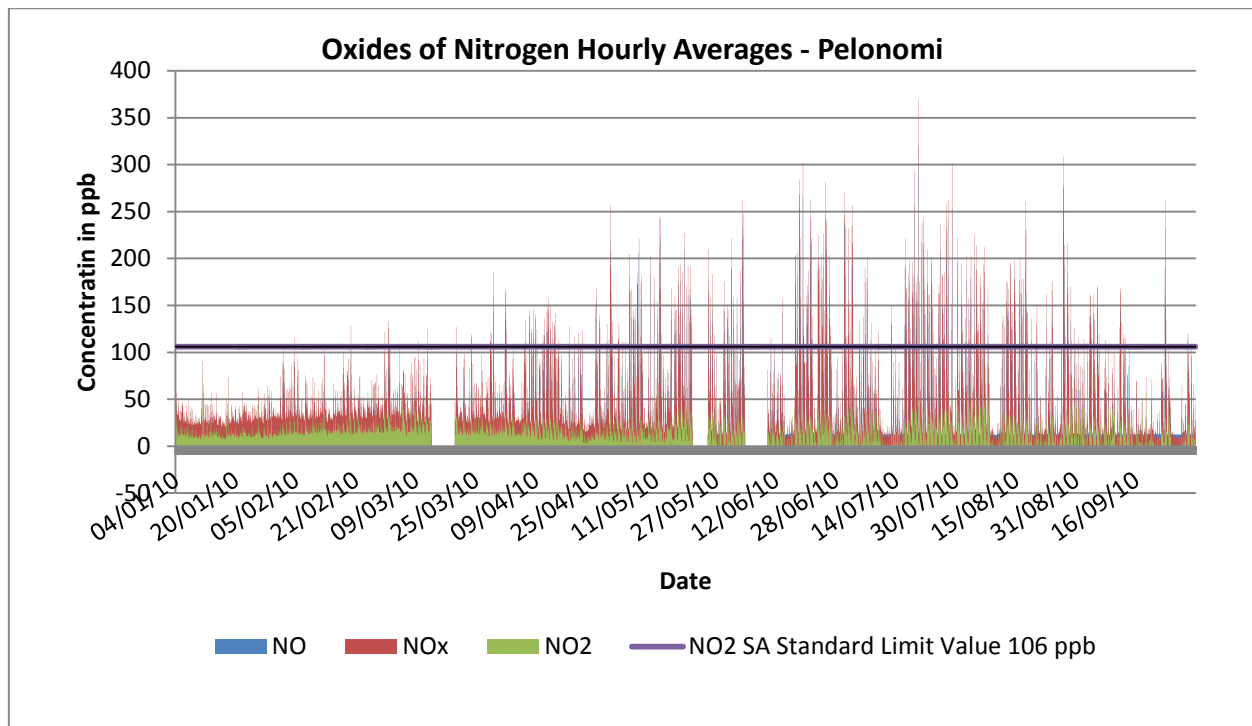


Figure 10. NO_x hourly averages measured at Pelonomi Hospital: Jan 2010 to Sept 2010

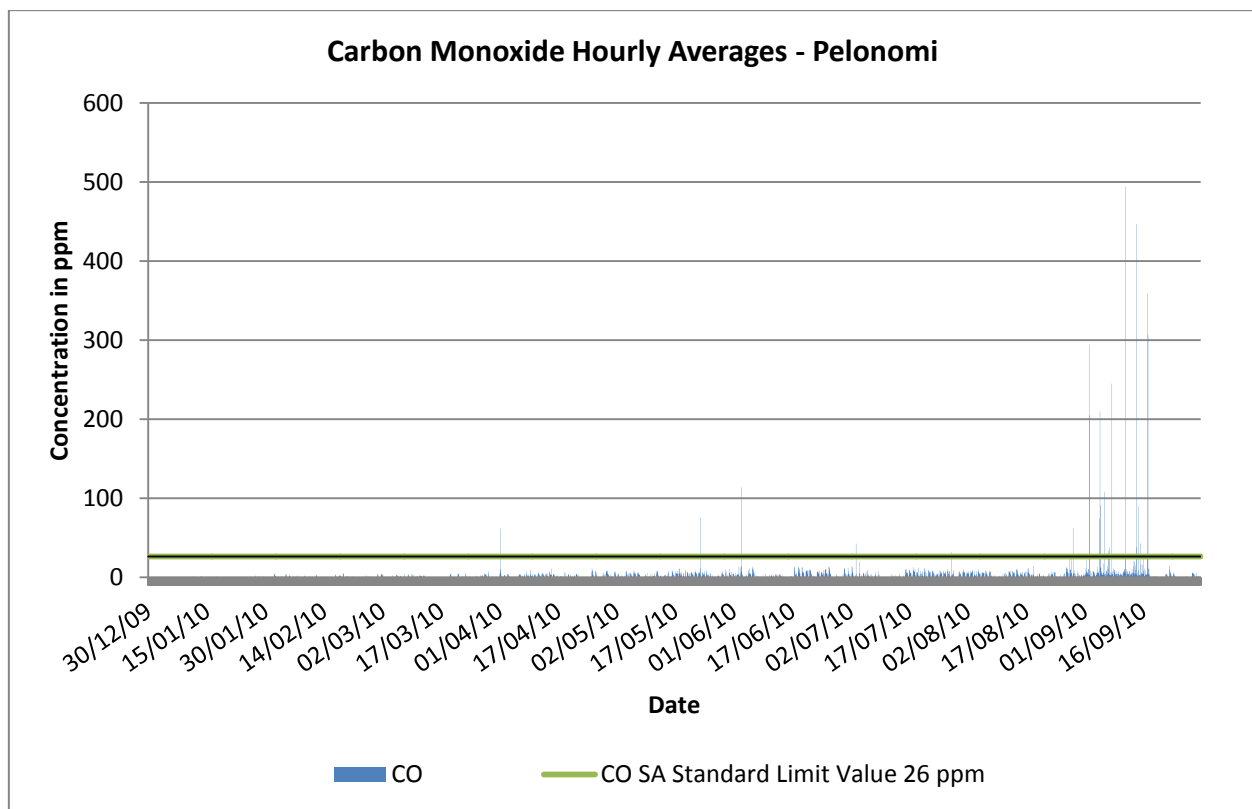


Figure 11. Eight-hourly CO averages measured at Pelonomi Hospital: Dec 2009 to Sept 2010

The number of exceedences for some of the air quality parameters were recorded for the period April to June, 2011 at Pelonomi. The largest number of exceedences were recorded for PM₁₀ and PM_{2.5}. This can be attributed to the low level burning of wood and coal around Pelonomi. (see Table 10).

Table 10. Number of air quality exceedances for the period April to June 2011 at Pelonomi Hospital

Parameters	(PM ₁₀) - daily average	(PM _{2.5}) - daily average	(PM _{1.0}) - daily average	(CO) – 8 hourly average	(CO) - daily average	(SO ₂) – hourly average	(SO ₂) - daily average	(NO ₂) - daily average
April	6	10	0	0	0	0	0	0
May	17	18	0	1	1	0	0	0
June	10	16	0	1	1	1	0	0
Total from the Quarter	33	44	0	2	2	1	0	0

2.2.6.4 Greenhouse gas emissions

Currently, no information is available on the greenhouse gas (GHG) emissions by the MMM and for the MMM, as the metropolitan area does not have a GHG emissions inventory.

The MMM published a draft climate change mitigation and adaptation strategy in 2015. In this report some climate change mitigation scenarios are proposed for the MMM.

2.2.7 Biodiversity

The absence of detailed information about fauna and flora in the boundaries of the MMM inhibits a thorough analysis of the *status quo* of fauna and flora at the metropolitan scale. An analysis at the provincial scale is therefore the only feasible approach.

2.2.7.1 Fauna

2.2.7.1.1 Mammals

Based on the Red Data list of the Free State, one species is categorised a critically endangered, four as endangered, seven as vulnerable and nine as near threatened. No information is available on the occurrence of these species in the jurisdictional area of the MMM (see Table 11).

Table 11. Mammals species in the Free State listed on the IUCN Red Data List

Species	Status
Black rhino	Critically endangered
Hartmann's zebra	Endangered
Oribi	Endangered
White-tailed rat	Endangered
Tsessebe	Endangered
Black rhino (minor)	Vulnerable
Bontebok	Vulnerable
Cape mountain zebra	Vulnerable
De Winton's long-eared bat	Vulnerable
Roan	Vulnerable

Species	Status
Sable	Vulnerable
Cheetah	Vulnerable
Brown hyaena	Near- threatened
Dent's horseshoe bat	Near- threatened
Geoffroy's horseshoe bat	Near- threatened
Lesueur's wing-gland bat	Near- threatened
Schreiber's long-fingered bat	Near- threatened
Serval	Near- threatened
South African hedgehog	Near- threatened
Spotted necked otter	Near- threatened
Temminck's hairy bat	Near- threatened
Sloggett's rat	Near- threatened

2.2.7.1.2 Birds

There are sixteen Important Bird Areas (IBAs) in the Free State, with one IBA located in the boundaries of the MMM at the Soetdoring Nature Reserve (see Figure 12). Based on the Red Data list, three bird species are categorised as critically endangered, three endangered, twenty-four vulnerable and twenty-two near threatened in the Free State (see Table 12).

Currently, most conservation work involving birds entails monitoring. There are twenty-six species of birds that are dependent on grasslands, or wetlands, or both habitats. These habitats are inadequately conserved in protected areas.

Table 12. Red Data bird species that have been recorded in the Free State

Species	Status
Rudd's Lark	Critically endangered
White-winged Flufftail	Critically endangered
Wattled Crane	Critically endangered
Bearded Vulture	Endangered
Botha's Lark	Endangered
Saddle-billed Stork	Endangered
African Finfoot	Vulnerable
African Grass Owl	Vulnerable
African Marsh-Harrier	Vulnerable
African White-backed Vulture	Vulnerable
Bateleur	Vulnerable
Blue Crane	Vulnerable

Species	Status
Cape Vulture	Vulnerable
Corn Crake	Vulnerable
Grass Owl	Vulnerable
Grey Crowned Crane	Vulnerable
Kori Bustard	Vulnerable
Lappet-faced Vulture	Vulnerable
Lesser Kestrel	Vulnerable
Ludwig's Bustard	Vulnerable
Martial Eagle	Vulnerable
Pink-backed Pelican	Vulnerable
Southern Bald Ibis	Vulnerable
Southern Ground-Hornbill	Vulnerable
Stanley's Bustard	Vulnerable
Striped Flufftail	Vulnerable
Tawny Eagle	Vulnerable
White-backed Night-Heron	Vulnerable
White-bellied Korhaan	Vulnerable
Yellow-breasted Pipit	Vulnerable
Black Harrier	Near-threatened
Black Stork	Near-threatened
Black-winged Lapwing	Near-threatened
Black-winged Pratincole	Near-threatened
Blue Korhaan	Near-threatened
Bush Blackcap	Near-threatened
Caspian Tern	Near-threatened
Chestnut-banded Plover	Near-threatened
Great White Pelican	Near-threatened
Greater Flamingo	Near-threatened
Greater Painted-Snipe	Near-threatened
Half-collared Kingfisher	Near-threatened
Lanner Falcon	Near-threatened
Lesser Flamingo	Near-threatened

Species	Status
Marabou Stork	Near-threatened
Melodious Lark	Near-threatened
Pallid Harrier	Near-threatened
Peregrine Falcon	Near-threatened
Red-billed Oxpecker	Near-threatened
Secretary bird	Near-threatened
Short-clawed Lark	Near-threatened
Yellow-billed Stork	Near-threatened

2.2.7.1.3 Reptiles and amphibians

In the Free State there are six species of reptiles and one species of amphibian that appear on the IUCN Red Data list. Two species of reptiles are categorised as vulnerable and four species as near threatened. One amphibian species is categorised as near threatened. No monitoring of amphibians or reptiles is performed in the Free State. Limited information is therefore available regarding their distribution and population dynamics (see Table 13).

Table 13. Red Data reptile and amphibian species that have been recorded in the Free State

Species	Status
Sungazer	Vulnerable
Breyer's Long-tailed Seps	Vulnerable
Lang's Crag Lizard	Near-threatened
Spiny Crag Lizard	Near-threatened
Striped Harlequin Snake	Near-threatened
Giant Bullfrog	Near-threatened

2.2.7.1.4 Arachnids

Although a Red Data list has not been generated for Arachnida, three family groups are vulnerable in the Free State (see Table 14). Limited information is available about the Arachnids of the Free State.

Table 14. Vulnerable Arachnida family groups in the Free State

Species	Status
Trapdoor spider	Vulnerable
Purse web spider	Vulnerable
Baboon spider	Vulnerable

2.2.7.1.5 Fish

Only one species of fish is listed on the Red Data List and is categorised as threatened (see Table 15).

Table 15. Red Data fish species that have been recorded in the Free State

Species	Status
Vaal-Orange largemouth yellow fish	Near-threatened

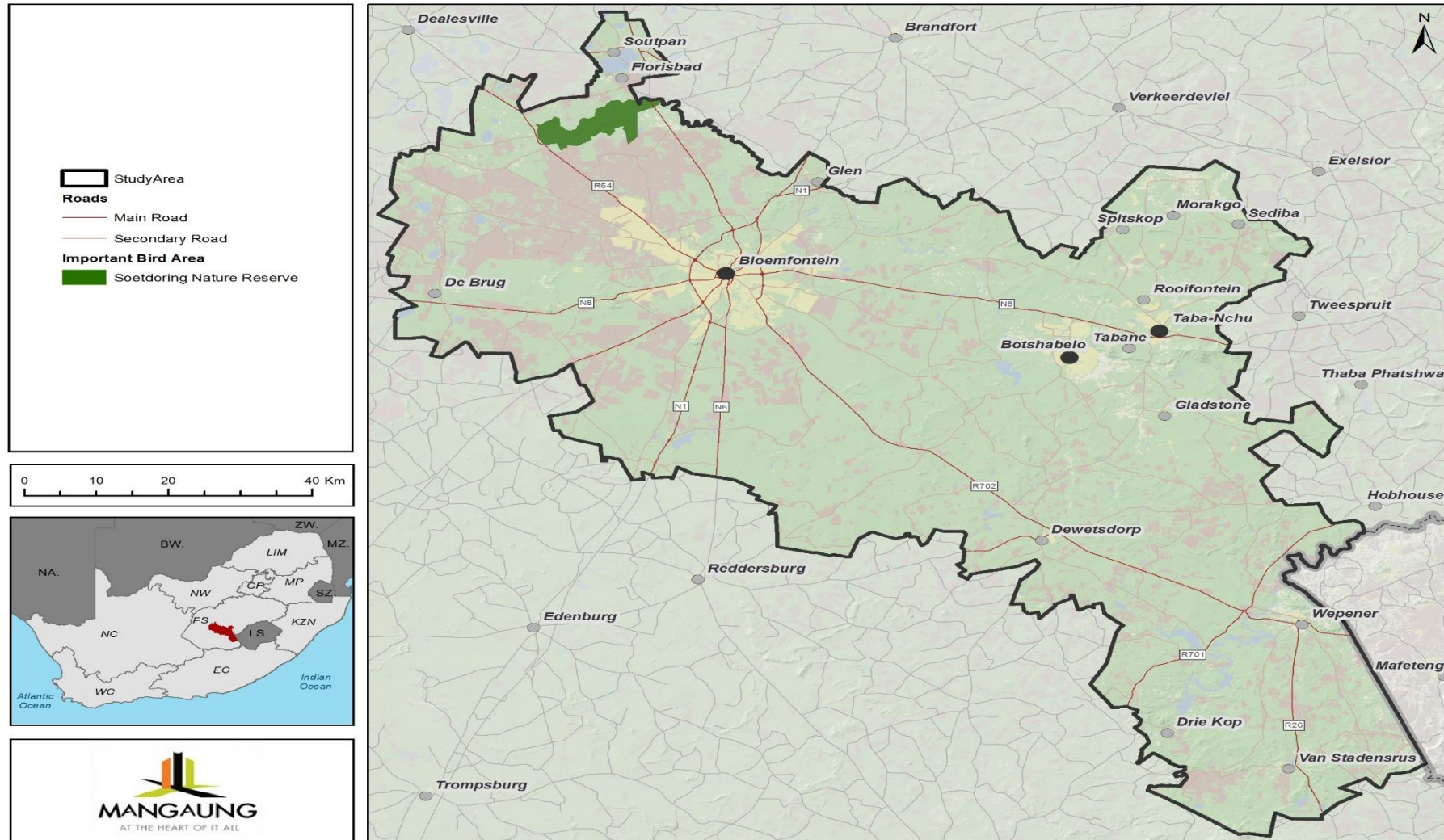


Figure 12. Important Bird Area within the boundaries of the MMM

2.2.7.2 Flora

The MMM is almost entirely located in the Grassland biome, with only the furthestmost north-western part of the metropolitan area classified as the Nama-Karoo biome (see Figure 13). The two dominant vegetation types found in the metropolitan area are the Bloemfontein Dry Grassland in the west and the Central Free State Grassland in the east. Two main shrub lands scattered throughout the MMM are the Winburg Grassy Scrubland and the Bloemfontein Karroid Grassland found in the Bloemfontein area, and the Basotho Montane Scrubland found in the Botshabelo area.

As listed in the National Environmental Management: Biodiversity Act (10 of 2004), three threatened terrestrial ecosystems occur within the boundaries of the MMM:

- The Bloemfontein Dry Grassland is classified as vulnerable;
- The Eastern Free State Clay Grassland is classified as vulnerable; and
- The Vaal-Vet Sandy Grassland is classified as endangered.

The conservation of grassland habitats is important for the protection of listed Red Data plant species. Based on the Red Data List, two plant species are categorised as endangered, seven as vulnerable and four near threatened (see Table 16). Information on plant species and their distribution in the province in general and the MMM area of jurisdiction in particular is limited, however.

Table 16. Red Data plant species that have been recorded in the Free State

Species	Status
Velvet silverpod (<i>Argyrobium velutinum</i>)	Endangered
Rooibergpypie (<i>Delosperma macellum</i>)	Endangered
Cushion daisy (<i>Argyrobium campicola</i>)	Vulnerable
<i>Brachystelma dimorphum</i>	Vulnerable
Drakensberg cycad (<i>Encephalartos ghellinckii</i>)	Vulnerable
<i>Helichrysum haygarthii</i>	Vulnerable
<i>Hermannia cordifolia</i>	Vulnerable
<i>Hypoxis uniflorata</i>	Vulnerable
Torch lily (<i>Kniphofia ensifolia</i>)	Vulnerable
<i>Brachystelma glenense</i>	Near threatened
<i>Gladiolus robertsoniae</i>	Near threatened
Brown poker (<i>Kniphofia typhoides</i>)	Near threatened
Coral plant (<i>Neohenricia sibbettii</i>)	Near threatened

2.2.7.2.1 Medicinal plants

The Free State province has more than 3000 known plant species. However, there is no record of the total number of plant species occurring within the boundaries of the MMM.

Medicinal plants are found in most habitats in the area, and factors such as soil, moisture and climate contribute to maintaining symbiotic relationships with insects, reptiles, mammals, birds and even fish species. Some of the medicinal plants are currently categorised as critically endangered and endangered according to the South African Biodiversity Institute (SANBI). These species are threatened due to factors such as habitat destruction (agricultural activities, urbanisation, etc.) and over-exploitation of the resource.

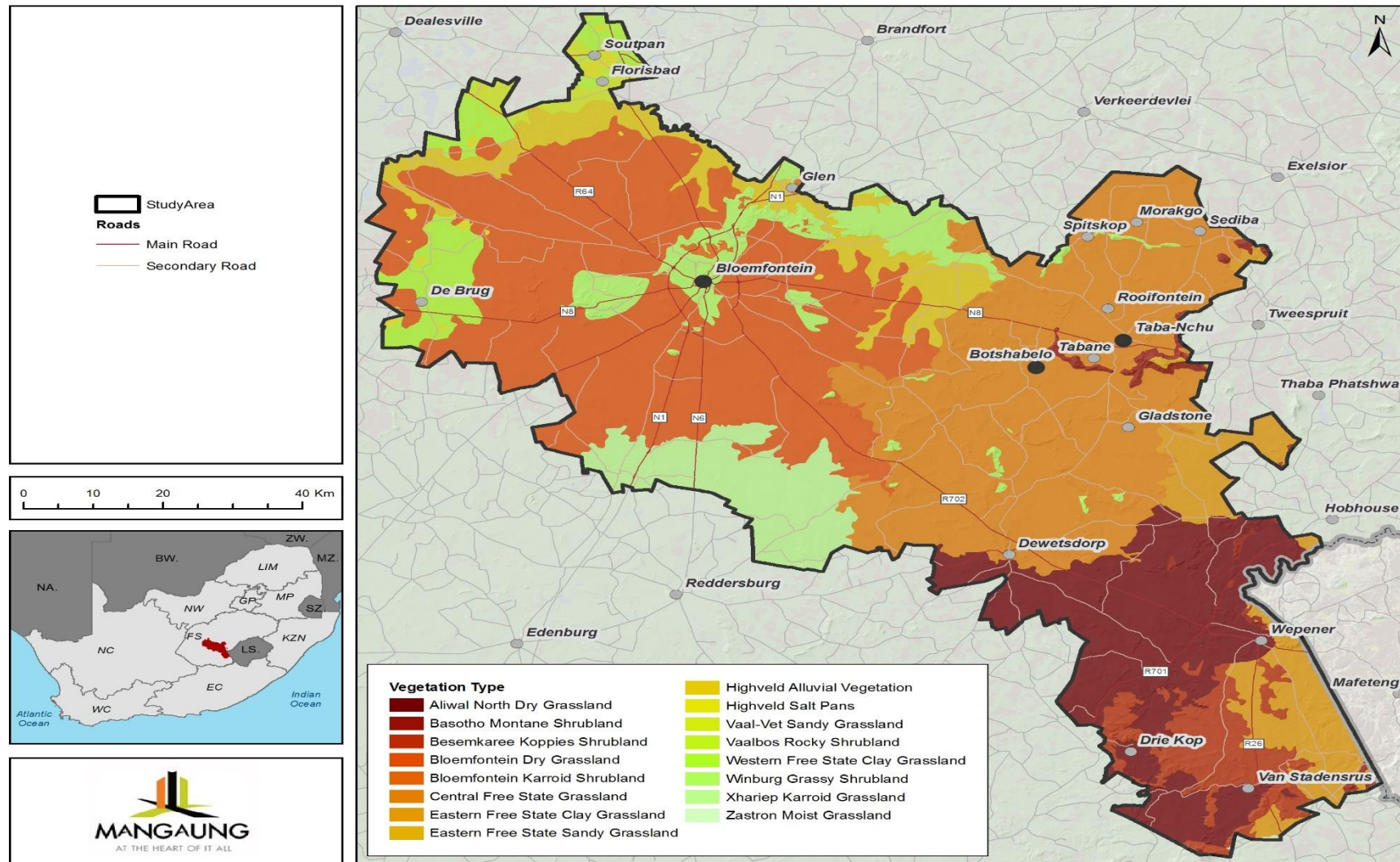


Figure 13. Vegetation types in the MMM

2.2.7.3 Alien and invasive species

The potential occurrence of alien plant and animal invasive species is relatively high throughout the Free State Province, and hence also throughout the MMM's area of jurisdiction. Invasive alien plants and animals can displace indigenous species and alien plant species often use more water than indigenous species.

In total, approximately seventy alien and invasive plant species have been recorded in the geographical region of the MMM. The clearing of natural vegetation to pave the way for development and agricultural activities creates feasible conditions for invasive plant species to establish. Figure 14 provides an overview of the average density distribution of alien and invasive plant species in the MMM area.

There are also five alien invasive bird species in the jurisdiction of the MMM. They are the common mynah (*Acridotheres tristis*), the common starling (*Sturnus vulgaris*), the house sparrow (*Passer domesticus*), the mallard duck (*Anas platyrhynchos*), and the yellow-billed duck (*Anas undulate*).

The eradication and control of these alien and invasive species are needed to sustain the natural ecosystems of the MMM. Alien species can “out-compete” indigenous species through reproduction and the absence of natural predators to control them. This can lead to the extinction of indigenous species and can harm the ecosystem.

The MMM manages alien and invasive species on an *ad hoc* basis and does not have a formal programme to identify, manage or monitor them. The National Environmental Management: Biodiversity Act (NEM:BA), requires that the MMM generate an invasive species monitoring, control and eradication plan as an IDP sector plan. The MMM initiated the process to generate such a monitoring, control and eradication plan at the time of drafting this EI&MP.

One option available for the MMM is to explore the EPWP as a potential management and monitoring strategy to address the alien and invasive species control plan in its area of jurisdiction.

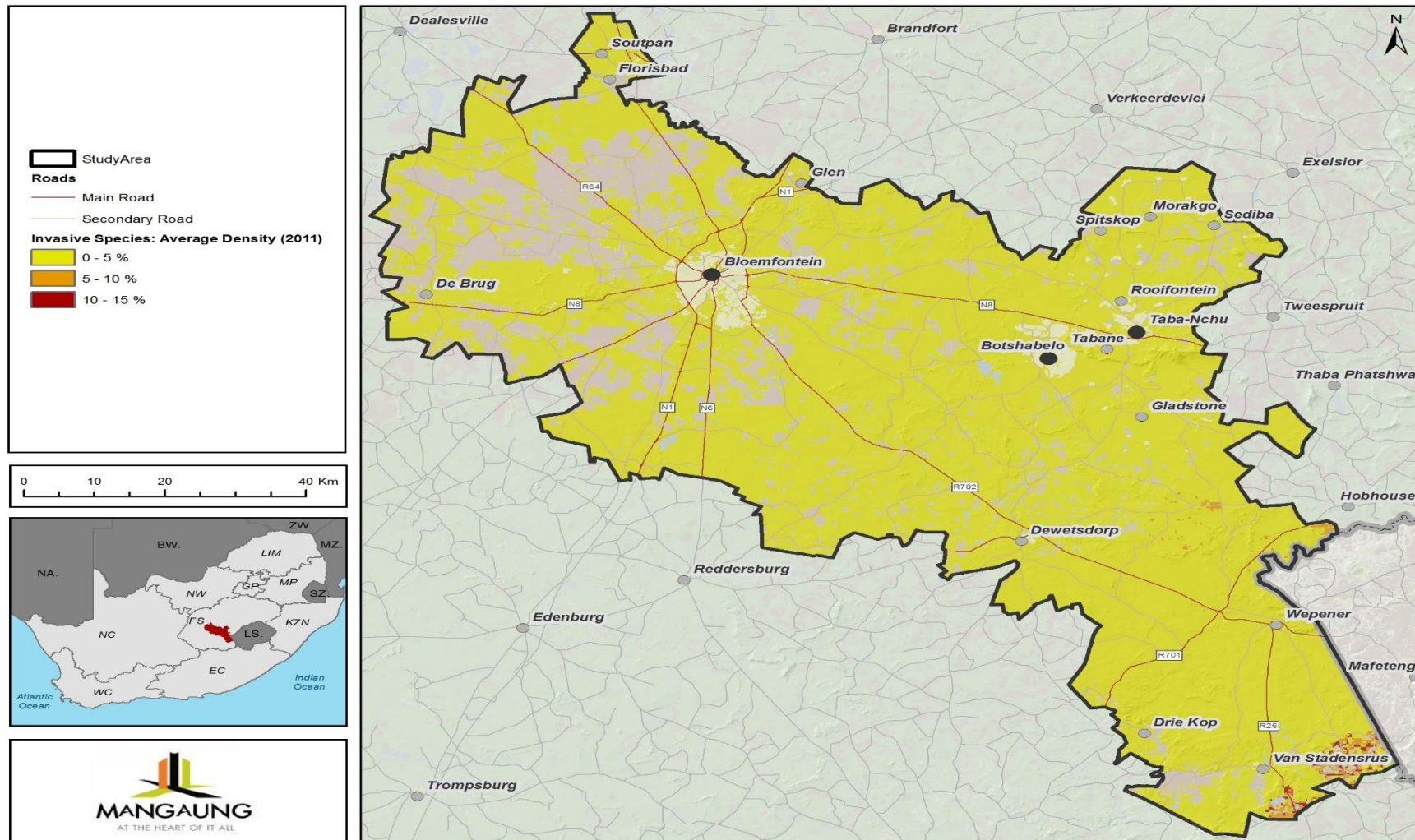


Figure 14. Overview of the average density percentage of area in the MMM covered by alien and invasive plant species

2.2.8 Conservation and protected areas

2.2.8.1 Ecological or green infrastructure

Ecological or green infrastructure²¹ including urban ecosystem services areas and a network of protected and conservation areas contributes to the quality of life in and the sustainability of municipalities. Green infrastructure in the municipal landscape should be a legitimate land use type that is recognised and protected by means of land use schemes or other instruments.

The network of green infrastructure should be identified in terms of the MMM's EMF and its MOSS, and the green infrastructure should then be entrenched as a legitimate land use in terms of the SDF, the IDP and the LUMS. It is important that the areas of green infrastructure are recognised for their use as environmental resource areas and their ecological and social functions, and not, as is stated in the 2016/17 IDP and SDF of the MMM, for their other utilitarian potential. The latter utilitarian perspective on green infrastructure is in essence pro-development, negating the principle that ecosystem services are to be rendered to the citizens of a metropolitan municipality.

The MMM has a MOSS and an EMF that were generated in 2004 and 2006 respectively. Both of these instruments were under review in the period 2015 and 2016 when this EI&MP was generated. The scope of the MOSS (2015) is limited to the original geographical area of the MMM (excluding Naledi and Soutpan), while the extended scope of the EMF (2016) includes these two former local municipalities.

The 2016 -2017 IDP of the MMM does not have any objective of protecting green infrastructure. The IDP objective for spatial planning is to rectify the skewed spatial patterns of the MMM urban and rural fabric.

The Sustainability Principles of the SDF specifies that: *a) special consideration is given to the protection of prime and unique agricultural land, and b) consistency of land use measures in accordance with environmental management instruments needs to be upheld.* The protection offered in terms of (a) above is limited to agricultural land, while no commitment is made to the protection of land that is essential to render ecological services and valued ecosystems.

The SDF principle made in terms of (b) above is vague. It needs to be unpacked in more detail in the IDP, the SDF and the environmental policy of the MMM.

The following recommendations are made in terms of this EI&MP:

- Revise the utilitarian definition of protected areas, parks and open spaces to recognise the ecosystem services that they render as legitimate land uses in the SDF and the LUMS;
- Take measures to protect these open spaces, protected areas and parks from piecemeal development and development encroachment;
- Extend MMM MOSS to include the Naledi and Soutpan areas;
- Revise the MMM environmental policy to require the adoption and use of spatially-based tools to ensure the sound management and protection of the green infrastructure; and

²¹ See the MMM draft MOSS (2015) for an explanation and definition of the MMM's green infrastructure.

- As an additional item under the eleventh IDP objective²² that relates to spatial planning, expand the focus of the MMM's SDF and IDP to include the objective of protecting, sustaining and responsibly using environmental infrastructure.

The sustainability principles of the SDF are: a) ensure that special consideration is given to the protection of prime and unique agricultural land, and b) uphold consistency of land use measures in accordance with environmental management instruments. The IDP objective for spatial planning is to rectify skewed spatial patterns of the MMM urban and rural fabric.

2.2.8.2 Protected areas

Conservation is an important function in terms of environmental and heritage resource management responsibilities, since local municipalities own or influence large tracts of land with high conservation value as well as important heritage resources.

The general conservation function also entails the provision of a general healthy environment that is conducive to a dignified quality of life with access to recreational facilities, clean air and water as well as ample functional open space.

At the time of generating this EI&MP, conservation within the MMM's area of jurisdiction was fragmented and not well managed. The MMM is in the process of drafting a MOSS as well as an updated SDF and LUMs.

There are two formal protected areas within the boundaries of the MMM which cover an area of 7303.1 ha (1.2% of the metropolitan area). The Soetdoring Nature Reserve in the north-west covers an area of 6167.7 ha (0.98% of the metropolitan) and the Rustfontein Nature reserve in the centre covers an area of 1135.4 ha (0.18% of the metropolitan).

The MMM also has a further 21 conservation areas (See Table 17 and Figure 15). The integration of conservation outcomes and the use of the planning instruments described above could overcome the fragmented management of conservation within the MMM.

Table 17. Protected areas in the MMM area of jurisdiction

Protected area	Name of protected area
1	Caledon Nature Reserve
2	Franklin Private Nature Reserve
3	Karee Nature Reserve
4	Mari Moroka Nature Reserve
5	Auch Macoy Game Reserve
6	Bergkraal Reserve
7	Buffalo Valley
8	Dawn Valley Private Nature Reserve
9	De Kuilen Private Nature Reserve

²² The others are: a) economic development, b) dealing with distortions in the built environment, c) public transport, d) rural development, e) the rendering of effective and reliable services, f) water services development, g) integrated waste management, h) revenue enhancement, i) mainstreaming poverty reduction, and j) youth and gender development.

Protected area	Name of protected area
10	De Oudekraal Nature Reserve
11	Gruisfontein Private Nature Reserve
12	Highlands Reserve
13	Meander Game Lodge
14	Mohokare Game Reserve
15	Olievenkloof Private Nature Reserve
16	Phakwe Restcamp
17	Rooikraal Game Ranch
18	Kopano Nokeng
19	Woodland Hills Golf and Wildlife Estate
20	Nielsview Nature Reserve
21	Steenbokkraal Nature Reserve

2.2.8.3 National Protected Expansion Areas Strategy

Declared priority areas are large, intact, and consolidated areas suitable for the creation or expansion of large protected areas. The two declared priority areas within the boundaries of the MMM are the Free State Highveld Grasslands, which are scattered throughout the boundaries of the MMM, and the Senqu Caledon, which is located at the far south-eastern part of Dewetsdorp.

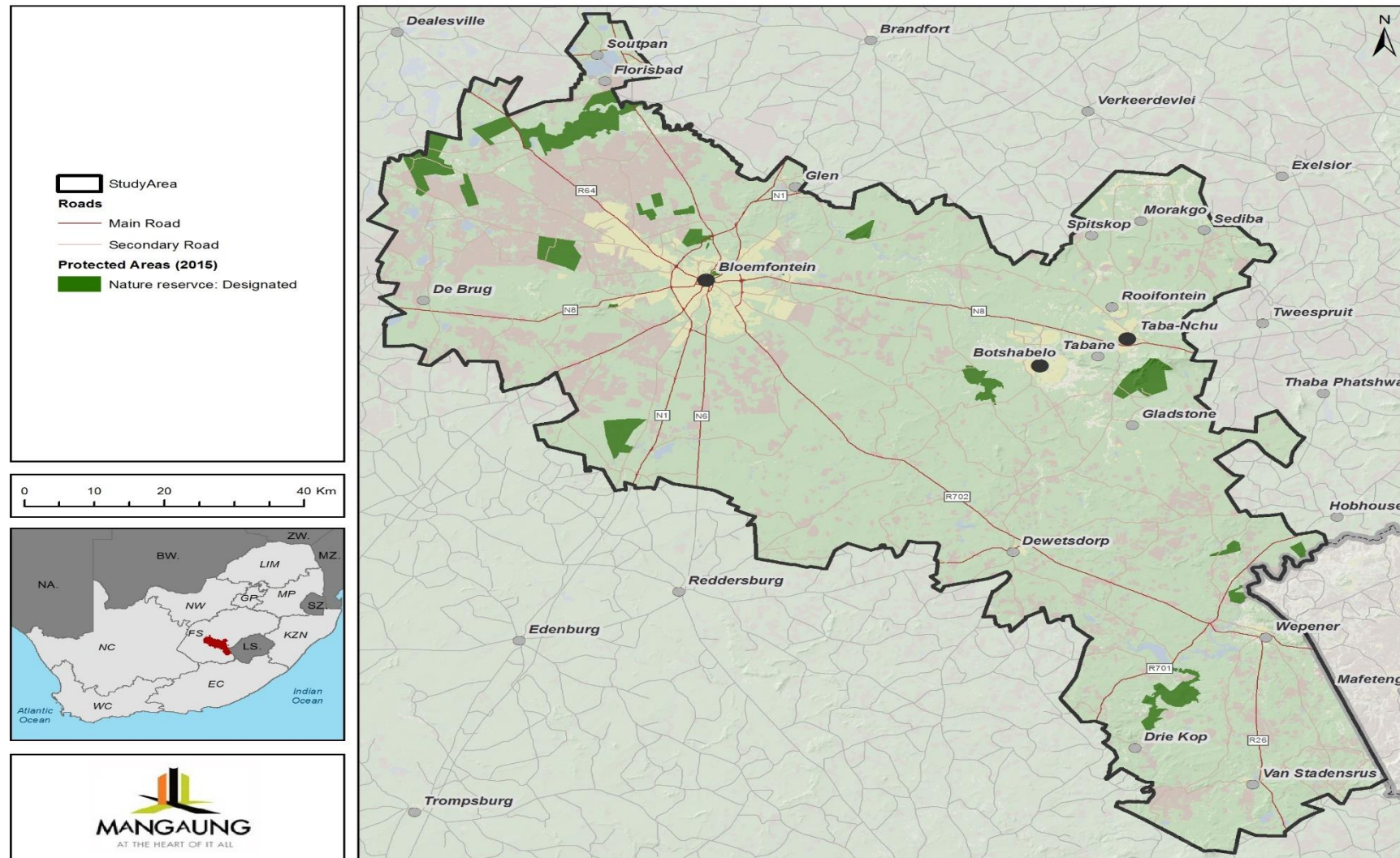


Figure 15. Protected areas located in the MMM area of jurisdiction

2.2.9 Socio-economic profile

The MMM is the eighth largest metropolitan area in South Africa with a population of nearly 775 000. The majority of the population of the MMM resides in Bloemfontein, Botshabelo and Thaba Nchu, with smaller concentrations in Dewetsdorp, Wepener, Vanstadensrus and Soutpan. Population numbers in the smaller towns have decreased over the past decade due to urbanisation.

In 2011, the majority of the population of the MMM area of jurisdiction was black Africans (83.3%), followed by whites (11%), Coloureds (5%) and Indian/Asians (0.4%). Sesotho is the most widely spoken language, followed by Afrikaans, Setswana and IsiXhosa.

Most of the members of the population (42%) aged between 15 and 64 years in the Bloemfontein, Botshabelo, and Thaba Nchu areas are employed, while 16% are unemployed and another 4% regard themselves as discouraged work seekers. The remaining 38% is not economically active. The situation in the towns of Dewetsdorp, Wepener and Vanstadensrus is somewhat bleaker with only 32% of the population (15 - 64 years) being employed, while 12% are unemployed, another 12% are discouraged work seekers, and the remaining 44% are not economically active at all. Most of the employed population work in the governmental, financial, agricultural, manufacturing, mining, transport and electricity sectors.

The MMM is currently implementing Phase 3 of the Extended Public Work Programmes. Through the EPWP the MMM can address the high level of unemployment in the metropolitan area. The EPWP aims to increase the focus on community-driven programmes, which through the transfer of wages can provide an economic stimulus. These programmes target the poorest areas, consolidate and strengthen the markets in marginalised local economies, and broaden the development impact.

2.2.10 Socio-economic environment

The MMM has generated a range of economic development initiatives, frameworks, programmes and plans that cut across a number of sectors such as rural development, transport, housing, infrastructure, tourism, industrialisation, the EPWP, agriculture, women, the youth etc.

Local government in South Africa is primarily developmental and the IDP of the MMM is fundamentally development orientated with numerous programmes and projects recorded and managed. As far as this EI&MP is concerned, the environmental interface with local economic development highlights the need to ensure that all development projects conform to the NEMA principles and the duty of care, as well as other environmental legal requirements.

2.2.11 Housing

The majority of the people who live in the MMM live in urban areas in formal dwelling structures. Some also live in formal structures on freehold farms and smallholdings or on communally managed land. Informal settlements are also to be found in the urban, rural and communal areas.

The MMM has approximately 238 000 households, with an average household size of 3.1 persons per household. As indicated by the Census data of 2011, approximately 178 000 households are located in formal settlements of the MMM and a further approximately 33 100 in informal settlements.

The MMM has a huge housing backlog, compared with other municipalities in the Free State province (Stats SA, 2011). A total of 14.2% of people residing in the MMM were living in informal dwellings during 2011, the bulk of which are located in the Bloemfontein/Mangaung Township.

Currently, the MMM has a housing backlog of 58 820 houses in the metropolitan area. Although the MMM has done reasonably well to address the burning question of the housing backlog, much remains to be done. There are currently approximately 45 informal settlement areas in the MMM area, and the demand for housing far outweighs the available resources (IDP, 2016/2017).

2.2.12 Basic services

A total of 221 127 households in the MMM area have access to water via a regional or local water scheme, while others use boreholes and water tanks as sources of water. The MMM faces a backlog of 17 555 households for which it still needs to provide water (IDP, 2016/2017).

A total of 185 268 households in the MMM have flush toilet facilities that are connected to the waste water treatment systems, whilst pit toilets with ventilation, pit toilets without ventilation, bucket toilets, and flush toilets with septic tanks are used by the remaining households. The MMM has embarked on a six-year programme of upgrading VIP and bucket toilets into decent sanitation (IDP, 2016/2017).

Almost 80% of refuse from households is removed by the local authority/private company at least once a week, whilst approximately 3.5% of households in the MMM area do not have access to waste removal services. This percentage of households is much higher (52%) in the Dewetsdorp, Wepener, and Vanstadensrus areas. However, the MMM has prioritised the implementation of an Integrated Waste Management Plan in the IDP 2016/2017.

2.2.13 Infrastructure

The MMM is currently experiencing huge challenges to simultaneously maintain its infrastructure assets and to address emerging needs. At the time of generating this EI&MP the MMM had embarked on a massive infrastructure enhancement programme for the following purposes, amongst others: roads, transport, storm water, sports and recreation, housing, water treatment and supply networks, bulk water supply, waste water treatment and waste management.

The most important linkages between infrastructural development and this EI&MP are a) the need to ensure that all development projects conform to the NEMA principles and duty of care as well as other environmental legal requirements and b) to improve the environmental performance of key infrastructure such as the WWTWs.

2.2.13.1 Roads

The vast distances between the various towns of the MMM make all communities dependent on the regional distribution roads for social as well as economic contact. The backlog of 1 049 km in formal roads is affecting 167 800 households.

The MMM aims to upgrade 150 km of gravel roads per year over the next 5 years, although the entire upgrade programme will take longer than 10 years. The MMM also has plans to improve the public transport network.

The road and transport needs of the Soutpan, Dewetsdorp, Wepener, and Vanstadensrus areas are not well documented. However, the 2015/2016 IDP of Dewetsdorp, Wepener, and Vanstadensrus, indicates that the construction and maintenance of roads are among the priority focus areas. The main challenges facing these smaller towns are:

- Aged infrastructure;
- An inadequate budget; and
- The maintenance of existing infrastructure.

To address these challenges, the 2015/2016 IDP of Dewetsdorp, Wepener and Vanstadensrus allocated specific projects, which include: a) the paving of internal streets, b) the development of an Integrated Transport Plan, c) the development of a roads and storm water master plan, and d) the re-gravelling of internal roads in several towns.

The MMM Integrated Transport Plan (2006 - 2010) proposed the upgrading of several aspects of transportation infrastructure within Bloemfontein, Botshabelo, and Thaba Nchu. These upgrades include the revamping of the railway station in the CBD of Bloemfontein, upgrading the infrastructure for the movement of pedestrian and cyclists, new road links in Botshabelo, relocating the long-distance taxi rank, and upgrading the road between the N8 and Selosesha industrial area in Thaba Nchu.

2.2.13.2 Railways

An east/west and north/south railway line services Bloemfontein. The town of Thaba Nchu also has a railway station for commuters to and from the Bloemfontein. The east/west Bloemfontein railway is also connected to the north/south railway from the towns Dewetsdorp, Wepener and Vanstadensrus in the southeast of the MMM.

2.2.13.3 Airports

Currently two airports are operational within the MMM area of jurisdiction. They are the Bram Fischer international airport and the Tempe airport. Major upgrades to the Bram Fischer airport have been specified. The Airport Development Node has also been highlighted as one of the eight point development priorities of Mangaung and forms part of Phase 1 of the Integrated Public Transport Network.

The Tempe airport is operated under private ownership and is being used for pilot training, gliding and accommodation via the Westline Aviation academy, as well as skydiving.

The airport at Thaba Nchu is currently closed and no objectives or plans for the airport have been specified.

2.2.13.4 Storm water infrastructure

The MMM has 56 km of bulk and major storm water canals. The capacity of the major systems varies from a 10 - 25 year storm event, depending on the area served. In general, there are no major capacity constraints in the major systems, but maintenance and rehabilitation are needed. The MMM has a Storm Water Management System (SMS) to determine and manage the flows and capacities of the storm water conduits. Storm water management remains a big challenge for the MMM, since continued urbanization interferes with the natural discharge of storm water (IDP, 2016/2017). These challenges of storm water infrastructure maintenance and development have also been highlighted by smaller towns including Soutpan, Dewetsdorp, Wepener, and Vanstadensrus (IDP 2016/2017).

The upgrading of the storm water infrastructure of the MMM is one of its eight development priorities as provided for in the IDP and SDBIP.

2.2.14 Solid waste generation and management

2.2.14.1 Waste generation

Waste generation in the MMM is increasing in direct proportion to population growth, improvements in the quality of life, and changes in lifestyle. The following sources generate waste in the MMM area:

- Domestic dwellings;

- Commercial nodes;
- Government institutions and offices;
- Mining;
- Industry and light industries;
- Agricultural producers;
- Farms and game farms;
- Medical facilities;
- Events; and
- Screens and dried sludge from WWTWs.

In 2015 the MMM generated 404 608 tonnes of waste and the projection is that it will generate 461 217 tonnes of waste by 2025.

2.2.14.2 Solid waste management

The Sub-Directorate Waste Management of the MMM renders all waste and cleansing-related services in its area of jurisdiction. At the time of generating this EI&MP, the towns of Soutpan, Dewetsdorp, Wepener, and Vanstadensrus had their own waste management services.

The Sub-Directorate Fleet Services and Engineering Support manages the fleet needed to render waste-related services. The waste collection service covers between 80 and 90% of all the households, collecting 96% of all waste generated.

The MMM formulated the following two waste-related objectives in its 2015/2016 SDBIP:

- The upgrading and maintenance of solid waste management infrastructure, that includes the upgrading of the northern and southern landfill sites, the development of a new landfill site, the upgrading and rehabilitation of the Botshabelo landfill site, refuse storage bins for the three CBDs, as well as the development of waste drop-off areas in Mangaung; and
- The acceleration of waste removal by providing households with weekly kerb-side waste removal services in all formal areas.

The MMM does have waste management by-laws in place (October 2013), but these by-laws are not aligned to address the issues of the reduction and source separation targets as set out in the National Environmental Waste Act (2008) and specifically the National Waste Management Strategy (2011). The MMM also reviewed and revised its IWMP.

The towns of Dewetsdorp, Wepener, and Vanstadensrus have also prioritised waste management in the 2015/2016 IDP. Strategies for waste management in these towns include:

- The repair and maintenance of infrastructure, including landfill sites;
- The licensing of all the landfill sites; and
- Environmentally safe waste management practices.

To address these challenges in the smaller towns, the following projects have been identified:

- The appointment of an external service provider to remove domestic waste; and
- The drafting of an Integrated Waste Management Plan.

2.2.14.3 Health care risk waste (HCRW) and hazardous waste (HW)

The management of health care risk and hazardous waste in the MMM area of jurisdiction remains a provincial competence. No landfill sites operated by the MMM are authorised to receive HCRW and HW and all generated waste is exported beyond the boundaries of the Free State.

The HCRW thermal treatment plant that operated in Mangaung was closed by the MMM for not complying with the air quality standards.

2.2.14.4 Landfill sites

The current state of landfill sites located in the MMM area of jurisdiction is summarised in Table 18.

Table 18. Summary of the landfill sites in the MMM area of jurisdiction

Area	Name of landfill site	Size and remaining air space	Status and comments	License nr
Bloemfontein	Northern landfill site	Size: 40 ha Air space: 885 362 m ³	Operational. The MMM could be compelled to close this landfill due to its close proximity to the residential area..	16/2/7/C522/D1/Z2/P478
	Southern landfill site	Size: 117 ha Air space: 5 504 332 m ³	Operational. This site has the potential to develop a waste-to-energy project and also to create green jobs through the sorting and separation of waste	B33/2/350/2/P162
Thaba Nchu	Thaba Nchu waste disposal site	Uncertain	Closed. The current Thaba Nchu landfill site is in the process of being closed in terms of the legal requirements.	WML/BAR/02/2013
Botshabelo	Botshabelo Eastern landfill site	Size: 24 ha Air space: 1 330 518 m ³	Operational. The life expectancy of this landfill site can be extended when the Thaba Nchu transfer station redirects waste.	16/2/7/C521/D1/1/P255
Soutpan	Soutpan solid waste disposal site	Uncertain	Operational Major non-compliance with licence conditions.	WML/BAR/14/2014

Area	Name of landfill site	Size and remaining air space	Status and comments	License nr
Dewetsdorp	Dewetsdorp solid waste disposal site	Uncertain	<p>Operational</p> <p>This landfill site has been scheduled for closure and the closure licence has been issued.</p> <p>A new landfill site has been licensed, but it needs to be constructed.</p>	<p>WML/BAR.25/2014</p> <p>16/2/7/D203/D1/Z2/1</p>
Wepener	Wepener waste disposal site	Uncertain	<p>Operational</p> <p>Major non-compliance with licence conditions.</p>	EM1/8/08/43
Vanstadensrus	Vanstadensrus waste disposal site	Uncertain	<p>Operational</p> <p>Concerns are raised about the impact of the landfill site on human and environmental health.</p>	Not licensed

2.2.14.5 Waste transfer centres/buy-back centres

The MMM is in the process of establishing waste transfer and buy-back centres in the metropolitan area (see Table 19).

Table 19. Waste transfer and buy-back centres in the MMM area of jurisdiction

Area	Name of buy-back centre	License number	Status	Date of authorisation (valid?)
Botshabelo	Botshabelo F 1 buy-back centre	WML/BAR/29/2014	Under construction/not yet constructed	9 th of September 2015 in terms of NEM:WA
Chris Hani	Chris Hani 3 buy-back centre	WML/BAR/28/2014	Under construction/not yet constructed	9 th of September 2015 in terms of NEM:WA
Thaba Nchu	The Selosesha 1 buy-back centre	WML/BAR/27/2015	Under construction	9 th September 2015 in terms of NEM:WA

A pilot project, initiated by the DETEA, to separate waste at source was launched in Fichardt Park. Apart from the new waste buy-back centres, the MMM does not have any other formal facilities to recycle solid waste.

The towns of Dewetsdorp, Wepener and Vanstadensrus have also identified in their IDP (2015/2016) the establishment of three waste recycling co-operatives as a Local Economic Development (LED) project.

2.2.14.6 Compliance verification

A compliance verification review²³ was conducted for all the waste management facilities in the MMM area of jurisdiction in 2016 to support the *status quo* analysis of this EI&MP. See Table 20 for an extract of the recommendations made to improve the environmental performance of these.

Table 20. Recommendations in the MMM Compliance Review Report 2016

Reviewed area	Recommendations
Waste management	<ul style="list-style-type: none"> • Apply for closure permits for unlawful landfill sites and close them in line with the conditions stipulated in the licence. • Obtain the necessary licences for all landfill sites within the jurisdiction of the metropolitan area. • Operate all landfill sites in accordance with the licence conditions. • The MMM needs to register the Thaba Nchu transfer station with the Provincial Department of Environmental Affairs and comply with the

²³ See the dedicated report Part 3 of 4 of this EI&MP report of 2016.

Reviewed area	Recommendations
	<p>Norms and Standards for the Storage of Waste (GN. 926 of November 2016).</p> <ul style="list-style-type: none"> • Determine the capacity of the buy-back centres and determine the need to register the activities for the storage of waste, or apply for a waste management licence, depending on the types of planned activities. • Install the software for weighbridges as soon as possible to record the mass of waste entering and leaving the landfill sites. • Address the management of the fleet. The unavailability of vehicles, machinery and equipment places the MMM at risk of non-compliance with waste legislation and the conditions of waste management licences. • Waste tyres need to be managed in accordance with the Waste Tyre Regulations. The recommendation is to do a gap analysis on the <i>status quo</i> versus the requirements of the regulations. Generate an action plan once the <i>status quo</i> has been determined. • Implement a surface water-monitoring programme to determine the quality of the storm water on the landfill sites, as required by the conditions of the waste management licences/permits. • Gather data on the volume or mass of waste disposed of at the landfill sites and report to the SAWIS. • Identify the reporting duties to the DWS and report to the DWS as required by the conditions of the waste management licences/permits.

2.2.15 Energy

South Africa's steady economic growth (as it increasingly focuses on industrialisation) has seen a steep increase in the demand for electricity. South Africa's energy demand is expected to be twice the current levels by 2030. The same trend, that of an increase in the demand for electricity, can be seen in the MMM with the influx of people from rural to urban areas, placing ever growing pressure on electricity provision.

2.2.15.1 Energy use

The entire electricity consumption of the metropolitan area is approximately 15 gigajoules of electricity per year (see Table 21). The MMM is committed to saving energy as reported in the IDP (2016/2017). One of the ways in which the MMM is managing energy use in the municipality is the implementation of the Energy Efficiency Standards for new buildings enforced by the Human Settlements Sub-Directorate.

At the time of drafting this EI&MP the MMM had not calculated the carbon footprint of the coal-based electricity consumption of the metropolitan area. According to the MMM draft climate change adaptation and mitigation strategy, long-term planning, information on the outcomes of mitigation options, technology development and other new information may identify additional mitigation actions in due course, for reducing the negative impact of a large carbon footprint.

The MMM further manages electricity consumption by means of the 2005 by-laws relating to electricity supply in the metropolitan area.

Table 21. Energy use per sector in MMM

Sector	GJ
Residential	2 566 386
Commercial	2 340 899
Industrial	608 530
Transport	9 406 084
Government	192 091
Total	15 113 990

2.2.15.2 Provision of electricity

CENTLEC is responsible for providing electricity to the MMM, including the smaller towns of Dewetsdorp, Wepener and Vanstadensrus. All formalised areas in the MMM have been provided with electricity. This translates into most households having access to electricity for cooking, lighting and heating. The city is providing electricity services to 217 616 households and there is an electricity backlog of 22 154 households (IDP, 2016/2017). Households affected by this backlog rely mainly on paraffin, gas and wood for cooking, heating and lighting purposes. The burning of these fuel sources contributes to an increase in the emission of greenhouse gases as well as a decrease in the ambient air quality of the metropolitan area.

For a number of years CENTLEC's infrastructure network has been hailed as one of the best in the country. It is now evident from a number of failures occurring in the system that the utility is challenged by its ageing infrastructure that is caused by inadequate investment in network upgrade projects and facility maintenance. Other challenges CENTLEC is facing include:

- The loss of firm electricity capacity;
- The overloading of electrical infrastructure;
- Weakened voltage levels;
- Un-economic levels of system distribution losses;
- The reduced life expectancy of distribution equipment;
- The loss of energy sales due to the poor performance of networks; and
- The loss of customer confidence due to the unreliability of the electricity supply.
- The challenge to:
 - Accelerate the provision of household electricity connections;
 - Fast-track the completion of Fichardt Park, Cecilia Park Distribution Centre and Northern Ring from Noordstad to Harvard Distribution Centres and Airport Development Node sub-station;
 - Recruit additional staff;
 - Fast-track supply chain management processes; and
 - Enhance debt collection strategies on the electricity services arrears debt.

Even though the utility has built up a substantial backlog on both capital and maintenance projects, the following refurbishment projects have been targeted:

- The replacement of 11KV switchgears;
- Remedial work on 132KV southern lines; and
- The replacement of the oil plant.

2.2.15.3 Alternative energy potential

The National Solar Energy Strategic Environmental Assessment, the SEA, identified a small portion of the MMM as viable for solar-related development (Figure 16). Even though the potential is limited, currently there are twelve applications for environmental authorisations for the development of PV solar plants in the boundaries of the MMM. The solar development potential of the MMM area could assist with economic development and small-scale employment opportunities in the area. The solar potential could be harnessed through local economic development initiatives, while the community benefit requirements of the Department of Energy (DoE) Renewable Energy Independent Power Producers Programme (REIPPP) could also contribute towards community development, infrastructure provision, and maintenance.

The MMM aligned the IDP (2016/2017) to address the outcomes of the National Development Plan, specifically with regards to Outcome 10: to reduce the major sources of greenhouse gas emissions and catalyse the large-scale supply of clean energy as well as to speed up and expand the generation of renewable energy. The MMM has considered the following actions to reach the NDP outcomes:

- Teasing out development trajectories related to future cities and exploring the possibility of harvesting energy without using coal;
- Addressing the question of access to energy by exploring all energy alternatives including solar energy; and
- Promoting energy-safe campaigns as well as advocating and investing in alternative sources of energy, especially renewable energy such as air and sun.

The smaller towns of Dewetsdorp, Wepener, and Vanstadensrus have also highlighted the potential to consider alternative energy to meet a growing demand. The IDP (2015/2016) makes provision for the following project to gain from the use of alternative energy:

- The installation of solar heaters and ceilings.

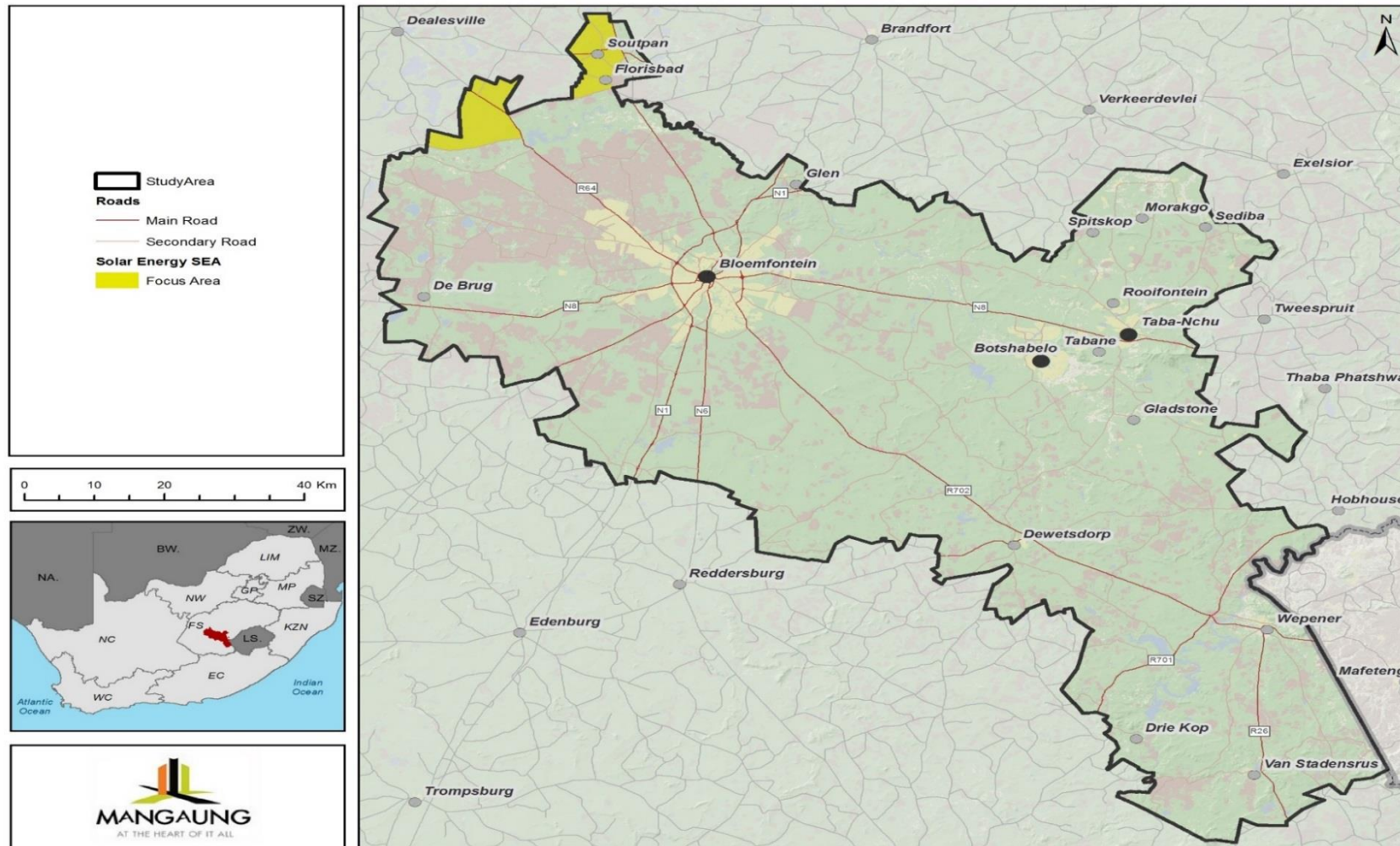


Figure 16. Solar energy focus area in the MMM area as identified by the National Solar Energy SEA

2.2.16 Heritage

Section 5 of the National Heritage Resources Act (25 of 1999) (NHRA) sets out the principles that apply to managing heritage resources. The MMM must identify and manage Grade III heritage resources, while it can also manage Grade I or II heritage should the MMM own them.

The NHRA defines numerous duties that the MMM as a custodian of heritage resources must adhere to. These duties are:

- Establishing a planning authority;
- Compiling an inventory of the heritage resources that it has jurisdiction for (S 30);
- Submitting such an inventory to the relevant provincial heritage resources authority;
- Once listed, protecting the heritage resources by means of any of the measures available to them such as but not limited to authorisations, by-laws, land use, or title deed endorsements, etc.; and
- Notifying the South African Heritage Resources Authority and the provincial heritage resources authority when a listed heritage resource within its area of jurisdiction is destroyed or lost.

The MMM has done some work to protect some heritage resources found in its area of jurisdiction and to market them as tourist attractions. However, the MMM is not managing all the heritage resources that it has jurisdiction over in line with the dictates of the NHRA.

The MMM furthermore has no baseline information as to the heritage resources that it has jurisdiction over. The absence of such a baseline makes it difficult for the MMM to proactively manage and protect these resources and to comply with the requirements of the NHRA. There was, at the time of writing this EI&MP, no dedicated person or persons appointed by the MMM to give effect to the requirements of the NHRA.

The South African Heritage Resource Agency raised the following concerns in its 2014 annual report for the Free State Provincial Heritage Resource Authority:

- The erection of reservoirs on Naval Hill;
- The erection of the Nelson Mandela Statue;
- Renovations on Hoffman Square (the permit has expired); and
- Continued construction on Naval Hill.

The 2016/17 IDP of the MMM states that heritage resources and cultural sites must be protected by means of the MOSS. The IDP does not have any additional commitments related to the management of heritage resources of the MMM. The 2015 version of the Metropolitan Context Report (2015) of the MOSS has a statement about the protection of heritage resources, but it has no additional information about the heritage resources located in the jurisdiction of the MMM. The SWOT analysis conducted for the towns of Dewetsdorp, Wepener, and Vanstadensrus highlight heritage resources as an economic opportunity (IDP, 2015/2016). Dewetsdorp and Vanstadensrus already form part of two heritage routes, namely a) the Battlefield Route, which includes attractions such as the British war graves and monument, and b) the Anglo-Boer War route respectively.

FSH identified the following heritage resources in the metropolitan area (see Table 22).

Table 22. List of heritage and proposed heritage sites in the MMM boundaries

Site name	Town/City	NHRA status
Historic tree-garden	Bloemfontein	Provincial Heritage Site
First University Building, University of the Orange Free State	Bloemfontein	Provincial Heritage site
Sannaspos Battlefield	Bloemfontein	Provincial Heritage site
President Brand street conservation area	Bloemfontein	Heritage area
Archives Building, 37 Elizabeth Street	Bloemfontein	Provincial Heritage site
Old Prison	Bloemfontein	Register
Old Presidency	Bloemfontein	Provincial Heritage site
Tweetoring Church	Bloemfontein	Provincial Heritage site
Military Museum Fort Bloemfontein	Bloemfontein	Provincial Heritage site
Fichardt House	Bloemfontein	Provincial Heritage site
Maphikela House	Bloemfontein	Provincial protection
Old Railway Bureau	Bloemfontein	Provincial Heritage site
City Hall	Bloemfontein	Provincial Heritage site
Cathedral of St Andrew and St Michael	Bloemfontein	Provincial Heritage site
Main Building, Bloemfontein Technical College	Bloemfontein	Provincial Heritage site
Ramblers Club	Bloemfontein	Register
Freshford House Museum	Bloemfontein	Provincial Heritage site
Vlerde Raadsaal	Bloemfontein	Provincial Heritage site
Old Government Building	Bloemfontein	Provincial Heritage site
Anglo-Boer War Blockhouse	Bloemfontein	Provincial Heritage site
Eerste Raadsaal	Bloemfontein	Provincial Heritage site
Hertzog House Museum	Bloemfontein	Provincial Heritage site
Orange Free State Botanical Gardens	Bloemfontein	Provincial Heritage site
Gnome Aircraft Engine	Bloemfontein	Heritage object
Boom van sameswering	Bloemfontein	Provincial Heritage site
Arthur Nathan Swimming Pool	Bloemfontein	Provincial Heritage site
Women's Memorial	Bloemfontein	Provincial Heritage site
Elizabeth le Roux Hostel	Bloemfontein	Provincial Heritage site
Hoffman Square	Bloemfontein	Provincial Protection
Main building and Hamilton Hall	Bloemfontein	Provincial Heritage site

Site name	Town/City	NHRA status
Andrew Murray House	Bloemfontein	Provincial Heritage site
Brill House	Bloemfontein	Provincial Heritage site
Tuck shop	Bloemfontein	Provincial Heritage site
Somerlust	Bloemfontein	Registration on process
Main Building UFS	Bloemfontein	Provincial Heritage site
Station Building, Sannaspos, Railway Station	Bloemfontein	Provincial Heritage site
Green Lodge	Bloemfontein	Provincial Heritage site
White House Stone	Bloemfontein	Provincial Heritage site
Abraham Fischer House	Bloemfontein	Provincial Heritage site
Archbell House	Thaba Nchu	Provincial Heritage site
Moroka House	Thaba Nchu	Prioritised site for registration
Paramount Chief Moroka II's grave	Thaba Nchu	Not declared
Mmabane Cultural Centre	Thaba Nchu	Heritage object, art or living heritage
Martha Motlhakwana's Grave	Bloemfontein	Provisionally declared
Martha Motlhakwana's House	Bloemfontein	Provisionally declared
Florisbad	Soutpan	Provincial Heritage site

Key heritage resources that are not listed are, amongst others: Batho Village, Waaihoek, the Wesleyan church, Klein Makhasa Hall, the heritage resources of Thaba Nchu, and buildings and structures in Bloemfontein.

The MMM should address heritage resource management to give effect to its legal responsibilities by:

- Establishing a baseline of heritage resources in the MMM area, including category one, two and three resources;
- Collaborating with the Free State Heritage to identify, protect and manage its heritage resources base;
- Establishing a baseline of heritage resources which the MMM owns, or is in control of;
- Drafting and implementing a heritage management plan for the MMM;
- Establishing mechanisms to ensure that heritage resources which are identified, or which may be potential resources not yet identified, are protected when demolition permissions are granted;
- Ensuring that the MMM complies with the requirements of the NHRA when conducting its own activities; and
- Ensuring that heritage resources within the control and ownership of the MMM are maintained and preserved.

2.3 Cross-cutting environmental management governing and governance issues

This section of the EI&MP reports on the cross-cutting environmental governing, governance and management elements such as functions, mandates, duties, voluntary initiatives, and instruments that are routinely mooted to be relevant to local government in general.

The elements addressed in this section are limited to those not readily provided for in South African legislation or otherwise they are best practices that are in place elsewhere. These elements are included in this EI&MP as they could inspire the MMM to adopt and address them as well.

2.3.1 Rural and local economic development (LED)

Local government in South Africa is fundamentally developmental. In association with the other spheres of government, local government is required to initiate and drive development in the area that it has jurisdiction over. The development agendas of local government extend beyond infrastructural development and relate to the services that local government typically renders such as water treatment, wastewater treatment and waste management services. These agendas also cover 'economic' and rural development to eradicate poverty, the creation of employment, and addressing inequalities in service delivery.

The developmental functions of the MMM are allocated to a number of directorates and sub-directorates such as but not limited to the following:

- Directorate Engineering Services;
- Directorate Planning;
- Directorate Human Settlements;
- Directorate Strategic Projects and Service Delivery;
- Directorate Economic and Rural Development;
- Directorate Waste and Fleet Management; and
- Some entities in the Office of the City manager.

The developmental activities that are initiated and managed by the MMM cover most of the typical major phases of development processes such as:

- Strategic and conceptual design and planning that includes feasibility determinations;
- Detailed design and planning processes;
- Procurement and contractor management processes;
- The actual development actions;
- Commissioning;
- The actual use phases;
- Maintenance and expansion processes;
- Closure, demolition, rehabilitation and brown fields redevelopment;
- Project management; and
- Contractor management processes.

The MMM is often responsible for the conceptual design of development initiatives and procurement processes, while most of the detailed design and other actions are outsourced to contractors and service providers. The development projects of the MMM are therefore decentralised to the line function directorates and sub-directorates, while they externalise these projects to contractors and service providers.

The interface between MMM development activities and environmental law is considerable. Most of the development actions are subject to the NEMA principles, the general duty of care, the reasonable measures doctrine, and a range of environmental management authorisations. The MMM therefore fulfils the role of an environmentally regulated entity as it is regulated by other spheres of government. It also acts as a governing entity as it needs to regulate the actions of the appointed contractors and service providers. As the custodian of the environmental resource base, it also needs to ensure that the developmental actions are aligned with the requirements of the natural resource base and related environmental management instruments such as the SDF, EMF, MOSS, and others.

Most of the contracts and agreements entered into are turnkey contracts where contractors and service providers are tasked to deliver all the elements of a development project, including the environmental elements such as environmental impact assessments, licence applications, on-site monitoring and measurement, etc.

The MMM therefore needs to take great care to ensure that these development projects are firstly aligned with the NEMA principles, as well as the duty of care and reasonable measures doctrines.

Secondly, these projects need to be compliant with all the regulatory provisions to obtain environmental authorisations, while thirdly they need to be compliant with the conditions of each authorisation. The MMM fourthly also needs to align development projects with the spatial environmental instruments such as the EMF and the MOSS, while it must fifthly also align with green strategies such as the green economy initiative.

The MMM must also manage these externalised projects in such a way as to ensure:

- Shared knowledge throughout the MMM regarding the status of the projects;
- Sustained management of and access to key documents and records even when the projects had been handed back to the MMM;
- That compliance with the legal requirements and permit conditions is indeed tracked by the MMM; and
- That assurance is given to the audit committee that these legally controlled processes are indeed being executed lawfully. These development projects need to be managed by means of the IDP-process and reports.

The MMM IDP for 2016 - 2017 states the need to initiate green energy projects in the region to reduce its dependence on carbon-based energy sources.

The current position at the MMM is that:

- Development projects are indeed decentralised to a plethora of line-function municipal entities;
- Most projects, including the environmental responsibilities, are externalised to contractors and service providers; and
- Compliance management remains fragmented, resulting in its often being unaccounted for by the MMM.

At the time of generating this EI&MP the MMM had successfully commissioned a number of developmental studies to inform its rural and economic development thrust, some of which are being implemented, while others still need to be operationalised. Evidence was found of some development projects that are accounted for in the relevant version of the IDP, while the performance of development planning and execution is not always included in the IDP, SDBIP and PMS reporting and assurance processes of the metropolitan municipality.

The implication for this EI&MP is that arrangements need to be made and implemented to ensure that environmental compliance processes at the MMM are indeed: integrated, aligned and accounted for.

The recommendation is that the MMM environmental policy be reviewed and revised to include policy commitments and requirements that will initiate and drive the integration, alignment, and accountability of the environmental compliance requirements that apply to development project life-cycles. The policy must also provide for the sharing of important information such the project-by-project determination of key attributes such as flood lines and heritage resources, amongst others.

The portfolio of projects that relates to greener energy and projects that are aligned with the green economy initiative should also be expanded.

2.3.2 The greening of events

One of the cornerstone strategies of the MMM to unlock economic development opportunities is directed at bringing major events to the MMM. Waste management during major events remains a challenge for the metropolitan municipality.

The greening of events touches two of the key environmental roles of municipalities, i.e.:

- Their need to regulate others who are involved with organising, hosting and attending events; as well as
- Making provisions to ensure that the staff members of the MMM do indeed adopt and use the principles and best practices that guide the greening of events.

Greener events can also be an important contributor to a carbon reduction strategy.

No evidence was found that the MMM has indeed adopted any guidelines or policies or made any IDP commitments to green events.

The recommendation is that the environmental policy and the IDP of the MMM be amended to provide for the adoption of strategies and guidelines for green events in line with the guidelines for the greening off events.²⁴

2.3.3 Greener buildings and facilities

This cross-cutting issue can be readily integrated with other cross-cutting issues such as carbon reduction and climate change mitigation strategies and energy efficiency and demand-side management strategies, as significant complementarities and synergies can be unlocked.

The general concept of green buildings covers the environmental performance of buildings and other physical infrastructure, as well as the activities performed in the buildings throughout the building life-cycle.

The performance of 'green buildings' and infrastructure covers amongst other things improvements in the:

- Design;
- Site and building orientation;
- Construction process;
- Materials used;
- Equipment installed;
- Operation and maintenance of buildings and infrastructure; as well as
- Sourcing, procurement and transportation of materials.

Improvements on the other hand refer amongst other things to increasing their resource use efficiencies as well as to reducing their negative outputs such as:

- Waste;
- Effluent; and

²⁴ See: ISO 20121:2012, *Event sustainability management systems – Requirements with guidance for use* and the Icarus Foundation's *Green festivals and events guide*.

- Scope one and two carbon and other emissions.

Greener buildings and infrastructure can be a key contributor to any carbon reduction strategy, as events can be organised to be carbon neutral.

Schedule 4B of the Constitution provides the legislative and executive authority to local government to regulate buildings and facilities. The National Building Regulations and Buildings Standards Act 103 of 1977 (NBRBSA), furthermore, defines certain roles, obligations, responsibilities and powers to municipalities to approve and control buildings. Municipalities have the responsibility to approve building plans and they must consider the inputs made by a building control officer or a building inspector. These inputs can include energy efficiency requirements for new buildings. Both the South African National Standard SANS 204: 2011 and the South African National Building Regulations 10400: XA specify energy efficiency measures for new buildings in South Africa.

The greening of buildings and infrastructure also touches on two of the key environmental roles of municipalities. The first relates to the need to regulate others who are involved with designing, constructing and managing buildings and infrastructure, while the second relates to making provisions to ensure that the staff members of the MMM do indeed adopt, use and enforce measures to green buildings and infrastructure throughout their life cycles.

The instruments of choice would be:

- Generating greening of buildings and infrastructure by-laws to give local effect to SANS 204 and the South African National Building Regulations 10400: XA;
- A carbon and green building and infrastructure policy to drive the behaviour of the MMM staff; and
- The requisite enforcement measures.

The MMM has not developed any by-laws or policies to give effect to the requirements of the South African National Building Regulations and SANS 204. Evidence was found, however, that MMM officials do apply these requirements when building plans are approved, while some project managers of the MMM do indeed introduce greener building and infrastructure in specific project specifications. Other initiatives by the MMM are:

- Provisions in the IDP to improve the energy efficiency of buildings in the MMM area of jurisdiction;
- The installation of solar energy and geyser systems, which has been identified in the IDP for specific wards of the MMM;
- Reporting energy savings as kW/h and not also as carbon equivalents; and
- Replacing incandescent light bulbs with energy efficient bulbs.

No evidence was found, however, that the MMM has a co-ordinated, comprehensive and holistic programme to drive the concept of greener buildings and infrastructure that is also linked to a carbon reduction strategy.

The recommendations related to greener buildings and facilities for the EI&MP are that the MMM:

- Generate and adopt a holistic and integrated green building and facility programme and policy that also interfaces with related programmes such as: a) energy efficiency, b) alternative energy, c) demand-side management and d) climate change mitigation; and

- Generate, adopt and use by-laws in line with national standards and regulations that regulate the design, construction and use of new buildings and facilities, and retrofit buildings and facilities when they are upgraded.

2.3.4 Green fleet management

Fleet management is key to ensuring the optimal use of and allocation of the right vehicles to a specific task within a service area. Route planning is another key aspect of reducing travel distances and time. Municipalities can also adopt strategies to purchase vehicles that perform better as far as fuel consumption and emissions are concerned, while driver training in effective driving techniques and sustained vehicle maintenance are also important contributors to a 'greener' fleet.

Efficient fleet management can save transportation, staff and services costs, while improving transport efficiencies and productivity, while limiting unnecessary travelling and the related environmental and health impacts.

The MMM had at the time of writing this EI&MP no initiative in place to drive a greener fleet programme. The environmental policy of the MMM should be revised to make provision for the adoption and implementation of a green fleet programme.

2.3.5 Climate change mitigation and adaptation and the reduction of carbon footprints

This cross-cutting issue can be readily integrated with other cross-cutting issues such as green buildings and infrastructure and energy efficiency and demand-side management strategies, as significant complementarities and synergies can be unlocked.

Municipalities need to adopt a two-pronged approach to address the threats of climate change. They need a) to mitigate greenhouse generation and b) to adopt climate change adaptation strategies to deal with the unavoidable implications of climate change at the local level.

The MMM commissioned a climate change response plan in 2015. This climate change response plan is a sector plan of the IDP. The relationship between the climate change response plan and the EI&MP is that the former informs the latter. The EI&MP will only reiterate that the recommendations of the climate change response plan must be implemented.

2.3.6 Greening urban mobility

Mobility is all about the movement of people from one place to another. Urban mobility addresses elements such as:

- The different modes of transport;
- The improvement of traffic flows (including route planning and the synchronisation of robots);
- The improvement of the performance levels of the urban road network;
- Minimizing and limiting the number of unwanted vehicles; as well as
- The related land-uses and distances between the functional areas of a city, i.e. the city structure.

The interface between urban mobility and the EI&MP entails the efficient combination of mobility solutions that perform better in:

- Energy use per passenger/km travelled;
- The reduction of greenhouse gas emissions per passenger /km travelled;

- Fuel consumption savings as a result of performance level improvements of the urban road network; and
- The reduction of greenhouse gas emissions as a result of the performance level improvements of the urban road network.

The provision of municipal public transport services is listed in terms of Schedule 4B of the Constitution, making it a local government function. Metropolitan municipalities have, in accordance with the requirements of the National Land Transport Act, Act 5 of 2009, to develop a comprehensive Integrated Transport Plan (ITP). The ITP is also a sector plan of the IDP.

At the time of generating this EI&MP no evidence was found that the MMM had adopted any initiatives to green its urban mobility solutions. The MMM has commissioned a revised ITP that was not yet ready to inform this EI&MP, while dedicated staff in the Office of the City manager are tasked to commercialise the planned metropolitan integrated transport system. The Traffic Engineering Section of the MMM does, however, assess and manage the performance levels of its urban road network. The section does have a software package that can calculate the reductions in atmospheric emissions as well as fuel consumption improvements when the performance levels of the urban road network are improved.

The environmental policy of the MMM needs to be revised in order to unlock and account for the environmental benefits of improved urban mobility.

2.3.7 Environmental communication and information

Environmental communication entails the communication of relevant environmental information to target audiences in an appropriate format and in a timely manner. Relevant, comprehensive, accessible, timely, and up to date environmental information is essential for effective environmental management, governing, and governance.

Environmental communication and information are often combined with environmental skills and capacity building programmes to ensure that officials, politicians and civil society are informed about their roles and duties that relate to the environmental performance of municipalities.

The MMM has a dedicated manager responsible for communications management of the municipality, whose details are available on the MMM website. The MMM policies and by-laws are made available through government gazettes, news bulletins and government website repositories. Reports and official documents regarding MMM are available electronically either through the MMM departmental websites or web portals from the document administrators (e.g. consultants contracted for report). Environment-related news and developments are communicated via the MMM website blog. Public engagement activities are advertised via local media and public announcements.

IDP, IDP sector plans, municipal by-laws, and policies are by law subjected to a comprehensive public participation process before they are adopted, promulgated, and implemented.

The recommendations for the EI&MP include:

- Underpin the MMM EI&MP and environmental policy with a comprehensive environmental management governing and governance communication strategy and plan to ensure widespread knowledge of them; and
- Revise the MMM environmental policy to make provision for a comprehensive and effective environmental management governing and governance communication approach.

2.3.8 Environmental capacity, knowledge and skills development

Environmental capacity, knowledge, and skills entail the ability of employees, politicians and civil society to understand their role and duties with respect to environmental performance.

For officials this means that they are skilled to do their work in line with the applicable environmental requirements. These requirements range from the overarching general duty of care and reasonable measures to very specific legal and other requirements. It also means that the officials understand and are skilled to use the numerous environmental management, governing, and governance instruments effectively.

Political office bearers also require a basic understanding of their role in environmental management, governance and governing in order to empower them to support environmental initiatives, projects and programmes initiated by the MMM.

Civil society and the business sector also need to be made aware of what their desired behaviour is with respect to specific environmental requirements. The business sector needs to understand the impact of relevant by-laws on the MMM. Civil society needs to understand how it needs to interface with specific environmental elements such as but not limited to waste management and littering, the use of sewage infrastructure, the impacts of vandalism to and the theft of critical infrastructure, the function of and need for public open spaces, etc.

At the time of generating this EI&MP evidence was found of the existence of a work skills plan (WSP) that had been updated for 2016. Some environment-related training is captured in the WSP. A review of the environmental training provisions in the 2016 WSP suggests that the provisions made for environmental training do not address all the training requirements for the staff members and councillors of the MMM. The MMM identified poor environmental education, awareness, and skills for staff and civil society as an issue in the MMM IDP (2016/2017) and the SDBIP (2015/2016). The identified strategy is to conduct a detailed skills needs analysis and to provide environmental education and awareness and information sessions for staff members, councillors and members of civil society by means of an integrated environmental education and awareness programme (IEEAP).

The best way to address the environmental knowledge needs of civil society is by means of structured communication campaigns.

The recommendations for the EI&MP are:

- Generate an environmental training needs analysis (TNA) for the staff and councillors of the MMM that is aligned with the requirements of both the EI&MP and the environmental policy; and
- Incorporate the environmental TNA into the WSP and deliver training.

2.3.9 Youth and gender development

Youth and gender development programmes aim to empower the youth and women in a community. Education and skills development aimed at creating and ensuring sustainable livelihoods for vulnerable groups in a community are often the key objective of these programmes. Youth and gender-based development programmes are often focused subsets of other development programmes such as economic and rural development programmes.

The NEMA S2 (4)(q) also recognises and promotes the role of women and the youth in effective environmental management and sustainable development programmes. Youth and gender development programmes are often initiated at international, national and local levels by various interest groups including government, development agencies and NGO's.

Some of the most notable environment-related programmes initiated by South Africa include:

- The Youth Environmental Services (YES) Programme;
- The Youth Jobs in Waste (YJW) Programme;
- The Groen Sebenza Jobs Fund partnership project;
- The Community Work Programme (CWP); and
- The Extended Public Works (EPWP) “Working for” programmes.

Considering that South African youth (aged 14 to 35 years) comprises forty per cent of the population, it is crucial to create environmental awareness and employment opportunities and to include these groups in environmental decision-making processes.

The MMM has drafted a *Youth Development Policy* (2016) that was guided by the Constitutional directive for developmental local governments to address the challenges related to unemployment and skills gaps in the MMM’s youth and women sectors.

The MMM Youth Policy focuses on the following:

- The identification and analysis of the needs and expectations of the youth and youth organisations in the MMM;
- The integration of the contributions of the different role players in youth development and other related activities in the MMM;
- The enhancement of the role of the MMM as a youth development agency; and
- Relevant legislation and policy related to youth development.

The MMM also generated a *Women and Youth Economic Empowerment Strategic Framework*. The framework is supported by a *status quo* analysis of the position of women and the youth with respect to their role in the economic sector of the MMM. The framework continues to identify funding sources and a series of projects aimed at enhancing the economic empowerment and integration of women and the youth of the Mangaung metropolitan area.

No environment-related projects are listed as empowerment projects for women and the youth, while the framework also does not seem to unlock the synergies that can exist between the objectives of the framework and other development initiatives such as the environmental programmes of the EPWP.

As of 2015 MMM in partnership with ABSA and the Central University of Technology (CUT) instigated the Youth Enterprise Development Programme, which aims to provide training or development, and assistance in establishing businesses to 3000 unemployed youth. The 2016/2017 Mangaung IDP identifies the need to accelerate the implementation of the Youth Enterprise Development Programme that has achieved the training of 467 young people in Digital Migration and enlisted 123 delegates to refurbish the three rental schemes in the City. In addition the youth have benefitted from capital expenditure, co-operatives, the training opportunities provided, and learnership programmes, and a further 803 young people have been employed by the City under this programme.

The following recommendations are offered to align the women and youth programmes of the MMM with the environmental management, governing and governance programmes of the MMM:

- Integrate the *Youth Development Policy* (2015) and Women and Youth Framework guidelines and plans into environment-related programmes for youth and women development, such as the EPWP;
- Create internships in partnership with national government and academic institutions; and
- Ensure that all projects initiated in terms of the women and youth programmes do indeed comply with the relevant environmental and other legislation.

2.4 Conclusion

This chapter profiles the environmental resource base elements of the region as well as the cross-cutting environmental functions, mandates, initiatives and elements that are pertinent to environmental governing, governance and management.

These environmental resource base elements and cross-cutting issues are profiled in terms of their *status quo*, matters that require attention, and their status in the official planning documents of the MMM such as the IDP and SDBIP. Each sub-section of this chapter concludes with recommendations for this EI&MP.

3 THE MANGAUNG METROPOLITAN MUNICIPALITY AS AN ENVIRONMENTALLY REGULATED ENTITY

3.1 Introduction

Not only does a municipality fulfil a role as an environmental governing authority, it is also an entity that is governed by other spheres of government with environmental mandates. As is the case with any legal person, applicable legislative and executive powers and functions of national and provincial authorities bind all municipalities. They must therefore comply with the national and provincial environmental laws applicable to them.

The objective of this chapter is to explore the nature and extent of the environmental policy, legislative and executive measures of the provincial and national spheres of government that the MMM must adhere to. It covers:

- The environmental policy and programme context that frame the activities of the MMM;
- A register of all the national and provincial environmental legal requirements that the MMM must adhere to; and
- A legal compliance verification report that indicates legal non-compliances that were recorded during a legal compliance verification process conducted in June, 2016.

The environmental legal register and the detailed environmental legal compliance report are published as separate reports of the EI&MP (2016) series. Executive summaries of both these reports are published in this report.

3.2 The environmental policy and programme framework and context

Policies, frameworks, programmes, and strategies²⁵ are high-order statements of intent, which frame and inform planning and decision-making. They therefore provide the context within which the MMM must exercise its environmental management, governing and governance functions, as they provide strategic direction to and inform the environmental priorities and actions of the MMM.

The specific application of the environmental strategies, policies, and programmes is recorded in Table 23. Overview of environmental and related strategies and policies and their applicability to the EI&MP. It offers an overview of the applicable policies, programmes and strategies at the international, national, and provincial levels, as well as their implications for the MMM in general and this EI&MP in particular.

²⁵ Please note: Policies, frameworks, and programmes are at best high-level direction-giving documents. The use of different names for different documents such as policies, frameworks and programmes seems to be arbitrary at best.

Table 23. Overview of environmental and related strategies and policies and their applicability to the EI&MP

Policy	Description	Environmental application	Considerations for the MMM EI&MP
International strategies and policies			
Sustainable development goals (SDGs)	On September 25th 2015, countries adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.	The SDGs focus on several environmentally related actions, such as clean water and sanitation, climate action, life below water, life on land, etc.	National and international policy contexts need to be taken into consideration when developing the IDP and implementing objectives and targets, especially as far as environmental sustainability is concerned. All role players, including local government, need to contribute to the achievements of these SDGs that South Africa committed to.
National strategies and policies			
Water quality management policy with regard to the management of and control over cemeteries as a source of water pollution. (Not dated).	This policy specifies considerations that must be taken into account when locating and managing graveyards.	This policy specifies requirements for graveyards to mitigate and/or prevent possible impacts on the environment, with a specific focus on ground water pollution.	Municipalities must consider the guidance given in the policy when locating and managing graveyards.
National Sanitation Policy (1996)	This policy provides a framework for the development of strategies to improve community sanitation services. Specific implementation strategies should be formulated at the provincial and local level.	The environment must be considered in all development activities. Sanitation services that have unacceptable impacts on the environment cannot be considered to be adequate.	Specific implementation strategies focused on sanitation services should be formulated at the local level. The policy <i>inter alia</i> focuses on: <ul style="list-style-type: none"> Health and hygiene education and promotion (including monitoring possible health impacts from sanitation or related services);

Policy	Description	Environmental application	Considerations for the MMM EI&MP
			<ul style="list-style-type: none"> • Environmental sustainability of sanitation systems (monitoring environmental impacts, water quality management); • Financial approach (tariff models, maintenance and upgrade of infrastructure); • Institutional and organisational frameworks for provision of sanitation services.
White Paper on Conservation and the Sustainable Use of South Africa's Biological Biodiversity (1997)	The policy promotes the protection and maintenance of essential ecosystem services and biological resources that are required to meet basic human needs.	The policy focuses on the protection of ecosystem services and biological resources.	<p>According to local circumstances and capacity, some functions of local government will be to:</p> <ul style="list-style-type: none"> • Ensure that biodiversity considerations are effectively integrated into local strategies, plans and programmes; • Institute and participate in public education, awareness and training programmes; • Develop management plans for local resources that are under pressure; • Ensure the integration of biodiversity considerations into land-use planning procedures for rural and urban areas; and encourage and prepare municipal open space systems that play a positive role in conserving and using biological resources sustainably.
The White Paper on Environmental Management Policy (WPEM) (1998)	The WPEM is an overarching policy framework that sets out a vision, policy principles, and strategic goals for environmental management and the sustainable use of natural resources in South	The policy informs government agencies and state organs what their objectives are and what they must do to achieve those objectives as they relate to environmental management.	<p>Key focus areas that should be addressed by MMM include:</p> <ul style="list-style-type: none"> • Using resources sustainably; • Protecting natural and cultural resources; • Improving environmental performance; • Promoting the conservation of biodiversity;

Policy	Description	Environmental application	Considerations for the MMM EI&MP
	Africa. Sector-specific policies must subscribe to this policy framework.		<ul style="list-style-type: none"> • Water resource management; • Sustainable agriculture and forestry; • Integrated pollution control and waste management; • Energy efficiency; • Environmental considerations for transportation; • Communication and participation in environmental governing; • Environmental education and empowerment; and • Information management systems.
White Paper on Local Government (1998)	In the framework of the Constitution, the White Paper establishes the basis for a new developmental local government system, which is committed to working with citizens, groups, and communities to create sustainable human settlements that provide for a decent quality of life and meet the social, economic, and material needs of communities in a holistic way.	This policy has an indirect application to the environment and/or environmental management.	<p>Municipalities must seek to achieve the following outcomes:</p> <ul style="list-style-type: none"> • Provision of household infrastructure and services; • Creation of liveable, integrated cities, towns and rural areas; • Local economic development; • Community empowerment and redistribution.
Policy on the registration of small private non-commercial farm waste disposal sites (2000)	The policy focuses on the registration of small, private non-commercial farm waste disposal sites (prior to the promulgation of the National Environmental	The policy allows for the registration of small, privately owned farm sites for the purpose of gathering information on potential environmental and	The MMM must take cognisance of this policy and register and manage small, privately owned farm (rural) sites with the Department of Water and Sanitation (DWS).

Policy	Description	Environmental application	Considerations for the MMM EI&MP
	Management Waste Act, as amended).	water quality impacts of these sites.	
White Paper on Integrated Pollution and Waste Management (2000)	A policy on pollution prevention, waste minimisation, impact management and remediation	The White Paper aims to protect the environment through controlling pollution sources and to prevent the transfer of impacts from one environmental medium to another. It also provides for waste management practices that are sound.	<p>Municipalities are responsible for providing waste management services and managing waste disposal facilities. Specific functions to be carried out by municipalities include:</p> <ul style="list-style-type: none"> • Compiling and implementing general waste management plans; • Implementing public awareness campaigns; • Collecting data for the Waste Information System; • Providing general waste collection services and managing waste disposal facilities; • Within their areas of jurisdiction implementing and enforcing appropriate waste minimisation and recycling initiatives, such as promoting the development of voluntary partnerships with industry, including the introduction of waste minimisation clubs where possible; • Sound planning for waste management at a regional scale; and • Controlling all pollution sources.
Managing the water quality effects of settlements: National Strategy, Edition 2. Policy document U1.3 (2001)	This policy outlines the then Department of Water Affairs and Forestry's (now the Department of Water and Sanitation, DWS) approach towards managing the water quality effects of settlements.	The policy focuses on managing the water quality effects of settlements.	Municipalities must plan for service provision in their IDP's and sector plans. Human settlements and developments must be designed, located, and managed in such a way that they do not pose negative impacts to water quality.

Policy	Description	Environmental application	Considerations for the MMM EI&MP
	The policy describes the underlying causes of pollution, and how dialogue between the community and service providers will be used to identify and manage these causes.		
Municipal Service Partnership Policy (MSP) (2004)	The Municipal Service Partnership (MSP) Policy aims to provide a clear framework within which to leverage and marshal the resources of public institutions, CBOs, NGOs, and the private sector towards meeting the country's overall development objectives.	This policy has an indirect application to the environment and/or environmental management. The policy is, however, applicable to services rendered by municipalities, that may include environment-related services, such as waste collection, the provision of water and sanitation services, storm water management, etc.	Municipalities must find innovative ways to fund and deliver municipal services.
Local Government Turnaround Strategy (LGTAS) (2009)	The Local Government Turnaround Strategy (LGTAS) is aimed at counteracting forces that are undermining the local government system. The root causes of some of these problems include policy and legislative factors, weaknesses in accountability systems, capacity and skills constraints, weak inter-governmental support and oversight, and issues associated with the inter-governmental fiscal system.	Promoting a safe and healthy environment is one of the key focus areas of the turnaround strategy.	<p>The policy implies that municipalities must ensure that:</p> <ul style="list-style-type: none"> • All households have access to the minimum standard for each basic service (water, sanitation, electricity, refuse removal, housing and others such as education and health care); • Cities are clean through the management of waste in such a way that it creates employment and wealth;

Policy	Description	Environmental application	Considerations for the MMM EI&MP
			<ul style="list-style-type: none"> • All schools, clinics, hospitals and other public facilities have access to water, sanitation and electricity; • They have clean audits; • They have trained and competent councillors, traditional leaders, officials, ward committee members, CDWs and community activists.
National Strategy for Sustainable Development and Action Plan (NSSD): 2011 – 2014 (2011)	The NSSD presents an understanding of sustainable development and explains the route towards a future that is more sustainable. It presents an action plan and indicators for the implementation of the strategy.	The strategy aims at sustainable development and the protection of natural resources.	<p>The policy implies that the MMM must ensure:</p> <ul style="list-style-type: none"> • Effective governance, and institutional structures and mechanisms to achieve sustainable development; • Monitoring and reporting for improved environmental performance; • That it values, protects and continually enhances environmental assets and natural resources; • That it engages in a transition towards resource-efficient, low-carbon and pro-employment growth path; • That it fosters community awareness and participation; • That it achieves the stabilisation of greenhouse gas concentrations; • That it adapts to and manages potential damaging climate change impacts (social, economic, and environmental) and develops emergency response capacity.

Policy	Description	Environmental application	Considerations for the MMM EI&MP
National Development Plan: 2030 (2012)	The National Development Plan (NDP) offers a long-term perspective. It defines a desired destination and identifies the role different sectors of society need to play in reaching that goal.	Environmental sustainability and the mitigation of deleterious impacts (i.e. carbon footprint, greenhouse gas emissions, damage to the environment) are identified as key goals of the NDP.	<p>The MMM must adopt and deliver economic development within its area of jurisdiction. It is prudent for the MMM to take the following factors into account when planning and reviewing development actions for the next five years:</p> <ul style="list-style-type: none"> • Aim to transition to a low-carbon economy; • Ensure environmental sustainability; • Protect the natural environment in all respects, leaving subsequent generations with an endowment of at least equal environmental value; • Ensure compliance with all applicable environmental legislation; • Reduce greenhouse gas emissions and improve energy efficiency.
National Waste Management Strategy (2011)	The purpose of the NWMS is to achieve the objectives of the NEM:WA. Organs of state and affected persons are obliged to give effect to the NWMS.	The NWMS focuses on waste management as a component of environmental management, aiming at reducing the direct and indirect impacts of waste on the environment, as well as on natural resource protection through the implementation of re-use and recycling practices.	<p>The NWMS requires the following of municipalities:</p> <ul style="list-style-type: none"> • Promote waste minimisation and the re-use, recycling and recovery of waste; • Ensure the effective and efficient delivery of waste services; • Grow the contribution of the waste sector to the green economy; • Ensure that people are aware of the impact of waste on their health, their well-being, and the environment;

Policy	Description	Environmental application	Considerations for the MMM EI&MP
			<ul style="list-style-type: none"> • Achieve integrated waste management planning (IWMPs in IDPs, and meeting targets in IWMPs); • Ensure sound budgeting and financial management for waste services, apply full-cost accounting for waste services, and implement cost-reflective tariffs; • Establish effective compliance with and enforcement of the NEM:WA; • Develop norms and standards for waste management.
National Climate Change Response White Paper (2011)	The policy embodies South Africa's commitment to a fair contribution to stabilising global greenhouse gas (GHG) concentrations in the atmosphere and to protect the country and its people from the impacts of inevitable climate change. It presents the vision for an effective climate change response and the long-term transition to a climate-resilient, equitable, and internationally competitive lower-carbon economy and society – a vision premised on Government's commitment to sustainable development and a better life for all.	The policy focuses on climate change mitigation and response.	<p>The policy requires that local government plays a crucial role in building climate resilience through:</p> <ul style="list-style-type: none"> • Planning human settlements and urban development; • The provision of municipal infrastructure and services; • Water and energy demand management; • Climate change adaptation planning; and • Local disaster response, amongst other things.

Policy	Description	Environmental application	Considerations for the MMM EI&MP
National Water Resource Strategy (2013)	The purpose of the NWRS is to ensure that national water resources are protected, used, developed, conserved, managed, and controlled in an efficient and sustainable manner towards achieving South Africa's development priorities in an equitable manner.	The major focus of the NWRS is equitable and sustainable access to and use of water by all South Africans, while sustaining our water resource.	<p>The NWRS has the following implications for local government:</p> <ul style="list-style-type: none"> • Water conservation and demand management: Reduction of water loss through appropriate municipal water control (metering) and pricing structure (billing and revenue collection); • Improve performance and compliance of municipal WWTWs and the quality of effluent discharges; • Maintain water supply infrastructure; • Recover the costs off water supply services (water tariffs); • Conduct feasibility studies of water re-use options in all water-scarce areas (The MMM is explicitly mentioned in the NWRS); • Develop early flood warning systems.
Back to Basics Strategy (2014)	The Back to Basic Strategy is essentially a programme geared towards guiding municipalities on what must be done to discharge the developmental mandates assigned to municipalities by the Constitution of the Republic of South Africa.	The strategy addresses infrastructure maintenance and repairs to reduce losses in respect to water and sanitation, and waste management, for example.	<p>The back to basics strategy requires municipalities to:</p> <ul style="list-style-type: none"> • Develop fundable consolidated infrastructure plans. • Ensure infrastructure maintenance and repairs to reduce losses with respect to water and sanitation, human settlements, electricity, waste management, roads, public transportation. • Ensure the provision of free basic services and the maintenance of an indigent register.

Policy	Description	Environmental application	Considerations for the MMM EI&MP
Medium-term Strategic Framework (MTSF): 2014 – 2019 (2014)	<p>The Medium Term Strategic Framework (MTSF, 2014–2019) sets out actions that the three spheres of government will take and outlines concomitant service delivery targets to bear on the manifold development challenges facing the country.</p> <p>The aim of the MTSF is to ensure policy coherence, alignment, and coordination across government plans as well as alignment with budgeting processes.</p>	<p>Focus on environmental assets and natural resources that are well protected and continually enhanced by:</p> <ul style="list-style-type: none"> • Stabilising and reducing the emission of CO₂; • Implementing climate change responses in five critical sectors; and • Increasing the compliance of mines with the requirements of the National Water Act. 	<p>The policy highlights the following priorities for local government:</p> <ul style="list-style-type: none"> • Alignment of the policies and plans of local government with those of provincial and national government; • Collaboration between municipalities, local business chambers and civil society stakeholders; and • Delivering effective municipal services.
Free State Province strategies and policies			
Free State Growth and Development Strategy (FSGDS): 2005 – 2014 (2005)	<p>The FSGDS is the fundamental policy framework for the Free State Provincial Government. It is the embodiment of the broad strategic policy goals and objectives of the province in line with national policy objectives. The Strategy addresses the key and most fundamental issues of development, spanning the social, economic, and political environment.</p>	<p>The strategy has an indirect application to the environment. It focuses on Sustainable Economic and Rural Development, amongst other matters.</p>	<p>The MMM should align its Growth and Development Strategy and other development-oriented plans and strategies with the FSGDS.</p>
Provincial Climate Change Response Strategy	<p>South Africa is a signatory to the 1994 United Nations Framework Convention on Climate Change (UNFCCC) and its associated</p>	<p>The strategy focuses on climate change mitigation, adaptation, and response.</p>	<p>Local government plays a crucial role in building climate resilience through:</p> <ul style="list-style-type: none"> • Planning human settlements and urban development;

Policy	Description	Environmental application	Considerations for the MMM EI&MP
	<p>Kyoto protocol (1997). Initial activities to be undertaken to develop the Climate Change Strategy include:</p> <ul style="list-style-type: none"> • A greenhouse gas inventory • A provincial climate change vulnerability and status report • The establishment of the FS climate change committee, involving sector departments. <p>Provinces as implementers of the agreements will be able to understand the status of the provinces' vulnerability in relation to climate change and generate both the mitigation and adaptation plans in response to climate change issues.</p>		<ul style="list-style-type: none"> • Having a climate change mitigation and response plan; • The provision of municipal infrastructure and services; • Water and energy demand management; • Climate change adaptation planning; and • Local disaster response plans, amongst others.

Policies that are not underpinned by practical actions or instruments and the necessary resources cannot achieve their respective objectives. Practical actions and resources are required to give effect to the objectives of policies and strategies. The MMM needs to align its policies and practical plans and measures with the national and provincial policies to ensure an aligned co-ordinated approach by all three spheres of government.

3.3 Environmental law and local government

3.3.1 Introduction

The processes, facilities and actions of the MMM are regulated by the organs of state from the national and provincial spheres of government that have environmental competencies, mandates and legislative and executive powers.

The general expectation is that the MMM is empowered to identify the suite of legislative measures that apply to it as a regulated entity. Once these measures had been identified the MMM needs to understand what it needs to do to comply with and remain compliant with these measures, including which instruments or tools it needs to adopt and use to achieve, confirm, demonstrate and report such compliance.

The environmental regulatory regime that the MMM needs to adhere to is a complex suite of environmental laws that are administered by a plethora of line functionaries of the national and provincial executive units.

The suite of applicable environmental law ranges hierarchically from broadly defined principles, through general duties, to specific legal and regulatory requirements, as well as norms and standards that culminate in environmental authorisations, permits, and licences that have very specific requirements.

3.3.2 The hierarchy of legal requirements applicable to the MMM

The environmental responsibilities of all the MMM range from very generic principles that have broad based applications to authorisations with very specific applications. The hierarchy of requirements as defined in the NEMA is:

- Environmental principles (S 2 of the NEMA);
- The reasonable measures and general duty of care (S 28 of the NEMA);
- Environmental norms and standards (S 24(2) the NEMA) ; and
- The NEMA and SEMA environmental authorisations (S 24 of NEMA etc.).

The environmental principles apply generally to decisions that are being made by the officials of the MMM, while the reasonable measures, the general duty of care, norms and standard and environmental authorisations generally apply to what are referred to as activities. Their application is limited to those decisions and actions that have the potential to cause a significant environmental impact.

Once these decisions have been translated into activities such as projects, plans, programmes and policies, they need to be executed in terms of:

- The general duty of care; or
- Norms and standards; or
- Environmental authorisations.

It is therefore the duty of all decision makers such as managers and planners of the MMM to apply their minds every time a decision is being made to determine whether such a decision has the potential to have a significant effect on the environment. The decision makers must then evaluate, assess and plan the execution of the decision in terms the NEMA principles.

Likewise, whenever decisions translate into activities, the proponents of these activities need to determine whether any of the following apply to the proposed activities:

- General duties of care;
- Norms and standards; or
- Environmental authorisations.

Figure 17 below illustrates this transition from decisions through to actions such as activities, policies, plans, and programmes.

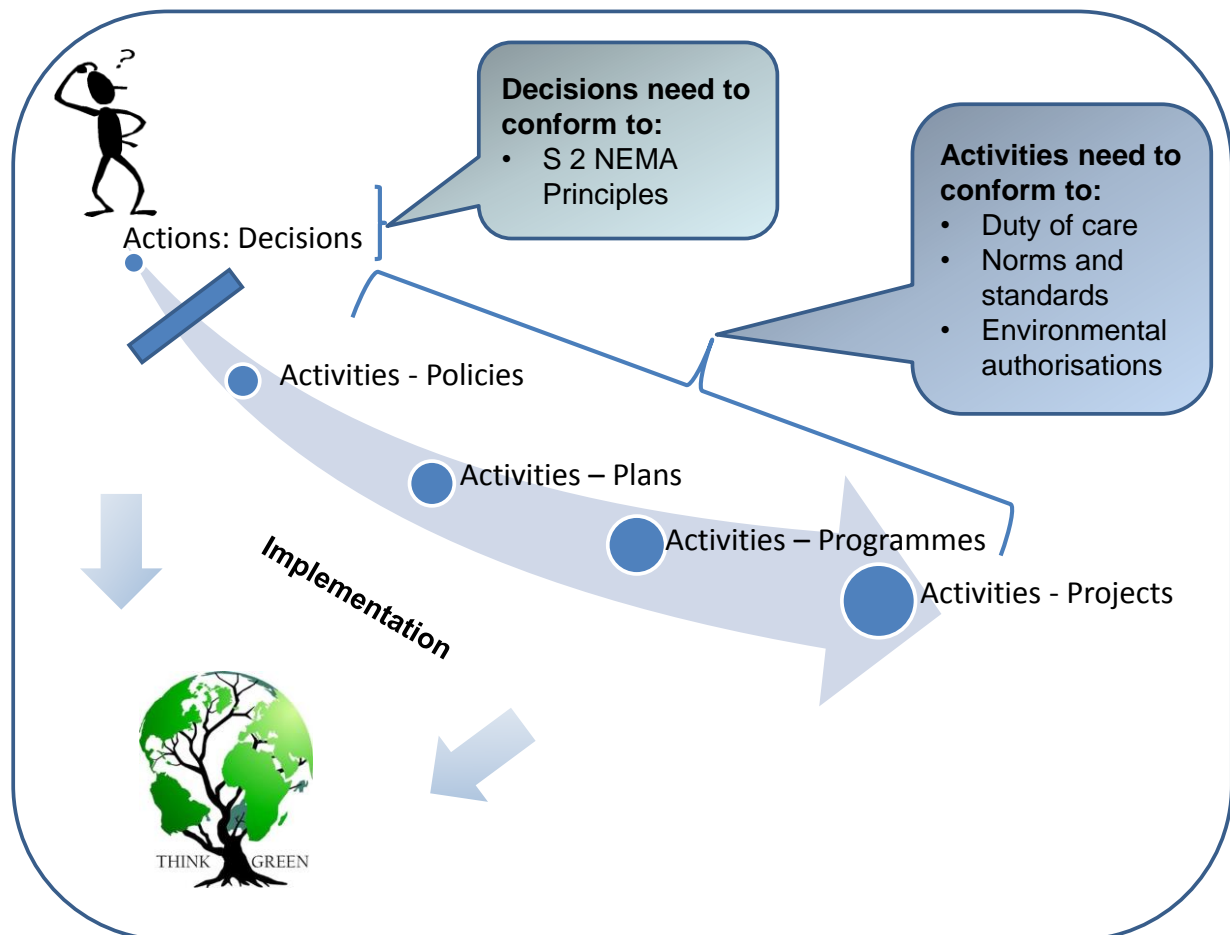


Figure 17. Environmental legal requirements: from decisions to activities

3.3.2.1 Environmental principles

The NEMA refers in S 2 to 'actions' or decisions made by the employees of organs of state. These decisions must be made with full consideration of the NEMA and other principles. This means that the decisions to be made by organs of state need to be considered, assessed and evaluated in terms of the S 2 NEMA principles to ensure that such decisions do align with the NEMA principles.

The principles set out in S 2 of the National Environmental Management Act (107 of 1998) (NEMA) apply throughout the Republic of South Africa to the actions of all organs of state that may significantly affect the environment.

These principles also serve as a reference to frame and guide any organ of state that must:

- Exercise any function, or make any decision in terms of any statutory provision concerning the protection of the environment; or

- Interpret, administer, and implement the NEMA and any other law concerned with the protection or management of the environment.

These principles apply alongside all other appropriate and relevant requirements and considerations, including the State's responsibility to respect, protect, promote, and fulfil the social and economic rights as defined in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination. The NEMA principles are listed in Table 24.

Table 24. S 2 NEMA principles as criteria for organs of state

Number	NEMA Section Reference	NEMA Principles as decision assessment criteria	The implication for decision making – <i>In order to give effect to the specific S2 NEMA principles, decision makers that make decisions that can have a significant environmental impact must ensure that such decisions are:</i>
1	2(2)	Ensure that people and their needs are foregrounded and that their needs are served equitably.	The decision addresses the needs of people and treats all people equitably.
2	2(3)	Ensure that development is socially, environmentally, and economically sustainable.	The decision maker must ensure that the decision addresses the economic, social, and environmental benefits and harmful effects caused by the decision. The benefits must also extend to both the shorter and the longer terms.
3	2(4)(a)(i)	Avoid, minimise, or remedy the disturbance to ecosystems and the loss of biological diversity.	The decision maker must drive the hierarchy of managing harm to ecosystems and biological diversity first by avoiding, second by minimising, and third by remedying such disturbance.
4	2(4)(a)(ii)	Avoid, minimise, or remedy pollution or degradation of the environment.	The decision maker must drive the hierarchy of managing the pollution or degradation of the environment first by avoiding, second by minimising, and third by remedying such pollution or degradation.
5	2(4)(a)(iii)	Avoid, minimise, or remedy the disturbance of landscapes and sites of cultural heritage.	The decision maker must drive the hierarchy of managing the disturbance of landscapes and sites of cultural heritage first by avoiding, second by minimising, and third by remedying such disturbance.
6	2(4)(a)(iv)	Avoid, minimise, re-use, recycle, or lawfully dispose of waste.	The decision maker must drive the hierarchy of managing the unlawful handling of waste that can be caused by the decision first by avoiding, second by recycling, and third by lawfully disposing of such waste.
7	2(4)(a)(v)	Use and exploit non-renewable natural resources responsibly and equitably taking into account the depletion of resources.	The decision maker needs to have due consideration for the finiteness of non-renewable resources that could be depleted because of the taking of the decision by ensuring the most efficient use of such non-renewable resources.
8	2(4)(a)(vi)	Use and exploit renewable resources and ecosystems without jeopardising the integrity of ecosystems.	The decision maker needs to have due consideration for the impact on renewable resources of the taking of the decision, and needs to take all reasonable steps to maintain the integrity of ecosystems.
9	2(4)(a)(vii)	Adopt a cautious and risk-averse approach when confronted with uncertainty.	The decision maker needs to understand that the environmental impacts caused by the taking of the decision may not be fully understood at the time

Number	NEMA Section Reference	NEMA Principles as decision assessment criteria	The implication for decision making – <i>In order to give effect to the specific S2 NEMA principles, decision makers that make decisions that can have a significant environmental impact must ensure that such decisions are:</i>
			that the decision is being taken. Decision makers therefore need to adopt a risk-averse and precautionary approach, should the effect of the decision on the environment not be understood fully.
10	2(4)(a)(viii)	Anticipate, prevent, minimise, and remedy the negative impacts on the environment and people's environmental rights.	The decision maker needs to apply his or her mind when taking decisions that can have a significant environmental impact so as to understand a) how the decision could affect the environment and the environmental rights of people and then b) mitigate the anticipated impact by driving the mitigation hierarchies of prevention, minimisation and remediation.
11	2(4)(b)	When taking decisions remember that all environmental elements are linked and interrelated, and pursue the selection of the best practicable environmental option (BPEO).	When taking any decision that can significantly affect the environment, the decision maker needs to apply the BPEO principle. This means that the decision outcome must be technically feasible, cost effective, and environmentally and socially responsible and equitable.
12	2(4)(c)	Pursue environmental justice.	The decision maker must ensure that the costs and impacts associated with any decision that could significantly affect the environment are internalised and not externalised to marginal persons.
13	2(4)(d)	Ensure equitable access to environmental resources.	The decision maker must ensure that when decisions can affect access to environmental resources such as grazing, water, or fisheries, such access is equitable.
14	2(4)(e)	Take responsibility for the environmental health and safety consequences of policies, programmes, and projects throughout their life-cycle.	The decision maker must manage the life-cycle environmental, health and safety consequences of activities that may emanate from decisions.
15	2(4)(f)	Provide for the participation of interested and affected parties in environmental governing.	The decision maker must ensure public participation when taking decisions that could significantly affect the environment.
16	2(4)(g)	Take into the account the interests, needs and values of interested and affected parties.	The decision maker must ensure that the interests, needs, and values of interested and affected parties are indeed taken into account when decisions that are taken could significantly affect the environment.
17	2(4)(h)	Promote community well-being and empowerment through environmental education.	The decision maker must provide environmental education when decisions are taken that can significantly affect the environment.
18	2(4)(i)	The social, economic, and environmental impacts of activities, including disadvantages and benefits, must be	The decision maker must consider the social, economic, and environmental impacts of activities than could be forthcoming from decisions, including

Number	NEMA Section Reference	NEMA Principles as decision assessment criteria	The implication for decision making – <i>In order to give effect to the specific S2 NEMA principles, decision makers that make decisions that can have a significant environmental impact must ensure that such decisions are:</i>
		considered, assessed, and evaluated, and decisions must be appropriate in the light of such consideration and assessment.	disadvantages and benefits, when taking decisions that could significantly affect the environment.
19	2(4)(j)	Recognise the right of workers to refuse work that is harmful to human health or the environment.	Decision makers need to be mindful of the need not to take decisions that could result in work that could be harmful to human health or the environment, and of the need to design and implement mitigation measures when such a decision is being contemplated.
20	2(4)(k)	Take decisions in an open and transparent manner.	Decision makers must ensure that decisions that could significantly affect the environment are taken in an open and transparent manner.
21	2(4)(l)	Ensure inter-governmental co-ordination and harmonisation of policies, legislation and actions pertaining to the environment.	Decision makers need to take decisions that are aligned with those of other organs of state that also have environmental mandates, as well as with all other applicable policies, legislation, and actions pertaining to the environment.
22	2(4)(m)	Resolve actual and potential conflicts through conflict resolution procedures.	The decision maker needs to use conflict resolution processes to resolve actual or potential conflicts when taking decisions that could significantly affect the environment.
23	2(4)(n)	Discharge global and international responsibilities at the local sphere.	Decision makers must ensure that decisions that can significantly affect the environment are aligned with global and international responsibilities that the RSA has adopted.
24	2(4)(o)	Hold the environment in public trust for the people and ensure that the beneficial use of natural resources is in the public interest.	Decisions makers of organs of state must always ensure that decision made by them do not violate the public trust doctrine; i.e., that the state holds environmental resources in trust for the people and that all decisions that can have a significant impact on the environment are beneficial and taken in the public interest.
25	2(4)(p)	Implement the polluter-pays principle.	Decision makers need to understand that the mitigation of any pollution or degradation of the environment that is caused by activities emanating from decisions needs to be paid for by the person causing such pollution or degradation.

Number	NEMA Section Reference	NEMA Principles as decision assessment criteria	The implication for decision making – <i>In order to give effect to the specific S2 NEMA principles, decision makers that make decisions that can have a significant environmental impact must ensure that such decisions are:</i>
26	2(4)(q)	Recognise and promote the role of women and the youth in environmental management and development.	Decision makers making decisions that could significantly affect the environment need to promote the role of women and the youth when making such decisions.
27	2(4)(r)	Give special attention to sensitive, vulnerable, highly dynamic, or stressed ecosystems.	Decision makers making decisions that could significantly affect the environment need to give specific attention to sensitive, vulnerable, highly dynamic, or stressed ecosystems when making such decisions.

3.3.2.2 Duty of care

The general duty of care as defined in terms of S 28 of the NEMA as reasonable measures that apply to all activities, is as illustrated in Table 25.

Officials of MMM should be aware of the general duty of care and the reasonable measures requirement, especially for activities that are not regulated by environmental authorisations or norms and standards.

Table 25. The NEMA duty of care

Number	Section	General duty of care	Comments
1	28(1)	Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution, or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.	Note the all-encompassing application of S 28(1). It refers to all instances where pollution or degradation of the environment is, was or could be caused by MMM staff. The general duty of care also has retrospective application, compelling MMM staff to address legacy pollution or degradation issues. The response of MMM decision makers should then be the adoption and implementation of reasonable measures to manage the potential, actual and or historical harm to the environment.
2	28 (3)	These reasonable measures may include measures to: <ul style="list-style-type: none"> • investigate, assess and evaluate the impact on the environment; • inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment; • cease, modify or control any act, activity or process causing the pollution or degradation; • contain or prevent the movement of pollutants or the cause of degradation; • eliminate any source of the pollution or degradation: or 	The NEMA (Section 28 (3)) offers examples of some reasonable measures. Note the provision for the hierarchy of reasonable measures ranging from prevention or elimination to remediation.

		<ul style="list-style-type: none"> remedy the effects of the pollution or degradation. 	
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3.3.2.2.1.1 Environmental norms and standards

S 24 (2) (d) of the NEMA provides for another layer of control over the activities that cause or can cause a significant impact on the environment. This layer of control entails environmental norms and standards that apply to activities that do not require an environmental authorisation.

Norms and standards are a series of requirements and conditions that apply to everybody who undertakes the activities controlled in terms of the norms and standards. It is the duty of decision makers and managers to determine which norms and standards apply to them.

Officials of the MMM need to know which of the activities performed by them are subject to norms and standards, and they need to ensure that such activities are performed in compliance with the applicable norms and standards. The norms and standards published in terms of the NEMA or the SEMAs are listed in Table 26.

Table 26. Norms and standards

Title	Published	Applicability
SANS 241-1 and 2: Specifications for drinking water	Published in 2011	This standard specifies criteria for drinking water quality.
National norms and standards for the storage of waste	GNR 926 published in GG 37088 of 29 November 2013	These norms and standards apply to the storage of waste
Waste classification and management regulations	GNR 634 published in GG 36784 of 23 August 2013	These regulations control the classification and management of waste.
National norms and standards for the assessment of waste for landfill disposal	GNR 635 published in GG 36784 of 23 August 2013	These norms and standards regulate the assessment of waste for landfilling.
National norms and standards for the disposal of waste to landfill	GNR 636 published in GG 36784 of 23 August 2013	These norms and standards regulate the disposal of waste to landfill.
National ambient air quality standard for particulate matter with aerodynamic diameter less than 2.5 micron metres (PM _{2.5})	GNR 486 published in GG 35463 of 29 June 2012	These norms and standards regulate particulate matter less than PM _{2.5} .
Norms and standards for biodiversity management plans for ecosystems	GNR 83 published in GG 37302 of 7 February 2014	These norms and standards regulate the generation of biodiversity plans.
Norms and standards for the management of protected areas in South Africa	GNR 382 published in GG 39878 of 31 March 2016	These norms and standards regulate the management of protected areas in South Africa.
National norms and standards for the remediation of contaminated land and soil quality	GNR 331 published in GG 37603 of 23 August 2013	These norms and standards regulate the remediation of contaminated land.

Title	Published	Applicability
Requirements for the purification of waste water or effluent	GNR 991 published in GG 9225 of 18 May 1984	These regulations specify water quality standards for WWTW outfall.
Regulations for the phasing out of PCBs	GNR 549 published in GG37818 of 10 July 2014	These regulations specify the phasing-out of the use of PCB and PCB-contaminated materials.
Regulations relating to compulsory national standards for process controllers and water services works	GNR 813 published in GG 36958 of 23 October 2013	This standard controls the operation of water treatment works and controllers.
National ambient air quality standards i.t.o. the National Environmental Management Air Quality Act 39 of 2004	GN 1210 published in GG 32816 of 24 December 2009	These standards specify air quality standards for South Africa.

3.3.2.3 Principal national legislation

The suite of principal environmental acts that provide *inter alia* for principles, general duties of care, norms and standards, and environmental authorisations that can apply to the MMM are listed in Table 27.

Please note these are just the principal environmental pieces of legislation that apply to the MMM. The environmental law portfolio encompasses many more laws with a direct environmental application and others with an indirect environmental application.

For a detailed analysis of environmental laws that apply to the MMM refer to Volume 4 of this EI&MP: The Mangaung Metropolitan Municipality Environmental Law Register (2016).

Table 27. Principal environmental and related legislation

The Act	Abbreviation	Number and year
National Environmental Management Act	NEMA	107 of 1998
National Environmental Management: Waste Act	NEM:WA	59 of 2008
National Environmental Management: Air Quality Act	NEM:AQA	39 of 2004
National Environmental Management: Biodiversity Act	NEM:BA	10 of 2004
National Environmental Management: Protected Areas Act	NEM:PAA	57 of 2003
National Water Act	NWA	36 of 1998
Water Services Act	WSA	108 of 1997
National Heritage Resources Act (Act 25 of 1999)	NHRA	25 of 1999
Mineral and Petroleum Resources Development Act	MPRDA	28 of 2002
Animals Protection Act	APA	71 of 1962

3.3.2.4 Environmental and related authorisations (EA)

The NEMA and the SEMAs provide for a number of environmental authorisations that are required by persons or organisations who performs the activities that are regulated by them.

It is illegal to commence with, or to perform and in some cases to modify, an activity without an environmental or related authorisation. It is the duty of the MMM decision maker or manager to determine which authorisations apply. The fact that an environmental or related authorisation applies to an activity implies that a series of administrative and other duties need to be performed. These duties are as follows:

- Submit applications for authorisations to the relevant authority in a timely manner;
- Keep sound records to demonstrate compliance with the requirements;
- Ensure that a copy of the authorisation is available at the workplace;
- Manage the validity period of the authorisation;
- Ensure that the authorisation is issued to the correct legal person and that it applies to the correct activities;
- Adhere to the EMP. The environmental management plan (EMP) that forms part of the EIA is often referenced in the environmental authorisation to be part of the authorisation. Adherence to the EMP is therefore mandatory;
- Ensure that employees and contractors are trained and competent to do work in line with the requirements and conditions of the applicable authorisation;
- Ensure that operational procedures or work instructions are aligned with the conditions defined in terms of authorisations;
- Ensure sustained compliance with all the conditions stated in the authorisation; and
- Regularly verify compliance with the conditions by means of monitoring and auditing.

The key authorisations that can be issued to the MMM in terms of the NEMA and SEMAs are listed in Table 28. Note that authorisations are managed by means of regulations. These regulations are frequently revised. Decision makers and managers need to ensure that they know which regulations apply to which activities.

Table 28. Key environmental authorisations

Legalisation	The authorisation	Purpose of the authorisation
The National Water Act	Water use licence (WUL)	The act provides for a number of water use licences to be issued for both consumption and non-consumption water uses.
National Environmental Management Act	Environmental authorisation (EA)	The act lists a number of activities as well as geographical areas where activities are controlled and an environmental authorisation is required to commence with and undertake such activities.
National Environmental Management: Waste Act	Waste management licence (WML)	The act lists a number of waste management activities that require an authorisation.
National Environmental Management: Air Quality Act	Atmospheric emissions licence (AEL)	The act lists a number of activities that require an AEL.

Legislation	The authorisation	Purpose of the authorisation
National Environmental Management: Biodiversity Act	Biodiversity permits	Permits are issued for some restricted activities related to threatened or protected as well as alien or listed invasive species.
Water Services Act	Water service provider authorisation (WSPA)	Municipalities need to be authorised to render water services.
National Heritage Resources Act	Permit	A permit is required when some activities affect heritage resources.
Mineral and Petroleum Resources Development Act	Mining licence	A mining licence is required for borrow pits and quarries.

3.3.2.5 The hierarchy of control in terms of the National Water Act

The National Water Act (NWA), like the NEMA, makes provision for a range of controls that allow for a number of permissible water uses. The hierarchy of controls is listed in Table 29.

Officials of MMM and especially those who perform non-consumptive water use activities need to understand which authorisations they require to ensure that their activities are permissible water uses. They then also need to have arrangements in place to manage them lawfully.

Table 29. Hierarchy of permissible water uses

Type of permissible use	Application	Implication
Schedule 1 water use	Authorises small and low impacting water uses such as reasonable domestic use and watering small gardens and animals, the storing and use of roof run-off water, and water use in emergencies such as fire-fighting, etc.	These low impact water uses are permissible.
Existing lawful use (ELU) – S32	Permission is granted to continue with an existing lawful water use as long as the use is registered and the user pays for using the water. Holders of ELUs may be required to apply for a new authorisation.	An ELU is a permissible water use until revoked and replaced by a new authorisation.
General authorisation (GA) - S39(1)	A GA is a general permission for specific uses of water within specific catchments. GAs are published in the Government Gazette.	GA regulations are regularly revised. Permissible water uses authorised in terms of a GA need to be registered. Such water users need to adhere to all the conditions that apply to a GA.
Water use licence (WUL) S 21	It is important to note that water use is not limited to the consumptive use of water. The non-consumptive use of water includes activities such as:	S 21 of the NWA regulates both consumptive and non-consumptive water uses.

Type of permissible use	Application	Implication
	<ul style="list-style-type: none"> impeding or diverting the flow of water (21c); controlled activities (21e); discharging water or water containing waste into a water resource (21f); disposing of waste in a manner that may detrimentally impact on a water resource (21g); disposing of water that contains waste or that was heated (21h); altering the beds and banks, course, or characteristics of a watercourse (21j); and using water for recreational purposes (21k). 	

3.4 The legal compliance verification process and report

The legal compliance process verifies the compliance of the key activities and facilities of the MMM that are regulated by other environmental line functions of the provincial and national executive. The purpose of this compliance verification process is to determine whether the MMM as an environmentally regulated entity is: a) indeed compliant with the requirements of the applicable environmental law and b) is managing its compliance status by means of typical local government instruments such as the IDP, SDBIP, PMS, etc.

The compliance verification report is a stand-alone report and is issued as Volume 3 of the four volumes EI&MP series of reports (2016). A record of all the environmental laws that are applicable to the MMM is issued as Volume 4 of the four part EI&MP series of reports (2016). Chapter three of Volume 1 of the EI&MP is dedicated to the nature and extent of environmental legal compliance. management in the local sphere of government. See Table 30 for a summary of recommendations for improvement offered in Part 4 of 4 of the EI&MP.

Table 30. Opportunities for improvement and recommendations

Function/area verified	Opportunities for improvement and recommendations
Drinking water management	<ul style="list-style-type: none"> Clarify roles and responsibilities to incorporate Naledi and Soutpan municipalities into the MMM to deliver good quality potable water. The MMM should draft an Emergency Water Provision Plan. Address disparities in drinking water quality by the two WSPs: Maselspoort and Bloem Water. Explore mechanisms to address the revenue shortfall for water services.
Waste water management	<ul style="list-style-type: none"> Apply for Environmental Authorisations for the following WWTWs: Vanstadensrus, Wepener, Sterkwater and the North Eastern WWTWs Address the employment of qualified process controllers at the various WWTWs.

Function/area verified	Opportunities for improvement and recommendations
	<ul style="list-style-type: none"> • Determine which incidents are environmental incidents in terms of the NEMA and the NWA. The MMM must then report such incidents to the relevant parties. • Water effluent monitoring must be undertaken at Naledi and Soutpan WWTWs.
Waste management	<ul style="list-style-type: none"> • Apply for closure permits for unlawful landfill sites and close them in line with the conditions stipulated in the licence. • Obtain the necessary licences for all landfill sites within the jurisdiction of the metropolitan area. • Operate all landfill sites in accordance with the licence conditions. • The MMM needs to register the Thaba Nchu transfer station with the Provincial Department of Environmental Affairs and comply with the Norms and Standards for the Storage of Waste (GN. 926 of November 2016). • Determine the capacity of the buy-back centres and determine the need to register the activities for the storage of waste, or apply for a waste management licence, depending on the types of planned activities. • Install the software for weighbridges as soon as possible to record the mass of waste entering and leaving landfill sites. • Address the management of the fleet. The unavailability of vehicles, machinery and equipment places the MMM at risk of non-compliance with waste legislation and the conditions of waste management licences. • Waste tyres need to be managed in accordance with the Waste Tyre Regulations. The recommendation is to do a gap analysis on the <i>status quo</i> versus the requirements of the regulations. Generate an action plan once the gaps have been determined. • Implement a surface water monitoring programme to determine the quality of storm water on landfill sites, as required by the conditions of waste management licences/permits. • Gather data on the volume or mass of waste disposed of at landfill sites and report to the SAWIS. • Identify the reporting duties to the DWS and report to the DWS as required by the conditions of the waste management licences/permits.
Management of hazardous substances	<ul style="list-style-type: none"> • Implement measures to establish an inventory/register of municipality-owned hazardous substances. • Determine the facilities and infrastructure necessary to store hazardous substances. • Implement measures to comply with the legal requirements when storing hazardous substances. • Address the labelling and placarding of storage areas for hazardous substances. • Identify and manage the risks related to the transportation and offloading of hazardous substances.

Function/area verified	Opportunities for improvement and recommendations
	<ul style="list-style-type: none"> • Implement measures to manage expired goods and substances. • Train the MMM staff members responsible for the handling of hazardous substances. • Establish and implement standard operating procedure(s) for the handling, storage, and disposal of hazardous substances. • Consider and implement procurement practices to consider less harmful alternatives. • Determine the need to apply for environmental authorisations (atmospheric emissions licences, EIAs, etc.) for the bulk storage of dangerous goods. • Adopt and implement measures to respond to and report emergency incidents that may have detrimental environmental impacts.
Fresh produce market (FPM)	<ul style="list-style-type: none"> • Explore alternative methods for dealing with food and pallet waste. Explore composting options for food waste and alternative solutions for redundant wooden pallets. • Ensure compliance of the waste storage facility with the National Norms and Standards for the Storage of Waste GNR 926 in GG 37088 of 29 November 2013. • Appoint an Approved Inspection Authority (AIA) to determine whether the refrigeration plant is a major hazardous installation (MHI) in terms of the Major Hazardous Installation (MHI) Regulations GNR 692 in GG 22506 of 30 July 2001. • Be compliant to the MMM Fire Fighting Services By-laws of October 2013 at the spray booth.
Fleet management (The mechanical workshop, Oranjesig)	<ul style="list-style-type: none"> • Control the potential for fuel losses from storage vessels. • Replace old and leaking storage tanks. • Determine the extent of potential fuel contamination in the underground storage tanks. • Remediate and rehabilitate contaminated and polluted areas. • Manage waste tyres in accordance with the applicable waste tyre regulations.
Air quality management	<ul style="list-style-type: none"> • The MMM must resume its duty of establishing a baseline for ambient air quality. • Commission the three monitoring stations as a matter of urgency. • Expand the monitoring network throughout the MMM area of jurisdiction. • Establish a complete and comprehensive emissions inventory for the MMM. • Continue with the identification and regulation of controlled emitters within the MMM.
Land and biodiversity management	<ul style="list-style-type: none"> • Draft and implement an invasive species monitoring, control and eradication plan. • Make residents aware of alien and invasive plant species, especially those alien plant species seen as ornamental species in gardens.

Function/area verified	Opportunities for improvement and recommendations
Environmental impact assessment and management	<ul style="list-style-type: none"> • Ensure the implementation of EA and EMP conditions at construction sites and for the operational phases of development projects. • Consult and involve the EIA Division in all EA applications done by or on behalf of other directorates of the MMM. • The EIA Division must keep records of all authorisations, licences and permits issued to the MMM. • Train the staff of the EIA Division in the EIA process and requirements. • Clearly define the roles and responsibilities of the EIA Division staff. • Improve and expand the oversight function of the EIA Division as far as EIA and other environmental licence processes are concerned.
Climate change	Adopt the climate change adaptation and mitigation strategy and allocate resources to implement the proposed mitigation and adaptation interventions.

3.5 Reasonable environmental measures expected from the MMM

S 28 (1) of the NEMA imposes the duty of care and the responsibility for taking reasonable measures on every person who causes, has caused, or may cause significant pollution or degradation of the environment. This means that MMM officials need to adopt and implement reasonable measures in terms of the duty of environmental care doctrine to prevent such pollution or degradation from occurring, continuing, or recurring. Where such harm to or degradation of the environment is authorised by law, or where it cannot reasonably be avoided or stopped, MMM officials need to minimise and rectify such pollution or degradation of the environment.

A key element of any environmental management, governance and governing framework in the local sphere of government must provide for an analysis of how and to what extent reasonable environmental measures apply to the directorates and sub-directorates of the MMM.

The following reasonable measures that can be adopted and implemented by MMM officials were identified during the legal compliance audit and the interviews conducted with key MMM staff members. The recommendations for reasonable measures are made at the directorate level and, where applicable and known, the sub-directorate or division levels as well.

The reasonable measures recommended here include the need to:

- Adhere to the duty of care by implementing reasonable measures to prevent harm to the environment;
- Conduct activities lawfully, especially those that:
 - Are controlled by norms and standards;
 - Are regulated by means of environmental and other legal requirements;
- Make decisions in line with the NEMA principles; and
- Perform the duty of:
 - Giving effect to good environmental governing; and
 - Driving environmental performance.

This analysis provides information on: a) the identified reasonable measures, c) the *status quo* at the MMM and c) recommendations for adoption and use.

3.5.1 The executive mayor of the MMM

The executive mayor of the MMM is the political head and executive leader of the metropolitan municipality. He or she determines policy direction and strategy while providing oversight of the overall performance of the municipality.

Policy decisions must be aligned with national and provincial policies, while decisions made by the executive mayor also need to be aligned with the S 2 principles of NEMA.

The executive mayor of the MMM is the key political role player and his or her support for the adoption and implementation of the EI&MP and the environmental policy is key to their successful adoption and implementation.

The potential role of the executive mayor of the MMM in the adoption and implementation of this EI&MP and the environmental policy is explained in Table 31.

Table 31. Reasonable environmental measures for the office of the executive mayor

Sub-directorate	Division or smaller	Reasonable Measures
		<p>Reasonable expectations: The executive mayor of the MMM must:</p> <ul style="list-style-type: none"> • Identify the needs of the MMM and recommend policies, plans, strategies and programmes necessary to perform and exercise the municipality's constitutional functions and responsibilities ; • Consider propositions made by the directors of the MMM; • Oversee the provision of services; • Take propositions to the MMM council for adoption and implementation; • Monitor and evaluate the progress of the municipal strategies to address needs; • Review the performance of the municipality; • Report to council; • Prepare and ensure the adoption of the budget; and • Oversee the implementation of the budget. <p>Status quo: The statutory and delegated roles and duties of the MMM are defined in the Delegation of Powers Policy of the MMM, which was last amended in 2007.</p> <p>Recommendations: Engage with the executive mayor of the MMM before the environmental policy and the IDP commitments that are initiated in terms of this EI&MP are submitted to council. Ensure that the executive mayor understands his or her responsibilities in terms of environmental management, governance and governing as far as the following are concerned:</p>

Sub-directorate	Division or smaller	Reasonable Measures
		<ul style="list-style-type: none"> • The environmental needs of the MMM; • The oversight functions related environmental management, governance and governing; and • The monitoring, evaluation and reporting of environmental management, governance and governing performance of the MMM.

3.5.2 The city manager of the MMM

The city manager is the head of administration and the MMM's accounting officer. His or her duties as far as environmental management, governance and governing are concerned, include:

- Implementation of the IDP;
- Managing the provision of services;
- Ensuring legal compliance;
- Facilitating public participation;
- Appointing, managing and training staff;
- Financial management;
- The management of assets and liabilities;
- Implementing the supply chain management process;
- Implementing the decisions of the political structures; and
- Performing some functions related to spatial planning.

Potential recommendations for the EI&MP and the Environmental Policy for the MM are listed in Table 32.

Table 32. Reasonable environmental measures for the office of the city manager

Sub-directorate	Division or smaller	Reasonable Measures
		<p>Reasonable expectations: The reasonable expectation is that the city manager of the MMM oversees effective environmental management, governance and governing processes. The challenge to the MMM is to determine the most effective and efficient way that the city manager of the MMM can discharge his or her environmental duties. These environmental duties cover the following roles of the MMM as:</p>

Sub-directorate	Division or smaller	Reasonable Measures
		<ul style="list-style-type: none"> • A governed or regulated entity, • A regulatory, or governing entity, as well as • The custodian of the natural resource base of the area under its jurisdiction. <p>Status quo: The <i>status quo</i> of environmental management, governance and governing by the MMM is characterised as follows:</p> <ul style="list-style-type: none"> • It is fragmented across directorates and sub-directorates; • There are significant gaps in the arrangements of the MMM designed to give effect to the environmental management, governance and governing mandates, functions and duties of the MMM; • There is an absence of a definition of clear roles and responsibilities in the MMM's Delegation of Powers Policy; • Record keeping is poor; • There is inadequate provision for environmental management, governance and governing in the IDP, SDBIP, PMS and performance reporting process of the MMM to ensure effective environmental management, governance and governing; • There is inadequate awareness and knowledge on the part of the MMM staff and civil society of their duties, functions and general best practice relating to environmental management, governance and governing; and • There are demonstrated gaps in compliance with applicable legal and other requirements. <p>Recommendation: Strengthening the role of the municipal manager in initiating, driving and evaluating the environmental management, governance and governing performance of the MMM is non-negotiable. How the MMM should give effect to this imperative needs to be determined. A feasible proposition is to piggyback the reform of environmental management, governance and governing at and by the MMM on the lessons learned through turning the EPWP strategy around.</p>

3.5.3 The Office of the Deputy Executive Director - Operations

Reasonable measures to give effect the general duty of care are listed in Table 33. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment:

- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; as well as
- Ensuring compliance with applicable legal requirements.

Table 33. Reasonable environmental measures for the Office of the Deputy Executive Director - Operations

Sub-directorate	Division or smaller	Reasonable Measures
Inter-governmental & international relationships and alternative funding	Inter-governmental Relations Division (A.1.2) ²⁶	<p>Reasonable expectations: The MMM is an organ of state in the local government sphere of government. Environmental governing is a concurrent mandate in terms of the South African Constitution. This means that all organs of state need to collaborate with one another in order to discharge effective environmental governing. This duty to collaborate is often discharged by means of formalised processes and structures between line functions of the different spheres of government as well as between different line functions of the same sphere of government.</p> <p>Status quo: This sub-directorate is responsible for inter-governmental relations, international relations, and alternative funding.</p> <p>Recommendation: Review and revise the MMM arrangements for the constitutional duty of co-operative government in terms of environmental matters and ensure that the MMM discharges the duty to effectively co-operatively govern environmental matters.</p>
	International Relations Division (A.1.2)	<p>Reasonable expectations: The reasonable expectation is that the MMM leverages its international relations to unlock opportunities in environmental governance, governing and management.</p> <p>Status quo: As far as international relations are concerned, the MMM is a member of ILEA, the MMM signed the Compact of Mayors to combat climate change, and the MMM also has formal relationships with the cities of Nanjing (China) and Ghent (Belgium). These relationships focus largely on socio-economic development, while the MMM and Ghent collaborate in the field of waste management.</p> <p>Recommendations: Explore opportunities to unlock value for the MMM from its international partners.</p>

²⁶ This reference correlates with the classification of the Organisational Structure of the MMM dated November 2011.

Sub-directorate	Division or smaller	Reasonable Measures
	Alternative Funding Division (A.1.2)	<p>Reasonable expectations: Most municipalities do not succeed in funding all their mandates and functions from their traditional sources of income. Municipalities need to be innovative to augment the income derived from rates and taxes and sundry and other service charges in order to deal with budget constraints. Alternative sources of income include:</p> <ul style="list-style-type: none"> • Innovative rates and structures, • Government grants; • Public/private partnerships, and • Foreign donor agencies and support programmes etc. <p>The reasonable expectation is that a metropolitan municipality promotes processes to identify and unlock opportunities to access alternative funds to finance its environmental mandate.</p> <p>Status quo: Evidence was found that the MMM has indeed managed to source additional financial and other resources from some unconventional sources. The MMM can, however, expand these sources of additional income to fund environmental projects. The challenge is that the sourcing of income by the MMM is fragmented amongst different role players that function independently from one another.</p> <p>Recommendation: Make an environmental policy commitment to investigate and explore opportunities for accessing additional funding for environmental projects in a co-ordinated and integrated way.</p>
Shareholder Management	Establishment of Entities or Business (A.1.1)	<p>Reasonable expectations: The expectation is that MMM officials and appointed advisers and consultants shall apply their minds at a very early stage when entities and businesses are identified to be established by:</p> <ul style="list-style-type: none"> • Considering the NEMA S 2 principles when decisions are being made and ensuring that all such decisions are aligned with the NEMA principles; • Ensuring that all applicable environmental norms and standards are identified and adhered to; • Ensuring that all relevant environmental authorisations that may apply to the project, the site and any infrastructural developments are identified and applied for in a timely manner; • Ensuring that these entities or businesses are established, constructed and operated in terms of the general duty of care, applicable norms and

Sub-directorate	Division or smaller	Reasonable Measures
		<p>standards, and the conditions defined in environmental authorisations;</p> <ul style="list-style-type: none"> • Ensuring that staff, contractors and agents are competent to identify and discharge all the applicable environmental duties; • Ensuring the verification of compliance with applicable environmental requirements; and • Ensuring that sound environmental management records are being kept to demonstrate compliance with applicable environmental legal requirements. <p>Status quo: It was not possible to determine the <i>status quo</i> of the work done by this division.</p> <p>Recommendation: Review the processes in terms of which entities and businesses are established by the MMM and revise them to ensure compliance with the reasonable environmental expectations identified.</p>
	PMU Division: EPWP (A.1.1)	<p>Reasonable expectation: The national EPWP programme has an environmentally related sub-programme: Natural Resource Management (NRM) in the environment and culture cluster. The environmental EPWP programme has a range of dedicated environmental focus areas such as the Working for/on programmes, the Youth Environmental Services Programme (YES), and Groen Sebenza, amongst others. The reasonable expectation is that MMM optimises its participation on the EPWP programmes that benefit the environment.</p> <p>Status quo: MMM reported in 2011 that it experienced challenges to deliver on the EPWP job creation targets set by the national government. MMM delivered EPWP-based jobs in the water and sanitation and roads and storm water programmes, albeit below the target. The MMM then identified the following environmental sector projects: Food for Waste, Road & Water, Road & Maintenance Projects, Parks Projects, a Waste Collection and Cleaning Project, as well as Waste Recycling as candidate programmes to participate in. The SA Cities Network reported for the period 2013/14 that the MMM Council:</p>

Sub-directorate	Division or smaller	Reasonable Measures
		<ul style="list-style-type: none"> • Adopted and approved the EPWP policy in March 2016. • Put into place the structure to deliver EPWP programmes; • Relied primarily on grant allocations to fund the EPWP; • Implemented 40 EPWP projects in the infrastructure, environment and culture and social sectors. <p>The 2015/16 Strategic SDBIP makes provision for the following EPWP commitments:</p> <ul style="list-style-type: none"> • Compliance with EPWP grant conditions; • The approval of the EPWP policy; • The implementation of the social sector EPWP programmes; and • Phased targets for implementing EPWP programmes. <p>The 2015/16 Strategic SDBIP does not make any specific provision for environmental sector commitments, however.</p> <p>The EPWP programme of the MMM was handed over to the Directorate: Special Projects. An EPWP policy was developed by the MMM and the institutional arrangements were transformed. EPWP is now managed by means of an EPWP committee that is chaired by the municipal manager.</p> <p>Recommendation:</p> <p>The Sub-directorate Environmental Management should take the lead with the support of other units of the MMM that are charged with environmental performance management portfolios, such as waste management, sanitation, conservation, rural development, and parks and cemeteries, to increase MMM's profile of environmental sector EPWP programmes.</p> <p>Increase the contribution of environmental sector projects and activities as a percentage of the total EPWP delivery by the MMM per year for:</p> <ul style="list-style-type: none"> • The number of projects that the MMM participates in; • The number of jobs created; and • The number of people trained.

3.5.4 Reasonable environmental measures for the Office of the Deputy Executive Director – Organisational Planning & Performance Management

Reasonable measures to give effect to the general duty of care are listed in Table 34. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; as well as
- Ensuring compliance with applicable legal requirements.

Table 34. Reasonable environmental measures for the Office of the Deputy Executive Director - Organisational Planning & Performance Management

Sub-directorate	Division or smaller	Reasonable Measures
Organisational Planning and Performance Management (A.2)		<p>Reasonable expectations: The reasonable expectations are that the MMM generates sound planning and oversight processes in terms of its IDP, SDBIP and the PMS processes that are supported by measurable environmental key performance indicators that:</p> <ul style="list-style-type: none"> • Are risk based; • Discharge all the duties of the MMM as an environmentally regulated entity; • Discharge all the duties of the MMM as an environmental regulator; • Discharge the duties of the MMM to protect the valued environmental attributes and ecosystem services reflected by the spatial and other environmental instruments. <p>The nature of environmental performance indicators The reasonable expectation is that MMM identifies key environmental performance indicators in terms of which the performance of senior and other staff is tracked. <u>Key environmental condition based performance areas</u> should include the following:</p>

		<ul style="list-style-type: none"> • The KPIs should be aligned with the significant risks identified in terms of the MMM risk assessment process and key applicable legal requirements; • Sustained conformity of the quality of effluent discharges from WWTWs with the chemical and microbiological standards that apply to the works; • Sustained conformity of the quality of drinking water with the chemical and microbiological standards that apply; • An effective air quality management capability; • Effective protection of the biodiversity and open spaces specified in the MOSS; • The reduction of non-revenue water losses, including an effective water demand management programme; • Effective energy efficiency programmes for all classes of energy use, including its calculation as carbon equivalents; • Progress made with driving the waste management hierarchy; • The effective management of alien and invasive species in the MMM area of jurisdiction; <p>Key <u>environmental compliance performance areas</u> should include the following:</p> <ul style="list-style-type: none"> • Ensure that all activities that trigger environmental authorisations are identified in a timely manner; • Ensure that all such environmental authorisations are indeed applied for in a timely manner; • Manage the copies and validity of all issued environmental authorisations; • Manage and report on compliance to all environmental requirements, including permit conditions; • On a regular basis verify compliance with all applicable legal requirements including permit conditions; • Establish an effective environmental authorisation management system; and • Ensure that all holders of environmental authorisations demonstrate sustained compliance with all the conditions of environmental authorisations. <p>Key <u>environmental regulatory indicators</u> should include:</p> <ul style="list-style-type: none"> • An up-to-date and relevant suite of environmentally related by-laws that are aligned with national and provincial legislation;
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		<ul style="list-style-type: none"> • An effective by-law enforcement capability that includes competent inspectorate and investigation officers, as well as an effective municipal court. <p>Key <u>operational indicators</u> that relate to environmental performance should include:</p> <ul style="list-style-type: none"> • The % operational availability of the sewage treatment plants at a Z-level of efficiency; • The volumetric throughput of sewage to be treated relative to the design capacity of the plant; etc. <p>Status quo: Environmental performance indicators (EPI)</p> <p>None of the planning instruments of the MMM that range from the SDF, the IDP, SDBIP and the PMS have adequate and suitable environmental performance indicators to drive effective environmental performance as well as environmental compliance performance management.</p> <p>Status quo: Integrated Development Plan (IDP)</p> <p>In response to the environmental elements of the Outcome 10 commitments, Vision 2030 and the Free State Growth and Development Strategy, the MMM commits to the following environmental management and climate change elements in the 2016/17 IDP:</p> <ul style="list-style-type: none"> • Environmental sustainability; • Increasing the environmental literacy level of stakeholders; • Reducing the major sources of greenhouse gas emissions and catalysing the large-scale supply of clean energy; and • Energy saving. <p>In Chapter 4 of the IDP, entitled Programmes and Projects, the MMM makes IDP commitments to environmental management and climate change (4.1.7). The Situation Analysis of the IDP (4.1.7.1) is limited to references to a clean environment (read cleansing of the CBD) and climate change mitigation. The Development Objective of the IDP (4.1.7.2) is limited to addressing energy supply and climate change issues, while the Strategies section of the IDP (4.1.7.3) lists the following environmental strategies:</p> <ul style="list-style-type: none"> • A completed and approved EI&MP; • Increasing the environmental literacy of MMM inhabitants; and • Maximising the use of sporting and social facilities.
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Sub-directorate	Division or smaller	Reasonable Measures
		<p>No actual environmental targets, KPIs, and strategies have been defined in the 2016/17 IDP, the SDBIP and the SDF apart from the need to generate the plans alluded to above.</p> <p>It is evident from the analysis that the MMM SDF through the IDP and the SDBIP do not discharge the following environmental duties:</p> <ul style="list-style-type: none"> • The IDP is not informed by enterprise-wide risk assessment; • The duties of MMM as an environmentally regulated entity; • The duties of MMM as an environmental regulator; and • The duties of MMM as manager of environmental goods and services in the urban and rural areas under its jurisdiction. <p>Status quo: The SDBIP</p> <p>The Organisational Service Delivery and Budget Implementation Plan (SDBIP) gives effect to the MMM's IDP and budget. The SDBIP includes service delivery targets and performance indicators that are linked to the performance agreements of senior managers. The SDBIP as the management and implementation tool of the MMM is at the heart of the MMM's performance management system (PMS).</p> <p>The MMM SDBIP has since 2015/2016 been a layered plan with a strategic level SDBIP and an operational SDBIP. The strategic level SDBIP is available to the public and it forms the basis for the PMS of senior management. The last publically available SDBIP was published in 2014. The scope of the internal audit system is also limited to verifying compliance with the strategic SDBIP only.</p> <p>The 2015/16 Strategic SDBIP has the following commitments that relate to environmental performance by the MMM:</p> <ul style="list-style-type: none"> • The 2015/16 Strategic SDBIP makes provision for environmental commitments but no actual environmental performance commitments have been included in the 2015/16 Strategic SDBIP. Some key omissions include amongst others: <ul style="list-style-type: none"> ○ The 2015/16 Strategic SDBIP contains no commitments to the actual quality of waste water discharges and drinking

		<p>water. It commits only to the regular monitoring of drinking water, not the actual quality thereof. Other references to water management by the MMM relate to the management of storm water, the improvement of water and sanitation-related infrastructure, the rendering of water-related services and ensuring sustained access to water resources; and</p> <ul style="list-style-type: none"> ○ The only waste management commitment in the Strategic SDBIP refers to waste removal service delivery, while no waste management performance commitments are made. <p>Recommendations for environmental indicators, the SDF, the IDP and SDBIP: The recommendation is that an integrated and holistic Environmental Management Policy be generated to drive the SDF, the IDP, the SDBIP and the environmental KPIs, that specifies:</p> <ul style="list-style-type: none"> • What needs to be managed by the MMM to ensure that MMM functions environmentally lawfully; • What needs to be done by the MMM to ensure that it functions optimally as a regulatory authority; • What needs to be done to discharge the duties of MMM to protect valued environmental services and assets; • What needs to be done to discharge its duty as a member of co-operative government; • The roles and responsibilities to achieve environmental performance; • The identification of the most effective instruments to ensure effective environmental performance management; • The formulation of environmental performance indicators that are aligned with the environmental duties and priorities; • An environmental monitoring and reporting protocol; • An environmental auditing protocol that includes the verification of environmental performance; and • A compliance management protocol. <p>The environmental performance indicators need to be included in the IDP and the Operational SDBIP, while the key indicators need to be included in the Strategic SDBIP.</p> <p>It is imperative that the environmental management effort at the MMM recognises the need to use the risk</p>
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Sub-directorate	Division or smaller	Reasonable Measures
		<p>assessment, SDF, IDP, SDBIP, PMS and internal audit management loop in order to ensure effective environmental management at the municipal level. (Read this recommendation with the recommendations made for the adoption and use of spatial tools to achieve environmental objectives). It is imperative to understand that the EMF, MOSS, EI&MP, and SoER will have a limited beneficial impact if they are published on their own.</p>
Risk Management and Anti-Fraud and Corruption	Risk Management (A.2.1)	<p>Reasonable expectations: The reasonable expectation is that the enterprise risk assessment and –management function of the MMM:</p> <ul style="list-style-type: none"> • Also addresses environmental performance risk assessment and –management; • Informs the IDP to ensure that critical risk exposures are indeed adopted and addressed in the IDP. <p>Status quo: The MMM does have an institutional enterprise risk assessment and management programme in place. At the time of the EI&MP review, no evidence was found that the enterprise-wide risk assessment and management system had indeed informed the IDP and SDBIPS. Environmentally related risks had been identified and assessed in the Strategic Risk Register 2015-2016 Final version. The Risk Assessment Policy, however, does not require that environmental risk exposures must be included in the risk assessments.</p> <p>Recommendation: The enterprise risk assessment and management plan should inform the IDP and both the Strategic and Operational SDBIPs, as these management instruments should be risk-based. The MMM risk assessment also needs to be reviewed to establish whether all environmental risks were identified and assessed. These risks can emanate from:</p> <ul style="list-style-type: none"> • Compliance-based issues, as the MMM is a regulated entity; • Enforcement-based issues, as the MMM is an environmental regulator; • Loss of environmental resources and assets; and • Loss associated with environmental conditions that could affect the MMM and its citizens.
Internal Audit (A.2.2)		<p>Reasonable expectation: The expectation is that the internal audit system of the MMM should also verify environmental performance and compliance with</p>

Sub-directorate	Division or smaller	Reasonable Measures
		<p>environmental legislation by the MMM, as is increasingly being done by the Auditor General.</p> <p>Status quo: The Internal Audit Sub-directorate does not audit compliance of the MMM operations with applicable environmental law. The scope of the activities of the Internal Audit Sub-directorate is presently limited to the performance commitments made in the SDBIP. From 2016 onwards, the scope of the internal audit will be further limited to the commitments defined in the Strategic SDBIP.</p> <p>The scope of internal auditing is risk-based. It is therefore imperative that the risk assessment and risk management system identify and assess key environmental risk exposures that are managed in terms of the Strategic SDBIP.</p> <p>The assurance provided by the audit committee of the MMM is currently limited to the requirements that govern financial matters only.</p> <p>Institutional compliance is managed by a Sub-directorate in the Office of the City manager A.2, while compliance with MMM by-laws is managed by a number of other line functions.</p> <p>Recommendation: The mandate of the Internal Audit Sub-directorate needs to be expanded so that it also provides assurance related to non-financial risk exposures, i.e. legal compliance assurance and the assurance of environmental performance against key environmental KPIs, as is the case with the Auditor General. To effectively provide assurance of environmental management performance by MMM line functions, these key environmental performance indicators need to be included in the IDP and the Strategic SDBIP.</p>
Institutional Compliance	Institutional Legal Compliance (A.2.3)	<p>Reasonable expectations: The expectation is that the MMM manages a legal compliance management and verification system that includes compliance with applicable environmental legal requirements.</p> <p>Status quo: At the time of reviewing the environmental management <i>status quo</i> at the MMM, the position of a Manager; Legal Compliance was vacant.</p> <p>Recommendation: At the time of the EI&MP review no evidence was found that a process and system are in place at the MMM to verify institutional compliance with applicable environmental law. The MMM needs to</p>

Sub-directorate	Division or smaller	Reasonable Measures
		design an integrated and aligned process to ensure sustained compliance enforcement.

3.5.5 Reasonable environmental measures for the Directorate Finance

Reasonable measures to give effect to the general duty of care are listed in Table 35. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; as well as
- Ensuring compliance with applicable legal requirements.

Table 35. Reasonable environmental measures for the Directorate Finance

Sub-directorate	Division or smaller	Reasonable Measures
Revenue Management	Rates and taxes (B.1)	<p>Reasonable expectations: The expectation is that the MMM uses fiscal-based incentive and disincentive instruments to change environmental behaviour as well as to right-size payments for environmental services such as waste disposal fees and waste water treatment rates, amongst others.</p> <p>Status quo: The functions of this Division are divided into two sub-functions: rates and taxes, and sundry charges.</p> <p>The rates and taxes arrangements of the MMM do not make specific provision for environmental rates and taxes. The principals that govern the rates and taxes policy are as follows:</p> <p>Water services</p> <ul style="list-style-type: none"> • Tariffs for the three major services rendered by the Municipality, namely water, sewerage and refuse

		<p>removal, need to recover the expenses associated with the rendering of each service concerned;</p> <ul style="list-style-type: none"> • A two-part tariff structure for water use is charged, namely a fixed basic charge and a charge based on consumption; • Tariff structures for water should contribute to a reduction in consumption; • The price of the water used must be proportional to the volume used; and • Two pricing structures are determined, one for residential purposes and one for non-residential purposes, based on the volume consumed. <p>Refuse removal</p> <ul style="list-style-type: none"> • The tariff levied by the MMM is based on the category and size of the property; • Special tariffs can be levied for specific developments and informal settlements; and • Additional charges can be levied for trade waste. <p>Sewage</p> <ul style="list-style-type: none"> • Sewage charges are linked to the market value of the property. <p>Social incentives</p> <p>The socially-based policy commitments include:</p> <ul style="list-style-type: none"> • Providing access to electricity, water, refuse removal, sewerage, property rates, and pauper burials. • A three-tiered pricing structure is in place for those who cannot afford the cost of services, those who can partially afford the cost, and those who can afford to pay for the services; • The rendering of free basic services to qualifying groups; and • Provisions for rebates, reductions, and exemptions for certain categories of owners such as the indigent, child-headed households, and retired and disabled persons. <p>The rendering of services that are not financed in terms of the rates and taxes policy is provided for in terms of the sundry charges system.</p> <p>Recommendation: Generate an IDP commitment to investigate opportunities to expand the rates and services and sundry charges policy to ensure that the MMM does indeed make full cost recovery for environmental services rendered.</p>
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Sub-directorate	Division or smaller	Reasonable Measures
Supply Chain Management	Performance and Compliance (B.3)	<p>Reasonable expectations: The general expectation from a centralised supply chain management system (SCMS) that the supply chain management processes deliver required goods and services that conform to specification in a timely manner.</p> <p>Status quo: Evidence was found that the failure of the SCMS to deliver key goods and services in a timely manner has severely threatened the performance of the MMM in general and in environmental performance specifically in a number of critical cases.</p> <p>Recommendation: Design, develop and implement a performance tracking system for the SCMS to ensure that required goods and services are delivered in a timely manner.</p>
Asset Management (B.5)		<p>Reasonable expectations: The reasonable expectation is that the sub-directorate manages the critical assets of the MMM comprehensively. To determine the real value of assets, the monetary criteria of assets should be integrated with the functional criteria. The functional criteria of assets should include the functional integrity of an asset. The monetary value of the technical assets of a sewage treatment plant is undermined when: a) the asset ceases to be functional, or b) when the asset functions sub-optimally, rendering the MMM liable to risks.</p> <p>Status quo: The Asset Management sub-directorate maintains an asset management register that reflects the value and liabilities of assets. The MMM defines the value of assets in monetary terms only. Key liabilities that are accounted for are closure and rehabilitation costs associated with landfill sites and borrow pits</p> <p>Recommendation: .The MMM needs to expand the current monetary basis for determining the value of assets to include a functional and performance value of critical assets that deliver environmental compliance and performance, such as but not limited to water treatment works, pollution prevention technologies, environmental performance monitoring equipment, and the available air space in licenced landfill sites. Also, ensure that closure and rehabilitation liabilities are realistically accounted for.</p>

3.5.6 Reasonable environmental measures for the Directorate Engineering Services

Reasonable measures to give effect to the general duty of care are listed in Table 36. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment,
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; as well as
- Ensuring compliance to applicable legal requirements.

Table 36. Reasonable environmental measures for the Directorate Engineering Services

Sub-directorate	Division	Reasonable Measures
Roads and Storm Water (C.1)		<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate Roads and Storm Water will have internal processes in place to manage compliance with applicable environmental law, that ranges through the hierarchy of compliance requirements such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • The adoption and implementation of NEMA S 28 Reasonable Measures; • The need to obtain environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations as well as the sustained management of all records that relate to environmental authorisations. <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the sub-directorate to ensure comprehensive and sustained adherence to applicable environmental law. Evidence was also found that borrow pits are unlawfully established and operated by the sub-directorate.</p> <p>Recommendation: The Sub-directorate Roads and Storm Water needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained in using the procedure effectively.</p>
Water	Water Supply (C.2)	<p>Reasonable expectation: The reasonable expectation is that the division, in association with other service providers such as Municipal Health Services, Bloem Water and the water quality laboratories deliver drinking water to the people of Mangaung that conforms to the prescribed drinking water standards. It is also expected that the sub-directorate:</p>

		<ul style="list-style-type: none"> • Manages water quality data, information and records responsibly • Analyses water quality data and trend water quality performance management at a supply system level; • Ensures sustained and quality assured sampling, testing and reporting of drinking water quality management performance; • Maintains a drinking water quality incident detection, response and communication system. <p>Status quo: The Mangaung Local Municipality was granted the coveted Blue Drop status, but it has since lost that status. The 2015/16 IDP and the SDBIP are silent on any attempt to regain Blue Drop status. Evidence was found that the microbiological and chemical laboratories of the MMM do indeed render a respected sampling, testing and reporting service to the council, as far as the testing of the microbiological quality of water is concerned. Water quality incidents are managed in terms off an Incident Management Plan, while the laboratories and the Environmental Health Services Unit manage the quality of drinking water in terms of the Water Quality and Safety Programme. The Water Quality Action Group ensures the aligned communication of any water quality issues. The MMM and Bloem Water have commissioned an integrated Water Safety Plan (WSP) for the two entities delivering water to the MMM, while a new laboratory is being built.</p> <p>A number of instances have also been found indicating that the MMM's drinking water does not meet microbiological standards. The challenge associated with achieving blue drop status is exacerbated by the fact that drinking water is supplied by two entities. The MMM is the Water Services Authority (WSA), while it also renders water services i.e. it acts as a WSP. Bloem Water is contracted in as an external Water Services Provider (WSP) The last publically available information about drinking water performance was published in terms of the Blue Drop reports in 2012. Some progress made with the improvement of drinking water quality was noted.</p> <p>The following improvements were also called for:</p> <ul style="list-style-type: none"> • An integrated, multi-stakeholder and metropolitan wide strategy to improve and sustain the quality of potable water; • Significant capital investment to improve water supply and drinking water treatment capacity;
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		<ul style="list-style-type: none"> • A more coherent approach to manage water quality incidents; • The improved availability of resources; • The absence of a chemical compliance programme in Mangaung West, Botshabelo and Thaba Nchu; • The need for improved collaboration between the MMM and Bloem Water to ensure the sustained delivery of water of a high quality; • The need to improve water quality at the point of use; • The publication of a joint Water Safety Plan for the MMM and Bloem Water; • Improving the granulation of water quality management to a system level in order to allow for water quality management at the water supply system level. <p>Key challenges observed in 2016 for the supply of potable water that meets drinking water standards amount to:</p> <ul style="list-style-type: none"> • The 2015/16 IDP has no KPIs for any water quality performance indicators <i>per se</i>. The IDP and SDBIP only track performance that relates to the number of water quality tests undertaken by the laboratory; • No evidence was found of any cumulative trending and reporting of water quality management performance by the MMM; • No evidence was found of responsible information and record management where water quality data is trended to inform management; and • An integrated incident management system needs to be established should drinking water be found not to conform to drinking water standards. <p>Recommendation: The following recommendations are made:</p> <ul style="list-style-type: none"> • As a number of entities are responsible for delivering safe drinking water to the end users, it is imperative that a water quality management policy be generated that amongst other matters provides for: <ul style="list-style-type: none"> ○ The clarification of roles, responsibilities and accountabilities; ○ The establishment of structures and processes to effectively manage drinking water throughout its life cycle; ○ The formulation of standing performance KPIs; ○ Performance management; ○ Sustained reporting of performance;
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Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> ○ Emergency response and communication strategies; and ○ The verification of performance by internal audit. <ul style="list-style-type: none"> • The management of water quality performance from both the WWTWs and of drinking water that is based on key chemical and microbiological parameters needs to be formalised in the IDP, the SDBIP, and the PMS. • The water quality data generated by the laboratory should be communicated as interpreted and trended management information, while longer-term records of water quality performance should be maintained to inform management decisions. • Internal audit should also verify both the performance of water quality management in terms of drinking water standards and the responsible management of data and information. • The sound management of the water quality monitoring system, as well as of data and information, should be integrated to include all the role players as well as all the processes that are relevant to the supply of potable water that conforms to the applicable chemical and microbiological standards.
	Water Reticulation Division (C.2)	<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate Water has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements, such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • The adoption and implementation of NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, as well as the sustained management of all records that relate to environmental authorisations. <p>The sub-directorate should also ensure that projects managed by it do not violate the integrity of valued environmental resources, while any buildings and infrastructure must conform to green building requirements.</p>

Sub-directorate	Division	Reasonable Measures
		<p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the sub-directorate to ensure a comprehensive and sustained adherence to applicable environmental law.</p> <p>Recommendation: The Sub-directorate Roads and Storm Water needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained in using the procedure effectively.</p>
	Bulk Water Division (C.2)	<p>Reasonable expectations: The reasonable expectation is that the Bulk Water Division has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements, such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • The adoption and implementation of NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, as well as the sustained management of all records that relate to environmental authorisations. <p>The sub-directorate should also ensure that projects managed by it do not violate the integrity of valued environmental resources, while any buildings and infrastructure must conform to green building requirements.</p> <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the sub-directorate to ensure sustained adherence to applicable environmental law.</p> <p>Recommendation: The Sub-directorate Roads and Storm Water needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained in using the procedure effectively.</p>
	Laboratory Services Division (Chemical) (C.2)	<p>Reasonable expectation: The reasonable expectation is that the laboratory:</p> <ul style="list-style-type: none"> • Delivers on the statutory and other requirements to monitor the non-biological water quality parameters

		<p>of outfall and drinking water from the MMM WWTWs and the drinking water network;</p> <ul style="list-style-type: none"> • Controls the sampling and laboratory testing processes so as to ensure the integrity of data and interpreted information; • Ensures the integrity of any sampling and testing equipment by means of calibration or verification processes and retains suitable records; • Translates and reports in a timely manner the water quality data into management information where the data is analysed and evaluated in order to allow the leadership team to assess the environmental performance of the WWTWs and the chemical quality of the drinking water; • Keeps long-term records of water quality performance; • Raises the alarm should the measured water quality parameters exceed legal limits or other performance targets; and • Ensures best laboratory practices where tests are not accredited in terms of ISO 17025. <p>Status quo: Water quality analysis by the MMM is split between two MMM directorates. Chemical quality testing services are rendered by the Sub-directorate Water, while the microbiological parameters are monitored by Municipal Health. (See the <i>status quo</i> report in the section of the Sub-directorate Health, while the actual performance of the WWTW is unpacked in the section on the Sub-directorate Sanitation).</p> <p>The current practice of the laboratory is to record the water quality data for the MMM WWTWs in the Green Drop system. Current or recent water quality data are not available in the public domain and the public has access only to reports that date back to two years from the present. The reviewer was not successful in obtaining from the laboratory staff for the WWTWs data that will allow for a more recent analysis of the chemical water quality performance of the WWTWs of the MMM. Also, no evidence was found that any of the tests conducted by the laboratory are accredited by SANAS in terms of ISO 17025. No evidence was found, either, in the 2016/17 IDP of any commitments to improve the practices at the laboratory.</p> <p>The 2011 Green Drop Performance of the water quality monitoring function for the WWTW of MMM is reported as follows in the Green Drop Report of 2014:</p>
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Sub-directorate	Division	Reasonable Measures
		<p><u>Monitoring programme:</u></p> <ul style="list-style-type: none"> • Botshabelo: 75% • Thaba Nchu: 75% • Bainsvlei: 75% • Northern Works: 75% • Bloem Spruit: 75% • Bloemindustria: 0% • Welvaart: 50% • Sterkwater: 75% <p><u>Credibility of Sample Analysis:</u></p> <ul style="list-style-type: none"> • Botshabelo: 40% • Thaba Nchu: 40% • Bainsvlei: 40% • Northern Works: 40% • Bloem Spruit: 40% • Bloemindustria: 0% • Welvaart: 40% • Sterkwater: 40% <p><u>Submission of Results:</u> 0% for all the works</p> <p>The 2014 Green Drop Report for the MMM does not record performance in terms of the monitoring parameters reported on in 2011. The 2014 report, however, concludes as follows on the activities related to the laboratory:</p> <ul style="list-style-type: none"> • Data appear to be absent from the Green Drop System; • Key determinants are not monitored for some systems; and • Best practice monitoring frequency needs to be implemented at the larger plants. <p>No Green Drop Status reports are available in the public domain for 2015 and 2016.</p> <p>Recommendation: The processes and practice in place at the laboratory need to be reviewed and revised to be aligned with both the legal and best practice guidelines in order to ensure that the laboratory meets both the statutory and best practice requirements, while providing accurate information to management regarding the environmental performance of the Metro's WWTWs.</p> <p>Define the best practise requirements for the laboratory in the environmental policy and set performance indicators in the IDP.</p>

Sub-directorate	Division	Reasonable Measures
	Water Demand Management Division (C.2)	<p>Reasonable expectation: The general expectation is that the Division Water Demand Management implements programmes to reduce per capita water demand and to reduce losses of Revenue water.</p> <p>Status quo: In 2010/2011 the MMM developed a Master Plan for the Implementation of a Water Loss Management Strategy. This strategy addressed two areas:</p> <ul style="list-style-type: none"> • Consumption (billing database) and • Physical losses from the water distribution system up to the point of sale to consumers. <p>In terms of the President's State of the Nation address, the MMM was obliged to reduce its water losses by 50% by 2014.</p> <ul style="list-style-type: none"> • The total bulk water supplied to the MMM area was 79 million m³/a. The water losses amounted to 29 million m³/a (or 37% of total bulk water supplied to this area) or 50% of the potable water supplied to the metro. • The financial losses to the metro amounted to R123 million. <p>The five-year Water Demand Management Programme (2011 to 2016) succeeded in reducing the loss of Non-Revenue water to 31%.</p> <p>The MMM also launched the Water Demand Management Strategy that includes the following strategies:</p> <ul style="list-style-type: none"> • Leak detection and repair programme; • Pressure management; • Repair of visible and reported leaks; • Mains replacement/management programme; • Reticulation/consumer connection replacement/management programme; and • The cathodic protection of pipelines. <p>The 2015/16 Strategic SDBIP does not make any reference to commitments related to the loss of Revenue water, while the 2016/17 IDP states a commitment to achieve a level of Non-revenue water loss of 35%. This is up 4% when compared with the reported achievement of only 31% of Revenue water losses.</p> <p>Recommendation: The management of Revenue water losses is a key environmental management strategy for MMM and it should be included in the Strategic SDBIP so that performance is tracked and so</p>

Sub-directorate	Division	Reasonable Measures
		that it is included in the MMM's performance management system.
Sanitation	Purification and Sanitation (C.3.1)	<p>Reasonable expectations: The reasonable expectations are that the MMM:</p> <ul style="list-style-type: none"> • Operates all WWTWs lawfully in terms of valid operational and upgrade environmental authorisations; • Manages its environmental authorisations and records in line with expectations; • Achieves water quality management performance objectives; • Achieves operational and hardware performance objectives; • Achieves staff complement and skills performance objectives; • Achieves monitoring and reporting performance objectives (see the analysis made for the laboratory); and • Extends WWTW performance to the performance management system (PMS) of leadership by means of standing items in the IDP and both SDBIPs. <p>Status quo: The performance <i>status quo</i> of the WWTWS is at the time of reviewing and revising the EI&MP in a state of flux as most of the eight WWTWs are currently being upgraded, while they continue to:</p> <ul style="list-style-type: none"> • Exceed the legal limits for key water quality parameters; • Exceed their design capacities; • Do not meet the legal requirements for staffing and staff competencies; • Have interim arrangements in terms of S 21 of the NWA; • Manage the EIA processes and records associated with upgrades poorly; • Manage records related to environmental authorisations poorly; • Manage water quality data poorly; • Do not translate data into information to inform management in a timely manner; and • Do not have environmental performance objectives and indicators recorded in the IDP and two SDBIPs. <p>The 2014 Green Drop compliance performance of the MMM WWTWs is reported as follows:</p> <p><u>Microbiological compliance</u></p>

		<ul style="list-style-type: none"> • Botshabelo: 0% • Thaba Nchu: 0% • Bainsvlei: 0% • Northern Works: 0% • Bloemspruit: 23,1% • Bloemindustria: Not applicable • Welvaart: 0% • Sterkwater: 0% <p><u>Physical Compliance:</u></p> <ul style="list-style-type: none"> • Botshabelo: 52,6% • Thaba Nchu: 70,5% • Bainsvlei: 70,3% • Northern Works: 100% • Bloemspruit: 37,8% • Bloemindustria: Not Applicable • Welvaart: 92 • Sterkwater: 50% <p><u>Chemical Compliance</u></p> <ul style="list-style-type: none"> • Botshabelo: 30,8% • Thaba Nchu: 92,1% • Bainsvlei: 93,1% • Northern Works: 84,6 • Bloemspruit: 26,4% • Bloemindustria: Not Applicable • Welvaart: 92 • Sterkwater: 33,7% <p>The risk ratings for MMM's WWTWs increased from 2013 to 2014 for Bloemspruit, Botshabelo Sterkwater, Bainsvlei, Thaba Nchu, Northern Works, and Welvaart, while the risk rating for Bloemindustria improved.</p> <p>Not all the WWTWs performed well in terms of the required staff complements and skills requirements, while the deteriorating risk rating for 7 of the 8 works remained a concern.</p> <p>Most of the works do have some form of water use licence that will have to be re-applied for, once the upgrades are concluded. The upgrades of the WWTW infrastructure are also covered by environmental authorisations, while the WWTWs have also been classified.</p> <p>Recommendation: The MMM needs to adopt and implement a WWTW performance improvement plan that covers all the key elements other than infrastructural improvements. Performance management of the MMM's WWTWs should be a</p>
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Sub-directorate	Division	Reasonable Measures
		<p>standing item in the IDP, as well as the SDBIP and the PMS. This non-infrastructure performance improvement plan should cover at least:</p> <ul style="list-style-type: none"> • Environmental condition indicators (micro-biological and chemical); • Operational indicators and • Compliance indicators; as well as • Staffing and skills indicators.
	Sewage: Engineering Services/Planning & Design (C.3.2)	<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate Engineering Services/Planning & Design has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • The adoption and implementation of NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, and the sustained management of all records that relate to environmental authorisations. <p>The sub-directorate should also ensure that projects managed by it do not violate the integrity of valued environmental resources, while any buildings and infrastructure must conform to green building requirements.</p> <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the Sub-directorate to ensure a comprehensive and sustained adherence to applicable environmental law.</p> <p>Recommendation: The Sub-directorate Engineering Services/Planning & Design needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained in using the procedure effectively.</p>
Sanitation	Engineering Services/project Management (C.3.2)	<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate Engineering Services/project Management has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p>

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • The adoption and implementation of NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, and the sustained management of all records that relate to environmental authorisations. <p>The sub-directorate should also ensure that projects managed by it do not violate the integrity of valued environmental resources, while any buildings and infrastructure must conform to green building requirements.</p> <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the Sub-directorate to ensure a comprehensive and sustained adherence to applicable environmental law.</p> <p>Recommendation: The Sub-directorate Engineering Services/project Management needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained in using the procedure effectively.</p>
Sanitation	Sewer Reticulation (C.3)	<p>Reasonable expectation: The reasonable expectation is that the Sub-directorate Sewer Reticulation has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • The adoption and implementation of NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations and the sustained management of all records that relate to environmental authorisations. <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the Sub-directorate to ensure sustained adherence to applicable environmental law.</p> <p>Recommendation: The Sub-directorate Sewer Reticulation needs to adopt and implement a</p>

Sub-directorate	Division	Reasonable Measures
		procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained in using the procedure effectively.
	Vacuum Services (C.3)	<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate Vacuum Services Water has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • The adoption and implementation of NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, and the sustained management of all records that relate to environmental authorisations. <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the Sub-directorate to ensure a comprehensive and sustained adherence to applicable environmental law.</p> <p>Recommendation: The Sub-directorate Vacuum Services needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained in using the procedure effectively.</p>

3.5.7 Reasonable environmental measures for the Directorate Planning

Reasonable measures to give effect to the general duty of care are listed in Table 37. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- enhancing environmental quality;
- giving effect to the NEMA S 2 Principles;
- ensuring good environmental governing; as well as
- ensuring compliance with applicable legal requirements.

Table 37. Reasonable environmental measures for the Directorate Planning

Sub-directorate	Division	Reasonable Measures
Town and Regional Planning	Spatial Development Framework (D.1)	<p>Reasonable expectations: The reasonable expectation is that the MMM's SDF is aligned with the EMF, the MOSS, Critical Biodiversity Plans, NEM:PAA protected areas and expansion priority areas, important</p>

Sub-directorate	Division	Reasonable Measures
		<p>bird areas and threatened ecosystems in order to give protection through spatial planning to important and valued environmental attributes.</p> <p>These sensitive environmental resources then need to be provided for in other policy instruments that offer some degree of protection such as:</p> <ul style="list-style-type: none"> • The IDP; • Title deed endorsements; • Land use zoning; and • The provisions of the NEMA Listing Notice 3. <p>Status quo: The MMM IDP of 2016/17 includes references to some links between the IDP and the SDF. The key environmental implications are:</p> <ul style="list-style-type: none"> • The SDF provisions achieve some degree of protection once they are stated in the IDP (until the IDP or SDF is modified); • The purpose of the SDF is not to infringe upon existing land rights but to guide future land uses. • No proposals in the SDF create any land use right, or exempt anyone from his or her obligation in terms of any other act controlling land use. • The Naledi and Soutpan SDFs will remain in force until the MMM promulgates an expanded SDF. • The SDF must give direction to the future development of land by indicating where development should not occur for sustainability and environmental access reasons. <p>From an environmental perspective the 2016/17 IDP fails to achieve an alignment between itself and the SDF, as the key environmental imperatives, functions and contributions of the SDF are neither recognised nor provided for. Where an attempt is made to establish the conceptual environmental links between the IDP and the SDF, some of the statements are clear, while the SDF provision is often more utilitarian than protectionist or conservationist, and other key linkages are not identified at all.</p> <p>See the following examples:</p> <ul style="list-style-type: none"> • The SDF improves <i>the existing environmental opportunities through consolidation & maintenance to maximising their benefits</i> (page 157). It is not clear what is meant by 'environmental opportunities'. • In Table 5.5.1 the links between the IDP and SDF are unpacked The IDP concept is labelled as '<i>Clean</i>

		<p><i>environment,</i>' which does not address the protection and sustainable use of natural open spaces;</p> <ul style="list-style-type: none"> • It is also stated in Table 5.5.1 that the SDF concept of a balanced city structure will '<i>consolidate the use of the environment for greater benefit</i>'. This stated linkage between the SDF and the IDP negates the key role of MMM, namely to protect key environmental assets, as the 'environment' is given a purely utilitarian value. • It is not clear how the linkage between the SDF concept of intensification, densification, and infill will result in maximising efficiency and safety, or benefitting the environment and open spaces (Table 5.5.1). Intensification, densification, and infill in reality threaten protected areas and open spaces. <p>Table 5.5 5 in the IDP continues to link the Clean Environmental Programme with SDF concepts. Examples of these identified linkages include:</p> <ul style="list-style-type: none"> • <i>By consolidating the use of the environment for greater benefit through the developing a greening plan for Bloemfontein.</i> It is not clear what is meant by a 'Greening Plan', while this utilitarian perspective flies in the face of the protectionist and conservationist role that the SDF must also fulfil. • <i>By improving, protecting, upgrading and maintaining valued environmental features (in the CBD) including providing adequate public sanitation facilities where people congregate.</i> It is not clear what these valued environmental features are and why this is limited to the CBD area only. • <i>By reducing levels of water pollution through sewage contamination, investigating and implementing a MOSS linkage plan, releasing for development open spaces not being utilized optimally, implementing the Quaggafontein Open Space Master Plan, developing, and implementing the Naval Hill Master Plan.</i> These IDP concepts have no bearing on the SDF concept of densification etc. The view that open spaces must be used is unacceptable, as some open spaces should not be used by people, as they render essential ecosystem services.
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		<ul style="list-style-type: none"> • <i>To develop a regional park between Thaba Nchu and Botshabelo and develop environmental friendly industrial development programmes.</i> • <i>By improving the existing environmental opportunities through consolidation and maintenance to maximize their benefits including investigating the central open space in Botshabelo for more amenable use.</i> It is not clear what is meant by improving environmental opportunities. • <i>By improving the existing environmental opportunities through consolidation and maintenance to maximize, their benefits including investigating the opportunities related to the conservation areas in and around Thaba Nchu.</i> It is not clear what is meant by improving environmental opportunities to maximise benefits as well as opportunities in conservation areas. The wording leans towards a developmental and utilitarian focus, rather than a protectionist and conservationist focus. • <i>By improved access to effective decision-making through developing an Integrated Environmental Management Policy and Integrated Environmental Management Plan (IMP), developing an Integrated Waste Management Plan, finalizing an Urban Open Space Policy and Plan, developing a Strategic Environmental Management Plan, and reviewing existing environmental by-laws.</i> This call for additional environmental management and governing instruments is supported. • The SDF map of 2015 does make provision for the following environmentally related functions: • The 2015 MOSS (despite the fact that the 2015 MOSS had not yet been published) • Green Buffers; and • Nature Reserves. • The sustained status of these open spaces is at risk, as they have not been specifically included in the 2015/17 IDP. • It is evident from the analysis that the SDF contains high-level and in most cases non-
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Sub-directorate	Division	Reasonable Measures
		<p>cadastral indications of areas earmarked for some environmental purposes.</p> <ul style="list-style-type: none"> The MMM SDF is unashamedly developmentally orientated, however, while it largely negates its environmental conservation and protectionist function. In addition, it does not provide for all the environmental services that are delivered to the Metro. Neither does the SDF indicate which areas will not be developed in future due to environmental and sustainability requirements. <p>Recommendation: The current SDF needs to be aligned with the valued elements of the EMF and other sources of environmental information. These valued environmental elements then need to be specified in terms of the SDF, while environmentally valued spatial elements need to be protected by means of the MMM's spatial planning and land use zoning scheme.</p>
	Development applications	<p>Reasonable expectations: All attempts made by the CEM to secure a meeting with senior staff from this Sub-directorate failed. The author is not in a position to determine the interface of this Sub-directorate with the NEMA principles and requirements.</p> <p>Status quo: Not determined.</p> <p>Recommendation: None defined.</p>
	Urban Design (D.1)	<p>Reasonable expectations: All attempts made by the CEM to secure a meeting with senior staff from this Sub-directorate failed. The author is not in a position to determine the interface of this Sub-directorate with the NEMA principles and requirements.</p> <p>Status quo: Not determined.</p> <p>Recommendation: None defined.</p>
	Transport Planning (D.1)	<p>Reasonable expectations: One expectation is that municipalities need to make their urban transportation modalities more sustainable by combining modes of transport that perform better than others in terms of fuel type, fuel efficiency, emission, and climate change impacts. Another expectation is that all the projects emanating from the integrated transport plan need to comply with the requirements of NEMA and other applicable environmental law.</p> <p>Status quo: Transport planning is identified in the 2016/2017 IDP as one of eight key development objectives of the MMM. Commitments are made in the 2016/2-17 IDP to implement the ITP in general, while</p>

Sub-directorate	Division	Reasonable Measures
		<p>key strategies with KPIs to achieve the transport objectives have also been defined.</p> <p>The MMM is implementing an intermodal transport system for the metropolitan municipality as provided for in the framework document for the Integrated Public Transport Network (IPTN) and the Integrated Transport Plan (ITP). The IPTN makes provision for an environmental 'work stream' for the project. This work stream must ensure that all the environmental requirements associated with the IPTN system are accounted for as the project progresses. The work stream must also ensure an alignment of the IPTN proposals and projects with other policies and requirements of the MMM. The 2014 version of the IPTN (the First Order Operational Plan) provides some environmental performance standards for buses that include specifications for fuel efficiency, as well as recommended noise and emission levels</p> <p>However, the IPTN does not state explicitly that another objective of the IPTN should be to ensure compliance of the IPTN with applicable environmental law requirements. Another objective of the 'environmental stream' of the IPTN should be to account for the improved environmental efficiencies achieved with the intermodal IPTN as far as climate change impacts, atmospheric emissions and fuel consumption efficiencies are concerned.</p> <p>Recommendations: Make arrangements to ensure that all the phases of projects that are associated with the IPTN comply with environmental legislation and that the environmental benefits generated by the IPTN are determined and quantified.</p>
	Transport Engineering (D.1)	<p>Reasonable expectations: Some of the ways in which sound transport planning optimises traffic flow are by: a) designing the road network to ensure that traffic flows optimally, b) maintain road conditions, c) managing any other obstacles, or bottlenecks, that could impede traffic flow and d) optimising traffic light settings.</p> <p>Improved traffic flow by means of optimised service levels of the road network reduces travel time, improves fuel use efficiencies, and reduces atmospheric emissions relative to the actual use of the network and the formation of smog, while it also mitigates climate change impacts caused by traffic. (Note: This benefit</p>

Sub-directorate	Division	Reasonable Measures
		<p>can be leveraged by making the city more compact, as provided for in the MMM's SDF and IDP.)</p> <p>Status quo: The MMM manages the urban road network in line with the guidelines of the Department of Transport, and programmes are in place to optimise traffic flow.</p> <p>No initiatives are in place, however, to calculate and profile the environmental benefits (fuel efficiencies, emissions, and climate change impacts) that are being achieved by improved traffic flows. The Division has the requisite skills and software to model the reduced environmental impacts that can be achieved by means of improved traffic flows.</p> <p>Recommendation: The Division can adopt and implement a programme to profile the key environmental impacts caused by the traffic flow patterns of the MMM. The MMM is then in a position to quantify the reductions in the environmental impacts that are caused by traffic. The performance levels of the Division should therefore not be measured only in terms of improved service levels of the road network, but also in terms of the reduction of environmental impacts as a result of the provision of more efficient service levels.</p>
Land Use Control	Outdoor Advertising (D.2)	<p>Reasonable expectations: Local government manages the control of outdoor advertising. The reasonable expectation is that municipalities put arrangements in place to control the proliferation of outdoor advertisements to protect the aesthetic integrity and sense of place of historical and architectural precincts, as well as to ensure road safety.</p> <p>Status quo: The MMM has exemplary arrangements in place to control the proliferation of outdoor advertisements. The outdoor advertisement control arrangements hinge on the MMM Outdoor Advertising Framework dated 2012 and the MMM Outdoor Advertising By-laws of 2008. The arrangements include a controlled application process and an assessment process to support applications for super billboards (those in excess of 6 m²). The MMM control arrangements include a rigorous enforcement strategy.</p> <p>Recommendation: No additional recommendations are made for the MMM.</p>
	Building and zoning control (D.2)	<p>Reasonable expectations: The expectation is that this division ensures: a) compliance with the requirements of the National Building Regulations as well as any applicable by-laws that the MMM may have that relate to buildings and structures and b) ensuring that the</p>

Sub-directorate	Division	Reasonable Measures
		<p>rights and restrictions allocated to cadastral land units in terms of the MMM's land use scheme are enforced.</p> <p>Status quo: This Division reported that it does indeed enforce the suite of energy saving requirements of the National Building Regulations as defined in SANS 10400 XA (Energy efficiency in buildings) and SANS 252 (Water supply in buildings). The MMM has not promulgated any other by-laws to ensure that new buildings and additions to or modifications of buildings do conform to greener building requirements. The MMM furthermore does not quantify the environmental benefits that are leveraged by means of the application of these regulations. The MMM land use scheme also does not make any provisions for the protection of valued environmental resource areas.</p> <p>Recommendation: The MMM should generate by-laws to implement the sustainability requirements of the National Building Regulations. These by-laws should introduce other environmental design principles that increase the environmental performance of buildings. The MMM should also determine the environmental benefits that are achieved by the adoption and use of these greener building requirements when compared to the base case of zero adherence to these requirements for buildings. The current land-use scheme of the MMM needs to be revised to provide for the maintenance of the spatial integrity of valued natural resource areas.</p>
	Enforcement (D.2)	<p>Reasonable expectations: See the sections dealing with the enforcement effort of the MMM.</p> <p>Status quo: See the sections dealing with the enforcement effort of the MMM.</p> <p>Recommendation: See the sections dealing with the enforcement effort of the MMM.</p>
	Architectural Services (D.3)	<p>Reasonable expectations: The reasonable expectation is that the Architectural Services Division ensures that the following environmental initiatives are adhered to when the properties of the MMM are being developed, renovated, modified or constructed:</p> <ul style="list-style-type: none"> • Ensuring that these properties conform to the energy efficiency requirements of SANS 10400 XA and other green building criteria; • Determining the environmental benefits achieved, such as climate change mitigation etc. and • Ensuring that all such work conforms with applicable environmental law.

Sub-directorate	Division	Reasonable Measures
		<p>Status quo: This division is not responsible for the development, modification or renovation of all the properties of the MMM. Other entities of the MMM are responsible for similar work. The staff members of this division are incorporating green building principles into the projects that they are responsible for. An environmental management plan (EMP) is being used to guide the work undertaken at the Naval Hill precinct</p> <p>Recommendation: The environmental policy of the MMM should provide for the incorporation of sound green building requirements into the management, maintenance, modification, development and re-development of all its buildings, facilities and properties.</p>
Environmental Management	Strategic Planning (D.5)	<p>Reasonable expectations: The expectation is that the Environmental Management Sub-directorate discharges, guides, or enables the effective discharge of environmental management, governing and governance on behalf of the MMM. Effective environmental management should cover at least all the key elements associated with the MMM as a(n):</p> <ul style="list-style-type: none"> • Environmentally regulated entity; • Environmental regulatory entity; and • Manager of environmental resources and assets. <p>The nature and extent of environmental management at the metropolitan level should also cover:</p> <ul style="list-style-type: none"> • Discovering what needs to be done; • Action planning to ensure that it gets done; • Environmental enforcement; • Checking that it has been done; • Improving the environmental management effort of MMM; and • The reporting on environmental management performance. <p>It is important that environmental management, governing and governance are discharged using typical local government instruments such as, but not limited to:</p> <ul style="list-style-type: none"> • Risk assessment; • IDP planning; • SDBIP planning; • Performance reporting and management; and • Relevant spatial tools. <p>Status quo: The Sub-directorate is divided into three divisions: Environmental Strategic Planning, the Environmental Implementation Plan; and the</p>
	EIMP (D.5)	
	EIA (D.5)	

Sub-directorate	Division	Reasonable Measures
		<p>Environmental Assessment Division. The current environmental management instrumentation at its disposal dates back to 2003 and 2006. These instruments include:</p> <ul style="list-style-type: none"> • The MOSS (2004) to be upgraded in 2016; • The urban open space policy (2004); • The IEP (2004) to be upgraded in 2016 as the EI&MP, • The Environmental policy (2004) to be upgraded in 2016; • The EMF (2006) to be upgraded in 2016; • SoER (2003) to be upgraded in 2016, while • A climate change mitigation and adaptation strategy has also been commissioned to be delivered in 2016. <p>The Sub-directorate has over the years lost some functions such as outdoor advertising and air quality management to other structures of the MMM. Environmental management, governing, and governance portfolios are fragmented amongst a plethora of sub-directorates and divisions, while many others make decisions that are subject to the S 2 NEMA principles and other environmentally regulatory requirements. Environmental management and governance can properly be managed only by means of a matrix management arrangement within a reformed institutional structure.</p> <p>Recommendation: The MMM should restructure the institutional arrangements of the metropolitan municipality to discharge effective environmental management, governing and governance. Once the MMM had been restructured the Directorate Environmental Management should be restructured to ensure affective environmental management, governance and governing in terms of its mandates and powers. A comprehensive and integrated environmental policy should support and operationalise this 2016 EI&MP.</p>
Fresh Produce Market (D.6)		<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate Fresh Produce Market has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made;

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> • NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations as well as the sustained management of all records that relate to environmental authorisations. <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the Sub-directorate to ensure sustained adherence to applicable environmental law.</p> <p>Typical issues that could be addressed include:</p> <ul style="list-style-type: none"> • Composting opportunities for organic waste; • Waste management; • Managements of ODSs (ozone depleting substances); • Confirmation of the potential MHI (Major Hazard Installation) status of the ammonia plant; and • Confirmation of the status of the PCO (Pest Control Officer). <p>Recommendation: The Sub-directorate Fresh Produce Market needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained to use the procedure effectively.</p>

3.5.8 Reasonable environmental measures for the Directorate Human Settlements

- Reasonable measures to give effect to the general duty of care are listed in

Table 38. The reasonable measures listed have the purpose of:

- Preventing the degradation or pollution of the environment;
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; and
- Ensuring compliance with the applicable legal requirements.

Table 38. Reasonable environmental measures for the Directorate Human Settlements

Sub-directorate	Division	Reasonable Measures
All sub-directorates and divisions are reviewed at the directorate level (E).		<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate Human Settlements has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p>

		<ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, and the sustained management of all records that relate to environmental authorisations. <p>The sub-directorate should also ensure that projects managed by it do not violate the integrity of valued environmental resources, while any buildings and infrastructure must conform to green building requirements.</p> <p>Status quo: The function of providing housing is shared between the MMM and the Province of the Free State. The MMM is a Level 2 accredited and assigned entity to administer elements of the national human settlements programmes. Level 2 accreditation, the highest level, entails that the accredited metropolitan municipality must demonstrate the capacity to manage EIA processes that are associated with housing projects. Level 2 accreditation also means that the Municipal Human Settlements Plan (MHSP) must be aligned with the municipality's IDP sector plans, including the environmental management plan. The human settlements programmes are then managed in terms of the Built Environment Performance Plan (BEPP). The BEPP is a strategic plan that aims to improve the performance of metropolitan built environs over the long term. The BEPP also includes environmentally related projects that interface with human settlements such as:</p> <ul style="list-style-type: none"> • The closure of the Thaba Nchu landfill site; • The two DTEA funded waste management projects; • The establishment of five waste drop-off or recycling facilities in the MMM; and • The construction of a waste transfer station in Thaba Nchu. <p>The BEPP continues to reference the 2004 version of the EIMP as an IDP sector plan that it needs to align with and state that it is being revised, while it also lists the key environmental challenges of the MMM as recorded in the 2004 EIMP.</p> <p>It is granted that an attempt has been made to align the BEPP with the 2004 EIMP, but at the time of reviewing the EI&MP no evidence was found that any arrangements are in place in the directorate to ensure sustained adherence to applicable environmental law.</p>
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Sub-directorate	Division	Reasonable Measures
		<p>Recommendation: The Directorate Human Settlements needs to adopt and implement a procedure to ensure that all staff adhere to the requirements of all applicable environmental law. All staff members then need to be trained to use the procedure effectively.</p> <p>Typical issues that need to be managed by the Sub-directorate are:</p> <ul style="list-style-type: none"> • Identifying the need for EIAs; • Managing the EIA system and keeping sound records; • Adherence to EIA permit conditions; • Managing building waste; • Ensuring that all environmental services are rendered to the community; • Ensuring that houses and structures conform to the relevant energy efficiency and other green building standards; • Not developing any housing in environmentally sensitive areas; • Considering water efficiency equipment in the dwellings. <p>The MMM also needs to revise its BEPP and MHSP with the revised MOSS, EI&MP, EMF, and the SoER.</p>

3.5.9 Reasonable environmental measures for the Directorate Social Services

Reasonable measures to give effect to the general duty of care are listed in Table 39. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; as well as
- Ensuring compliance with applicable legal requirements.

Table 39. Reasonable environmental measures for the Directorate Social Services

Sub-directorate	Division	Reasonable Measures
Social Development	Municipal Health Services: Micro-Laboratory Services – Water (F.1.4)	<p>Reasonable expectation: The reasonable expectation is that the micro-biological laboratory renders the following services to the MMM:</p> <ul style="list-style-type: none"> • Microbiological water quality sampling in line with the Water Sampling Plan and the Water Safety Plan, • Quality assured testing of samples and • Reporting of the water quality performance of the MMM against key legal and other parameters defined for both sewage effluent and drinking water.

Sub-directorate	Division	Reasonable Measures
		<p>Status quo: Please note that this report needs to be read in conjunction with the report on the chemical laboratory that resorts under the Directorate Engineering, as well as the report for the Sub-directorate Water and Sanitation.</p> <p>Evidence was found that the microbiological laboratory of the MMM does indeed render a respected sampling, testing and reporting service to the council. The laboratory monitors water quality in terms of a water monitoring plan that was revised in 2014, and against relevant water quality indicators. The sampling points cover the entire MMM area. Water quality incidents are managed in terms of an Incident Management Plan, while the laboratory and the Environmental Health Services Unit manage the quality of drinking water in terms of the Water Quality and Safety Programme (WSP). A revised suite of WSPs at the supply system level had been commissioned and is expected to be finalised in 2016. The Water Quality Action Group ensures the aligned communication of any water quality issues.</p> <p>Laboratory records indicate, however, that all effluent streams from WWTWs exceed key microbiological indicators. This sustained non-compliance should improve when the WWTW upgrade programme is completed. A number of instances were also found indicating that the MMM's drinking water does not always meet microbiological standards. The challenge associated with achieving blue drop status is exacerbated by the fact that drinking water is supplied by two entities. The MMM is the Water Services Authority (WSA), while it also renders water services i.e. it acts as a WSP and the services of Bloem Water are contracted in as an external Water Services Provider (WSP). The most recent publically available information about drinking water performance by the MMM was published in 2012. Some progress made with the improvement of drinking water quality was noted.</p> <p>The following improvements were also called for in the 2012 Blue Drop Report:</p> <ul style="list-style-type: none"> • The need for an integrated, multi-stakeholder and metropolitan-wide strategy to improve and sustain the quality of potable water; • A more coherent approach to managing water quality incidents;

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> • The improved availability of resources; • The absence of a chemical compliance programme in Mangaung West, Botshabelo and Thaba Nchu is a concern; • The need for improved collaboration between the MMM and Bloem Water; • Improve water quality at points of use; • Improve the granulation of water quality management to a system level in order to allow for water quality management at the water supply system level. <p>The following key challenges relate to the supply of potable water that meets drinking water standards:</p> <ul style="list-style-type: none"> • The 2015/16 IDP has no KPIs for any water quality performance indicators per se. The IDP and SDBIP only track performance that relates to the number of water quality tests undertaken by the laboratory; • No evidence was found of any cumulative trending and reporting of water quality management performance by the MMM; • No evidence was found of responsible information and record management where water quality data is trended to inform management; and • An integrated incident management system needs to be established should drinking water be found not to conform to drinking water standards. <p>Recommendation: The management of water quality performance from both the WWTWs and of drinking water that is based on key chemical and microbiological parameters needs to be formalised in the IDP, the SDBIP, and the PMS. The water quality data generated by the laboratory should be communicated as interpreted and trended management information, while longer-term records of water quality performance should be maintained to inform management decisions and to demonstrate sustained conformity to requirements. Internal audit should also verify both the performance of water quality management in terms of drinking water standards by the MMM and the responsible management of data and information. The sound management of the water quality monitoring system, as well as of data and information, should be integrated to include all the role players as well as all the processes that are relevant to the supply of potable water that conforms to the chemical and microbiological standards applicable.</p>

Sub-directorate	Division	Reasonable Measures
	Municipal Health Services: Environmental Quality Management – Pollution Control (F.1.4)	<p>Reasonable expectation: The reasonable expectation is that the division delivers the following functions in the MMM area of jurisdiction:</p> <ul style="list-style-type: none"> • Manages air quality; • Co-manages drinking water quality; • Renders pest control services that are lawful; • Addresses pollution-related complaints such as illegal dumping and sewage blockages; • Effectively prevents pollution; • Manages noise levels; and • Enforces environmental compliance. <p>Status quo: The Municipal Health Services Division co-manages the environmental management portfolio with the Directorate Environmental Management and is responsible for the following:</p> <ul style="list-style-type: none"> • Air quality management; • Management of noise; • Pollution prevention; • Pest control services; • The management of chemicals and substances; • Drinking water quality and • Enforcement of environmental compliance. <p>The 2015/16 IDP mentions that it is 'keen to mitigate the negative impact of climate change by monitoring the air quality' without defining any air quality strategies. No commitments related to air quality management are made in the 2015/16 SDBIP. The MMM has since July 2010 not done any air quality monitoring, but evidence was found that the air quality monitoring equipment had been repaired and re-calibrated. The MMM has a draft air quality management plan (AQMP) that was drafted when the MMM was still a local municipality.</p> <p>Good progress was made with issuing air quality licences (AELs) in terms of the delegated authority under NEM:AQA. The MMM also has a designated Air Quality Officer (AQO), while some air quality enforcement actions are recorded. By-laws to regulate air quality are provided for in terms of the Environmental Services By-law of 2013. This sub-directorate also employs the only Environmental Management Inspector (EMI) of the MMM.</p> <p>The 2015/16 IDP refers to the newly determined noise contours for the airport with land use mitigation strategies. No other commitments are made in the IDP regarding the management of noise.</p>

Sub-directorate	Division	Reasonable Measures
		<p>The management of potable water has been addressed under the Sub-directorate Water and the issues requiring attention are not repeated here.</p> <p>Recommendation: See the Sub-directorate Water for recommendations related to the management of drinking water quality.</p> <p>The MMM needs to commence with air quality monitoring, while it also needs to commission the generation of a revised Air Quality Management Plan for the MMM.</p> <p>See the Directorate: Environmental Management for recommendations relating to the restructuring of the environmental management, governing and governance function of the MMM.</p>
	Municipal Health Services: Environmental Quality Management – Compliance (F.1.4)	<p>Reasonable expectation: The reasonable expectation is that the MMM enforces by means of its by-laws the plethora of environmentally related mandates and authorities that it has as an environmental regulator. See the analysis made for the Sub-directorate: Public Safety for comment.</p> <p>Status quo: The only qualified Environmental Management Inspector (EMI) at the MMM works for this sub-Section. See the analysis made for the Sub-directorate Public Safety regarding the need for an integrated and co-ordinated approach to environmental enforcement.</p> <p>Recommendation: See the recommendations made for the Sub-directorate Public Safety regarding the need for an integrated and co-ordinated approach to environmental enforcement.</p>
Emergency Management Services	Fire and Rescue (F.2.1)	<p>Reasonable expectation: As the first responder to any incident, the reasonable expectation is that that the sub-directorate also identifies, assesses, and responds to any environmental affects that are or that may be caused by any such incident.</p> <p>Status quo: The Sub-directorate Emergency Management Services does not have access to an environment-related integrated and holistic emergency response plan. Such a plan should clearly define the preferred response procedures, as well as the responsibilities and authorities of all the role players that are tasked with the environmental implications of emergency incidents. The plan should also cover the entire life-cycle of environmental response planning, ranging from an initial assessment to immediate</p>

Sub-directorate	Division	Reasonable Measures
		<p>mitigations, clean-up, waste disposal and final rehabilitation of the contaminated site.</p> <p>Recommendation: Review and revise the existing emergency response plans and procedures of the MMM and ensure that all the relevant environmental management measures that can be associated with any such event are indeed provided for in the plans and procedures. Ensure that all emergency response staff members are trained to respond appropriately. The MMM must also ensure that the teams are equipped with the requisite equipment to mitigate and or prevent environmental impacts.</p>
Disaster Management (F.3)		<p>Reasonable expectation: The reasonable expectation is that the Sub Disaster Management, that acts as the co-ordinating body planning - directorate the reaction to any disaster event, will make arrangements in its plans to manage the environmental impacts that are associated with the life-cycle of disasters, while it also makes provision for any environment-related disasters.</p> <p>Status quo: The Sub-directorate has generated a Disaster Management Plan. As far as the environmental interface of the plan is concerned, it references the NEMA (107 of 1998) and states that the plan must mitigate environmental disasters. This statement is not entirely correct as the NEMA makes provision for the reporting of disasters (The NWA, 36 of 1998, has similar requirements) that affect or can affect the environment, while the S 2 NEMA principles and the S 28 NEMA General Duty of Care also apply to all matters related to disaster management. The purpose thereof is to prevent or mitigate the environmental impacts that are or can be caused by any disasters. The Disaster Management Plan continues with the following environmental interfaces:</p> <ul style="list-style-type: none"> • The plan recognises that a disaster can cause environmental damage; • The plan calls for <i>...environmental management strategies to prevent and mitigate environmental disasters...</i> • The plan calls for an alignment between the Disaster Management Plan and the EMF; • The disaster risk identification and assessment covers a range of environment-related hazards; • The disaster management plan states that the MMM Municipal Health Directorate must have action plans

Sub-directorate	Division	Reasonable Measures
		<p>in place to mitigate the environmental impacts associated with:</p> <ul style="list-style-type: none"> ○ Soil pollution; ○ Human exposure to toxic substances; and ○ Atmospheric pollution. <p>Recommendation: An audit of the Disaster Management Plan and the Contingency Plans needs to be undertaken to provide the assurance that the MMM Disaster Management Plan and all other related contingency plans that are in place do address all the requirements of applicable environmental law. The audit also needs to ensure that:</p> <ul style="list-style-type: none"> • All the roles, responsibilities and authorities have been correctly identified and allocated; • All the environmental hazards that can affect the MMM have been identified; • All the appropriate actions to prevent or mitigate associated environmental impacts have been foreseen; • All the equipment required to implement the environmental contingency plans is available; • The training and competence requirements of relevant staff are in hand; • The communication and reporting requirements should a disaster occur have been catered for; • The contact details of all parties relevant to the environment are known; • Sound waste management strategies should a disaster occur are in place; • The revision of the Disaster Management Plan to provide for climate change mitigation and adaptation strategies in line with the Climate Change Action Plan is in hand.
Public Safety	Law Enforcement (F4.5)	<p>Reasonable expectation: The reasonable expectations are that the MMM discharges its duty as an environmental regulator. The regulatory duties of South African metropolitan municipalities are divided into two principal classes: a) the legislative powers, enabling local government to promulgate by-laws and b) the executive powers, mandating local government to enforce the by-laws. Enforcement of by-laws is typically discharged by the following role players:</p> <ul style="list-style-type: none"> • Case officers, who generate the documents required to lay charges. The case officers can be metropolitan

Sub-directorate	Division	Reasonable Measures
		<p>police officers or duly appointed Environmental Management Inspectors (EMIs);</p> <ul style="list-style-type: none"> • Subject matter experts, who need to support any case with technically correct information; • Municipal courts with staff to administer the legal proceedings. Otherwise local government needs to use magistrates' courts ; and • Legal support services, to render litigation support. <p>Status quo: A number of units or entities of the MMM on the 2014 version of the MMM Organisational Structure are tasked with compliance management. These enforcement-based entities include:</p> <ul style="list-style-type: none"> • The Law Enforcement Division of the Sub-directorate Public Safety – this Division recently prosecuted a person for the unlawful disposal of waste, while it also enforces traffic by-laws; • The Compliance Sub-section of the Municipal Health Services Division. This Sub-section has successfully enforced the MMM's noise by-laws, while it also ordered the closure of a thermal waste treatment facility in Mangaung that failed to comply with air quality standards; • The Enforcement Division of the Sub-directorate Land Use Control, which enforces adherence to land use and building requirements; while • The Sub-directorate Solid Waste Management also has a function to enforce the solid waste by-laws. <p>Compliance and enforcement management by the MMM is fragmented along line functions, while some of these role players do not possess all the skills required to ensure successful enforcement. The MMM has appointed one qualified environmental management inspector (EMI).</p> <p>The MMM has not yet established a municipal court to enforce its by-laws, and neither the 2015/16 IDP nor the SDBIP makes provision for the establishment of such a court or a metropolitan police service.</p> <p>The MMM has, however, commenced with the process of revising the existing by-laws, while new ones have been and are being generated (See the section for Legal Services/By-Laws).</p> <p>Recommendation: It is imperative that the MMM generates a by-law enforcement policy that provides for the following:</p> <ul style="list-style-type: none"> • The identification of the lead agent responsible for driving the compliance enforcement effort of MMM;

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> • The clarification of roles, responsibilities and authorities for the various functions of delivering enforcement services; • The establishment of a metropolitan police force and municipal court to give effect to its enforcement function; • The expansion of the number of qualified EMIs available to the MMM to ensure effective enforcement of environmentally related by-laws and other environmental mandates and powers; and • The systematic review of the existing portfolio of environmentally related by-laws to determine whether the MMM does indeed: <ul style="list-style-type: none"> ○ Have all the by-laws that they are mandated to have and those that it needs to have; ○ Have its portfolio of environmental by-laws aligned with the requirements of the NEMA as well as related sectoral environmental acts (SEMA's); and ○ Add the NEMA S 2 Principles and other requirements of environmental law to all the by-laws of the MMM.
Parks and Cemeteries	Horticultural Services (F.5.1)	<p>Reasonable expectations: The reasonable expectation is that the Division Horticultural Services has internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p> <ul style="list-style-type: none"> • S 2 NEMA principles when decisions are being made; • NEMA S 28 Reasonable Measures; • Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, and the sustained management of all records that relate to environmental authorisations. <p>The Division is furthermore expected to:</p> <ul style="list-style-type: none"> • Compost organic waste, rather than landfilling it; • Ensure that an authorised pest control officer (PCO) is taking charge of herbicide and pesticide applications; • Actively manage alien invader species and generate a plan to manage alien and invader species; • Maintain the parks and open spaces of the city; and

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> Take steps to protect key open spaces from development encroachment by entrenching the MOSS, EMF and SDF provisions for open spaces (see the section on spatial instruments). <p>Status quo: At the time of reviewing the EI&MP, no evidence was found that any arrangements are in place in the Division to ensure sustained adherence to applicable environmental law. The Division:</p> <ul style="list-style-type: none"> Does not compost all its organic waste; Does not determine the carbon sequestration services rendered by the MMM's trees; Does not have an alien and invasive management strategy, plan or policy. <p>The MMM does have a tree planting programme that favours indigenous plants and the 2015/16 IDP references the landscaping and planting of trees as part of the CBD renewal programme only. The current MOSS and SDF, however, do not provide for the protection of valued open spaces from development pressures.</p> <p>Recommendation: The Division Horticultural Services needs to:</p> <ul style="list-style-type: none"> Adopt and implement a procedure to ensure that all staff members adhere to the requirements of all applicable environmental law. All staff members need to be trained in using the procedure effectively; Generate, adopt and implement a strategy to enhance the composting of organic waste; Integrate the MMM's tree resource base with the new climate change mitigation strategy as far as carbon sequestration is concerned; Adopt innovative strategies to entrench the status of these open spaces, such as title deed restrictions, zoning restrictions, and to a lesser extent the NEMA Listing Notice 3; Generate, adopt, and implement a strategy/plan/policy to manage alien invasive species.
	Zoo and Kwaggafontein (F.5.2)	<p>Reasonable expectations: The reasonable expectation is that the Division Zoo and Kwaggafontein have internal processes in place to manage compliance with applicable environmental law, that range through the hierarchy of compliance requirements such as adherence to:</p> <ul style="list-style-type: none"> S 2 NEMA principles when decisions are being made;

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> NEMA S 28 Reasonable Measures; Obtaining environmental authorisations when such authorisations are triggered, sustained adherence to the conditions defined in authorisations, and the sustained management of all records that relate to environmental authorisations. <p>The Division is furthermore expected to:</p> <ul style="list-style-type: none"> Manage all waste in line with the principles and requirements of the NEM:WA; and Use registered pest control officers (PCOs) when herbicides and pesticides are applied. <p>Status quo The 2015/16 IDP and SDBIP provide for the relocation of the zoo to the Kwaggafontein facility, the development of Kwaggafontein as a modern zoo that conforms to all the requirements of a modern zoo, and the redevelopment of the current zoo site. The current operations at the zoo are licensed in terms of all the authorisations required to keep specific species, while the new facilities at Kwaggafontein are planned to conform to all the requirements for keeping animals. An EIA is also being done to authorise the NEMA-listed activities at Kwaggafontein. The zoo does not have a comprehensive and integrated waste management plan for all the waste streams generated at the zoo.</p> <p>Recommendation: The Division needs to adopt and implement a procedure to ensure that all staff members adhere to the requirements of all applicable environmental law. Generate a waste management plan for all the waste streams.</p>
	Natural Resource Management (F.5.3)	<p>Reasonable expectations: The author was not in a position to secure an interview with the relevant staff members of the MMM to source status quo information.</p> <p>Status quo: None.</p> <p>Recommendation: None.</p>
	Cemeteries (F.5.4)	<p>Reasonable expectation: The author was not in a position to secure an interview with the relevant staff members of the MMM to source status quo information.</p> <p>Status quo: None</p> <p>Recommendation: None.</p>

3.5.10 Reasonable environmental measures for the Directorate Corporate Services

Reasonable measures to give effect to the general duty of care are listed in Table 40. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- Enhancing environmental quality;

- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; as well as
- Ensuring compliance with applicable legal requirements.

Table 40. Reasonable environmental measures for the Directorate Corporate Services

Sub-directorate	Division	Recommendation: Reasonable Measures
Human Resource Development	Individual Performance Management (G.1)	<p>Reasonable expectations: The general expectation is that the Individual Performance Management Division needs to identify, adopt, allocate and manage a set of environmental performance indicators for the different levels and functions in the MMM to ensure that the MMM staff drives compliance with applicable environmental legislation. These environmental performance indicators need to be managed as an integral part of the MMM's performance management system (PMS). The suite of performance indicators should include:</p> <ul style="list-style-type: none"> • Environmental condition indicators; • Environmental law compliance indicators; and • Operational indicators that are key to assuring environmental performance. <p>Status quo: The authors were not successful in securing an appointment with the relevant staff of the MMM to confirm the <i>status quo</i>. It is feasible, however, to argue that the performance management of individuals depends on the nature and extent of performance indicators that have been formulated. The argument is made elsewhere in this report that the environmental indicators need to be improved.</p> <p>Recommendation: Align the individual PMS arrangements with the revised environmental indicators.</p>
	Operational Training Division – Law Enforcement Training (G.2)	<p>Reasonable expectations: See the expectations defined in section 2.3.8.</p> <p>Status quo: See the <i>status quo</i> defined in section 2.3.8.</p> <p>Recommendation: See the recommendations defined in section 2.3.8.</p>
	Skills Development (G.2)	<p>Reasonable expectations: See the expectations defined in section 2.3.8.</p> <p>Status quo: See the <i>status quo</i> defined in section 2.3.8.</p>

Sub-directorate	Division	Recommendation: Reasonable Measures
		Recommendation: See the recommendations defined in section 2.3.8.
Communication & Technology	Service Management and Infrastructural Support (G.3)	<p>Reasonable expectations: The reasonable expectation is that the Division makes arrangements with the Directorate Waste and Fleet Management to manage the e-waste it generates, lawfully and in line with the latter's waste management strategy.</p> <p>Status quo: The Division does not have a strategy to manage its e-waste.</p> <p>Recommendation: Generate an action plan to manage the e-waste generated by the Division in line with the requirements of the NEM:WA and the IWMP of the MMM.</p>
Corporate Secretariat	Council Support Services – Management Committees (G.4)	<p>Reasonable expectations: The general expectation is that MMM provides for a S 79 advisory committee on the Environment.</p> <p>Status quo: The MMM does not have a dedicated S 79 advisory committee on the Environment.</p> <p>Recommendation: Establish a S 79 advisory committee on the Environment.</p>
Legal Services	By-Laws (G.5)	<p>Reasonable expectations: The general expectation is that the Division discharges the legislative mandate (i.e. the right to make by-laws) as an environmental regulator. The expectation is that the MMM generates, adopts and enforces the environment-related by-laws that it is mandated to have, while it also revises other by-laws to cover the generic requirements of the NEMA and SEMAs.</p> <p>Status quo: This Division is charged with the duty of generating by-laws for the MMM. The 2015/16 IDP makes references to two by-laws that are required to be developed, one to manage the informal retail sector and one to drive and direct the development of the waterfront at Maselspoort. The MMM embarked upon a by-law revision programme and the following environmentally related by-laws were revised or published for the first time:</p> <ul style="list-style-type: none"> • Discharge of Industrial Effluent (2016); • Environmental Health Services by-laws (2013) • Outdoor advertising by –law (2015); • Urban open space by-laws (2007);

Sub-directorate	Division	Recommendation: Reasonable Measures
		<ul style="list-style-type: none"> • Municipal parks (2016); • Noise control (2016); • Waste management by-law (2013); and the • Water Services by-law (2013). <p>Recommendation: The MMM suite of environmentally related by-laws should be collectively and comprehensively reviewed to provide assurance that:</p> <ul style="list-style-type: none"> • All the environmental by-laws that the MMM are mandated to have, have indeed been generated; • All MMM by-laws are aligned with the NEMA and SEMA requirements and principles; and • All other by-laws are reviewed to ensure alignment with the requirements of the NEMA and SEMAs.
	Litigation	<p>Reasonable expectations: The general expectation is that this Division renders litigation support to the compliance enforcement entities of the MMM.</p> <p>Status quo: See the analysis made in the section for Social Services: Sub-directorate Enforcement.</p> <p>Recommendation: See the recommendations offered in the section for Social Services: Sub-directorate Enforcement.</p>
Corporate Services	Facilities Management: Swimming Pools	<p>Reasonable expectations: The reasonable expectation is that the Division manages the swimming pool water quality to meet the objectives of recreational water quality, while chlorine is managed in line with best safety practices for chlorine dosing facilities, including an emergency detection and response plan.</p> <p>Status quo: Not determined.</p> <p>Recommendation: None.</p>
	Building Maintenance	<p>Reasonable expectations: The general expectation is that this Division adopts a programme to 'green' the MMM's portfolio of buildings to make them more efficient. 'Greening' does not mean that the buildings need to be registered as green buildings. The key expectation is to make the buildings more energy efficient, while all hazardous materials such as asbestos should be removed. The carbon savings achieved by means of improved</p>

Sub-directorate	Division	Recommendation: Reasonable Measures
		<p>energy efficiencies should be calculated from the base case</p> <p>Status quo: <i>Status quo</i> could not be established.</p> <p>Recommendation: See the comments made in the Section on Architectural Services.</p>

3.5.11 Reasonable environmental measures for the Directorate Strategic Projects and Service Delivery

Reasonable measures to give effect to the general duty of care are listed in Table 41. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; and
- Ensuring compliance with applicable legal requirements.

Table 41. Reasonable environmental measures for the Directorate Strategic Projects and Service Delivery

Sub-directorate	Division	Reasonable Measure
Strategic Projects (H)	Strategic Projects Development (H.4)	<p>Reasonable expectations: The expectation is that the MMM project managers and appointed advisers and consultants shall apply their minds at a very early stage of the project cycle when projects are identified, designed and implemented to:</p> <ul style="list-style-type: none"> • Consider the NEMA S 2 principles when decisions are being made and to ensure that all such projects are aligned with the NEMA principles; • Ensure that all applicable environmental norms and standards are identified and adhered to; • Ensure that all relevant environmental authorisations that may apply to the project, the site and any infrastructural developments are identified and applied for in a timely manner; • Ensure that these projects are established, constructed and operated in terms of the general duty of care, applicable norms and standards, and conditions defined in terms of environmental authorisations; • Ensure that staff, contractors and agents are competent to identify and discharge all the applicable environmental duties; • Ensure the verification of compliance to applicable environmental requirements; and
	Strategic Project Compliance (H.4)	
	Project Implementation (H.4)	

Sub-directorate	Division	Reasonable Measure
		<ul style="list-style-type: none"> Ensure that sound environmental management records are being kept to demonstrate compliance with applicable environmental legal requirements. <p>The sub-directorate should also ensure that projects managed by it do not violate the integrity of valued environmental resources, while any buildings and infrastructure must conform to green building requirements.</p> <p>The events managed by this sub-directorate should also be 'greened' in line with green event guidelines and requirements.</p> <p>Status quo: This division manages a range of large projects and events. The contractors take care of all the associated environmental requirements and assessments. The events managed by the sub-directorate are not greened.</p> <p>Recommendation: Generate an environmental policy that specifies how projects and events should be managed to ensure compliance with applicable law and to reduce their associated environmental impacts.</p>
	EPWP (H)	See the comments recorded in the section: Sub-directorate Shareholder Management, Division: EPWP.

3.5.12 Reasonable environmental measures for the Directorate Economic and Rural Development

Reasonable measures to give effect to the general duty of care are listed in Table 42. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; and
- Ensuring compliance with applicable legal requirements.

Table 42. Reasonable environmental measures for the Directorate Economic and Rural Development

Sub-directorate	Division	Reasonable Measures
Rural Development (I)	All Divisions	<p>Reasonable expectations: The expectation is that MMM project managers and appointed advisers and consultants shall apply their minds at a very early stage of the project cycle when projects are identified, designed and implemented by:</p> <ul style="list-style-type: none"> • Considering the NEMA S 2 principles when decisions are being made and ensuring that all such projects are aligned with the NEMA principles;

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> • Ensuring that all applicable environmental norms and standards are identified and adhered to; • Ensuring that all relevant environmental authorisations that may apply to the project, the site and any infrastructural developments are identified and applied for in a timely manner; • Ensuring that these projects are established, constructed and operated in terms of the general duty of care, applicable norms and standards, and the conditions defined in terms of environmental authorisations; • Ensuring that staff, contractors and agents are competent to identify and discharge all the applicable environmental duties; • Ensuring the verification of compliance with applicable environmental requirements; and • Ensuring that sound environmental management records are kept to demonstrate compliance with applicable environmental legal requirements. <p>The sub-directorate should also ensure that projects managed by it do not violate the integrity of valued environmental resources, while any buildings and infrastructure must conform to green building requirements.</p> <p>Status quo: The MMM rural area is characterised by extensive commercial farming in the west, mainly mixed crop production and cattle farming. There is intensive farming along the lower drainage area of the Modder River in the north-west and the west. The area surrounding Thaba Nchu and Botshabelo is Trust land, which is utilised by subsistence and small farmers. The area is also characterised by high unemployment rates. Most employed people are migrant workers in Bloemfontein and elsewhere, due to the limited employment opportunities in the area.</p> <p>The 2015/16 IDP has pertinent project commitments with respect to its rural development strategy. The 2015/16 target defined in the SDBIP is 100% completion of Phase 1 of the Thaba Nchu Agri-Park.</p> <p>The MMM has also generated a Rural Development Strategy.</p> <p>Recommendation: Review the processes in terms of which entities and businesses are established by the MMM and revise them to ensure compliance with the reasonable environmental expectations identified.</p>

Sub-directorate	Division	Reasonable Measures
		Generate an environmental policy that specifies how proposed developments should be designed, planned, implemented, and managed to ensure compliance with applicable environmental law and conformity to green building requirements, while respecting valued environmental resources and areas.

3.5.13 Reasonable environmental measures for the Directorate Waste and Fleet Management

Reasonable measures to give effect to the general duty of care are listed in Table 43. The reasonable measures listed have the purpose of:

- Preventing degradation or pollution of the environment;
- Enhancing environmental quality;
- Giving effect to the NEMA S 2 Principles;
- Ensuring good environmental governing; and
- Ensuring compliance with the applicable legal requirements.

Table 43. Reasonable environmental measures for the Directorate Waste and Fleet Management

Sub-directorate	Division	Reasonable Measures
Landfill Site Management (J.1) and Solid Waste Management (J.2)		<p>Reasonable expectations: The reasonable expectations are that the MMM:</p> <ul style="list-style-type: none"> • Complies with legislation applicable to solid waste management; • Designates waste management officers (WMOs); • Promotes and ensures efficient waste management services at the minimum acceptable service level; • Ensures sound budgeting and financial services for waste services; • Gives effect to the National Waste Management Strategy (NWMS) and considers waste management activities, services and infrastructure to implement the waste management hierarchy; • Promotes waste minimisation, re-use, recycling and recovery of waste and initiates separation at source programmes; • Ensures that people are aware of the impact of waste on their health, wellbeing and the environment; • Develops, implements and reviews an integrated waste management plan (IWMP);

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> • Ensures that IWMP is incorporated into Integrated Development Plans (IDPs); • Achieves integrated waste management reporting; • Develops and implements waste management by-laws, where required; • Addresses illegal dumping; • Promotes bulk infrastructure development and services for the municipality as a whole. The term 'infrastructure' refers to the establishment of regional waste disposal sites and bulk waste transfer stations that can be used by more than one area/district; • Collects data for the Waste Information System. <p>Status quo: The <i>status quo</i>, at the time of reviewing and revising the EI&MP was as follows:</p> <ul style="list-style-type: none"> • Waste Management By-laws (October 2013) had been developed. The Waste Management By-law were, however, not aligned with the reduction and source separation targets as set out in the Waste Act (2008) and specifically the NWMS (2011); • An IWMP for MMM has been developed and is in the process of being revised; • The IWMP has been incorporated into the IDP; • Several waste management issues and projects have been identified in the IDP; • The MMM does not have a waste management policy; • It is not certain whether a WMO has been designated for the MMM; • Three transfer/buy-back centres have been licensed for construction in MMM (Botshabelo, Thaba Nchu, Chris Hani); • A separation at source pilot project (initiated by DETEA) has been implemented in Fichardt Park; • The MMM does not have a formal recycling scheme, solid waste treatment scheme or a composting scheme; • No recycling services are currently available in the Free State Province; • Waste collection is carried out by the Sub-directorate Solid Waste Management of the MMM, with external (private) contracts in place for emergency collection;

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> • The solid waste management sub-directorate is subdivided into the following divisions: Public Cleansing, Domestic waste and Trade Waste Services; • Hazardous waste management remains a Provincial responsibility; • The vehicles fleet of Solid Waste Management is managed by the Sub-directorate Fleet Services; • The MMM has a fleet of around 53 collection vehicles (19m3 rear-end loaders) and ±50 vehicles operating on landfill sites; • Four private companies collect waste from informal areas; • Waste collection service coverage: 80% – 90% of the households, collecting 96% of all waste generated. The households that are not covered are small villages and remote farms and small-holdings; • All the waste management licences are in place and evidence suggest that EIAs have been done for the new waste management projects; • The Directorate has also conducted compliance audits against the conditions of the waste management licences. <p>Recommendations: Waste management in MMM is one of the areas of excellence in the municipality. A few improvements are recommended, however. It is recommended that:</p> <ul style="list-style-type: none"> • The MMM aligns its Waste Management By-laws with the reduction and source separation targets as set out in the Waste Act (2008), and specifically the NWMS (2011); • The MMM develops a waste policy to suit the particular intentions of MMM in terms of waste management; • The MMM formalises waste re-use, recycling and recovery projects/activities; • The MMM formalises revenue collection for waste management services at the landfills. • The MMM finds external funds to support its IDP commitments; • The MMM centralises/harmonises the enforcement of waste legislation;

Sub-directorate	Division	Reasonable Measures
		<ul style="list-style-type: none"> The MMM addresses waste management services in the rural villages and farming areas; and The MMM improves the education and information campaigns on waste management.
Fleet Services and Support (J.3)		<p>Reasonable expectations: The reasonable expectation is that the Sub-directorate adopts and manages a green fleet management programme and that it ensures the availability of the requisite fleet when needed.</p> <p>Status quo: No evidence was found of the existence of a green fleet management system. Instead, evidence was found that the sub-directorate routinely fails to make the required vehicles available to the Sub-directorate Solid Waste Management, severely compromising the ability of the latter to render the requisite services</p> <p>Recommendation: Consider the adoption and implementation of a green fleet programme for the MMM and de-bottleneck the fleet supply processes.</p>

3.6 Conclusion

The reasonable environmental duties and functions of all the Directorates, Sub-directorates and Divisions of the MMM that have or can have an interface with its environmental management performance are alluded to in this section. The analysis, up to the divisional level, was made under the headings:

- Reasonable expectations;
- The *status quo*; and
- Recommendations.

The information regarding the profiling of the *Status quo* of each directorate is based on information gleaned from:

- The EMF;
- The SoER;
- Other documents that are readily available in the public domain;
- Interviews with MMM staff;
- Filed observations; and
- The compliance verification process.

It is evident that environmental management by and at the MMM is highly complex, ranging from the situation of being regulated to a situation where the MMM is indeed also the regulator, while it also needs to manage its own processes in line with environmental requirements.

The MMM is also the first-line custodian of a vast area of land in the central Free State. It is imperative that the key and mandatory management instruments that are being used by the MMM be applied to ensure effective environmental management, while an interface between the so-called spatial instruments and environmental management also needs to be established.

Environmental management at and by the MMM must by necessity be within a matrix framework mode of delivery, as many directorates are charged with relevant environmental management, governing, governance and performance functions. An integrated and co-ordinated approach between these various role players needs to be provided for by means of an integrated and comprehensive environmental management, governing and governance policy for the MMM. A detailed EI&MP should support the environmental policy of the MMM.

4 MANGAUNG METROPOLITAN MUNICIPALITY AS A REGULATED ENTITY – DIRECT AND INDIRECT ENVIRONMENTAL APPLICATION THROUGH LOCAL GOVERNMENT LAW, POLICIES AND PROGRAMMES

This section reviews the instrumentation with direct and indirect environmental application that the MMM is required to develop, adopt, and use in terms of national local government law and policy e.g.:

- The Local Government: Municipal Systems Act 32 of 2000;
- The Local Government: Municipal Structures Act 117 of 1998;
- The Preferential Procurement Policy Framework Act 5 of 2000;
- The Local Government: Municipal Finance Management Act 56 of 2003;
- The Local Government: Municipal Planning and Performance Management Regulations of 2001; and
- The White Paper on Local Government (1998).

Reference is also made to relevant national and provincial (Free State) programmes.

An understanding of local governmental legislation, including the management and governance instruments that it provides, is imperative for effective environmental management and governance by the local sphere of government. Environmental management and governing agendas that are often determined, planned for, implemented and verified by means of the classical environmental *Plan, Do, Check and Act* (PDCA) style of environmental management instrumentation need to be 'translated' into the local government suite of instruments provided for in local government law. The objective of this chapter is to unpack the management and governance instrumentation that is typical to South African municipalities and to provide guidance on how it should be used for environmental management and governance purposes as well.

4.1 Introduction

A suite of local government legislation, policies and programmes of the national and provincial authorities regulates the MMM. At first glance it may appear as if these laws and policies neither address the 'natural' environment nor apply to matters 'environmental'. There are, to the contrary, several requirements and instruments in local government law, policy and programmes that:

- Find direct and indirect application to local environmental governing by the MMM and, as such,
- Inform the EI&MP of the municipality.

As argued above, the adoption and use of these instruments, which are so typical of local government, are imperative for effective environmental governing and management at the municipal sphere.

4.2 Legal instruments with a direct and an indirect environmental application

Local government law and policy provide for various municipal instruments that are designed to enable municipalities to govern well. Some of these instruments have environmental application because of their objectives, their intended outcomes, or as a result of the role players in society and government that they involve. The risk management system, the integrated development plan (IDP) with its sector plans, the annual municipal budgets, the service delivery budget implementation plan (SDBIP), the performance management system (PMS), the supply chain management policy, the tariff policy, the by-laws and the internal audit plan of the MMM are typical examples of instruments that are relevant for effective environmental management. See the PDCA loop in Figure 18.

Note: local government in South Africa also has access to spatial and classical environmental management instruments that should be used alongside the classical management and governance instruments of local government. Both of these instrument options are explained elsewhere in this report.

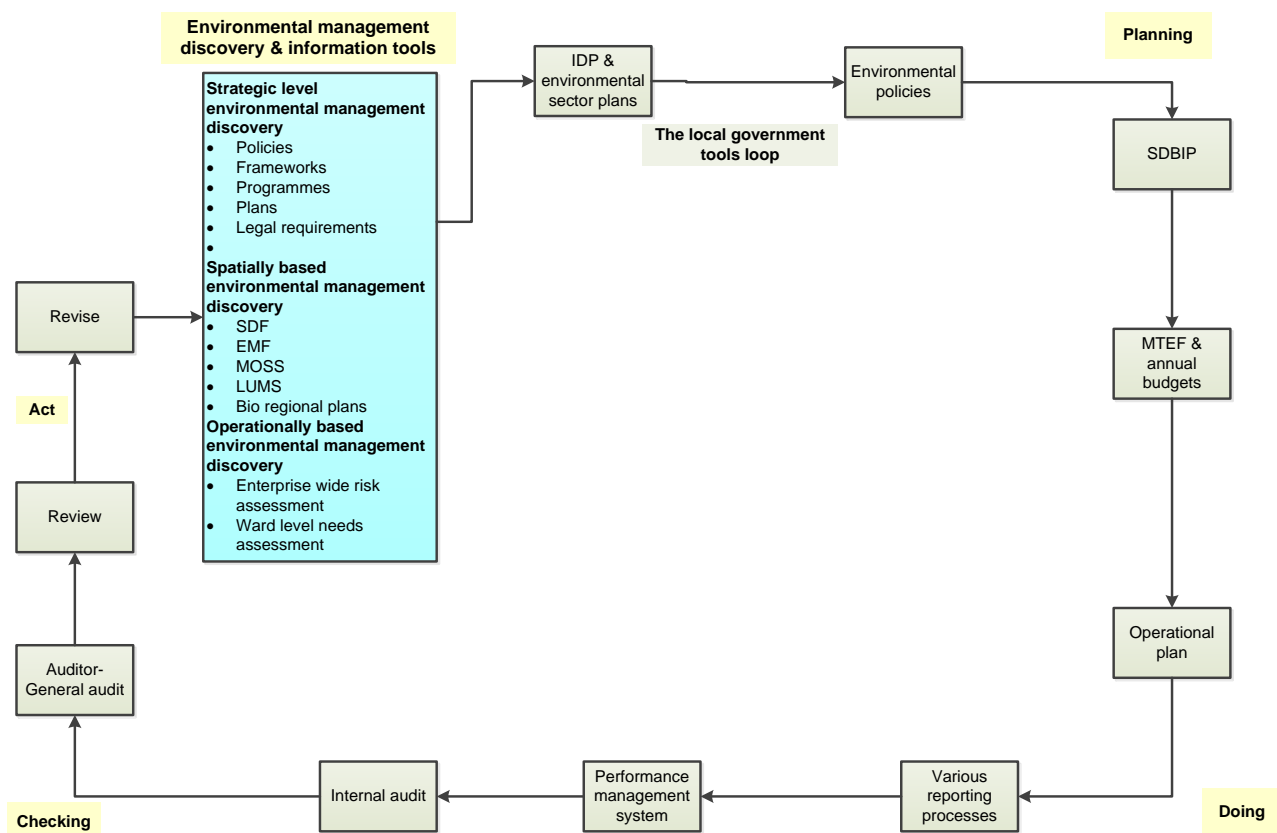


Figure 18. Local government management and governance instruments

4.2.1 The risk management system

In terms of the MFMA, every municipality must have and maintain an effective, efficient, and transparent system of risk management. Risk identification must take place on a regular basis and a risk management policy must be adopted and implemented (ss 62(1) (c) (i) and 95(1) (c)). While it is possible for the risk management system to be focused exclusively on financial risk, good governance demands that risk be seen as broadly as possible, i.e. that the organisation takes an enterprise risk management view.

The risk management system must identify and address all risks that have the potential to disrupt the achievements of the MMM's strategic and operational objectives. These risks should typically include environmental risks such as water scarcity, droughts, floods, environmental infrastructure failure and the loss of institutional memory on environmental governing in the MMM. Notably, risk management is also a critical part of supply chain management in the Municipality, as discussed elsewhere in this document.

The risk assessment is the foundation of municipal planning and governance, as the IDP as well as all the other instruments that follow must, amongst other qualities, be risk based.

4.2.1.1 Responsibility for development and implementation

The MMM's accounting officer must ensure that the Municipality has and maintains an effective, efficient and transparent system of risk identification, assessment and management.

4.2.1.2 Reasonable expectations

Risk assessment and management in the narrowest of senses normally refers to financial risk assessment and management. Enterprise-wide risk identification, assessment and management relates to all forms of potential loss and opportunity.

The intention of the MMM is to identify and assess all types of potential loss, including environmental risks.

The reasonable expectation is that the MMM uses environmentally skilled persons to identify and assess all the environment-related threats and opportunities.

4.2.2 The integrated development plan (IDP) and its statutory sector plans

The MMM's integrated development plan (IDP) is the instrument of choice for 'development oriented planning'. The spatial development framework (SDF), on the other hand, is the spatial reflection of the IDP (see the section in this report on spatial instruments).

Developmental governance is the constitutional mandate of every municipality in the country. It speaks to the broad constitutional objective of local government to be developmental and to the specific duty of municipalities to realise the section 24 environmental right in the Constitution. This right promises the local community of Mangaung an environment that is not harmful to human health or well-being; and demands that the (local) environment be protected for the present and future generations through pollution control, the prevention of the degradation of the environment, the promotion of conservation, and the pursuit of ecologically sustainable development.

The MMM must implement its IDP and must conduct all of its affairs in conformity with it. The IDP is legally binding on all of the MMM's decision making and also on the decisions and actions of others in its jurisdiction – e.g. local businesses and the local community – provided that the commitments made in and the duties created by the IDP are discharged by means of additional instruments such as the SDBIP, policies, by-laws, action plans etc.

4.2.2.1 The legal mandate and prescribed contents

The IDP is a development and management planning instrument created in terms of the Systems Act and 'links, integrates and co-ordinates plans and takes into account proposals for the development of the municipality'. (S 25(1)). The IDP guides the preparation of any action plans for the implementation of strategies identified by the MMM. The Systems Act provides the legal framework for the development, adoption, revision and implementation of the MMM's IDP, and demands that its IDP be aligned with the plans of other municipalities (e.g. Kopaneng and Matjabeng) as well as with relevant provincial (Free State) and national plans. Similarly, it may be expected that any other plan of the MMM (e.g. the EI&MP) be aligned with its most recent IDP.

Its IDP must form the 'policy framework' and the 'general basis' for the MMM's annual and other budgets. In other words, the IDP typically dictates what should be budgeted for in terms of community development and development in the MMM in general. The Local Government: Municipal Planning and Performance Management Regulations of 2001 (the Regulations) determine in reg 6 that the IDP must inform the Municipality's annual budget, since the latter must be based on the:

- MMM's development priorities;
- MMM's objectives; and
- Performance targets of the Municipality – all of which must be captured in the IDP.

The prescribed content of the IDP is important for understanding how the MMM's IDP could, and ultimately should, inform its EI&MP. In terms of the Systems Act and the Regulations, the IDP must reflect:

- The MMM's vision for the long-term development of the Municipality with special emphasis on the most critical development and internal transformation needs;
- An assessment of the existing level of development in the MMM, which must include the identification of communities in its jurisdiction which do not have access to basic municipal services such as water and sanitation;
- The MMM's development priorities and objectives for its elected term;
- The MMM's development strategies, which must be aligned with national and provincial (Free State) sector plans and planning requirements;
- A spatial development framework (SDF) for the MMM, aligned with the SDFs of neighbouring municipalities, which must include basic guidelines for a land use management system in the MMM, objectives that reflect the desired spatial form of the Municipality, a capital investment framework for the MMM's development programmes, a strategic assessment of the environmental impact of the SDF, programmes and projects for the development of land in the Municipality, and a visual representation of the MMM's desired spatial form;
- Council's operational strategies;
- The disaster management plan of the MMM;
- A financial plan, which must include a budget projection for at least the next three years, an estimate of the financial resources available for capital project developments and operational expenditure, and a financial strategy that defines sound financial management and expenditure control and ways of increasing revenue;
- Key performance indicators and performance targets that mirror the indicators and targets in the MMM's performance management system (PMS);
- The MMM's institutional framework, which must include an organogram required for the implementation of its IDP and addressing the MMM's internal transformation needs;
- Any investment initiatives by the MMM;
- Any development initiatives of an infrastructural, physical, social, economic and institutional developmental kind; and
- All known projects, plans and programmes to be implemented by the MMM by any organs of state e.g. provincial or national departments responsible for water affairs, rural development, energy and housing.

4.2.2.2 The IDP sector plans

By law, several 'sector plans' must form part of the IDP. Several of these are not listed in the Systems Act itself. The environmentally relevant statutory sector plans of the MMM to be included in the IDP typically include: the disaster management plan; the financial plan; the SDF; the local Air Quality Management Plan; the local Waste Management Plan; the Water Services Development Plan; an Integrated Human Settlements Plan; an Integrated Transport Plan and the Built Environment Performance Plan. The relevance of the Built Environment Performance Plan (BEPP) may not be immediately clear. This is typically a sector plan required for all Level 2 municipalities in terms of the Division of Revenue Act 10 of 2014. It serves as an instrument for 'compliance and submission'

for critical infrastructure grants that the MMM as a metropolitan municipality may apply for, such as the Integrated City Development Grant, the Urban Settlements Development Grant, the Integrated National Electrification Programme Grant etc.

The MMM's executive mayor is ultimately responsible for the IDP and must further assign responsibilities in this regard to the municipal manager (MM). While there is no legal duty on the Free State government to assist the MMM with the development, implementation or review of its IDP, the general gist of the Systems Act and the notion of co-operative government suggests that such assistance should be rendered when requested. The MMM must further review (and amend, if necessary) its IDP on an annual basis in accordance with the assessment of its performance in terms of the PMS and as changing circumstances demand (e.g. newly adopted plans such as the EI&MP, added risks, or a change in municipal boundaries) as required by (s 34 of the Systems Act).

4.2.2.3 Reasonable expectations

Against the background of the above, it is to be expected that:

- The objectives and priorities set in the most recent IDP and the IDP sector plans of the MMM inform this EI&MP;
- This EI&MP must be reviewed and revised with every new or revised version of the MMM's IDP and sector plans;
- The design of the EI&MP of the MMM assumes and reflects the interconnectedness and interdependence between the Municipality's risk management system, the IDP, the SDF, municipal budgeting, the SDBIP and the PMS, as envisaged in law.

4.2.3 Annual municipal budgeting (the budget) and financial reporting

The MMM may incur expenditure only in terms of an approved budget as determined in the MFMA (S 15). The MMM may accordingly incur expenditure only in the limits of the amounts appropriated for the different departments (e.g. Environmental Management Division) and for functional areas (e.g. environmental management).

4.2.3.1 Legal mandate and prescribed content

The MMM's council must for each financial year approve an annual budget before the start of the financial year. Important from an environmental management perspective is the requirement that when an annual budget is tabled it must be accompanied by, amongst other items, the following relevant documents:

- Measurable performance objectives for revenue from each source and vote in the budget;
- Any proposed amendments to the budget-related policies of the MMM such as its procurement policy); and
- Particulars of any proposed service delivery agreements (e.g. for the provision of environmental services such as extended domestic waste collection services).

Annual budgeting allows for the appropriation of money for capital expenditure for a period not exceeding three financial years (s 16 of the MFMA). The MMM may spend money on a capital project (e.g. waste-treatment facility upgrades) only if the money for the project has been appropriated in the capital budget and if the project has been approved by council.

The MFMA also provides for 'adjustment budgets' and 'unforeseen and unavoidable expenditure' which may be of relevance in the event of environmental emergencies (e.g. droughts, floods, or chemical spills) or in the event of sudden and critical environmental infrastructure demands (e.g. the breakdown of electricity reticulation, or storm water infrastructure).

4.2.3.2 Responsibility for the budget process and other financial duties

The duty to ensure the coordination of the budget process and the annual review of the MMM's IDP and budget-related policy and that these are consistent and credible ultimately lies with the mayor. When preparing the budget the mayor must take into account the MMM's IDP (and sector plans – e.g. the EI&MP or the spatial development framework), the national and provincial (Free State) budgets, the national government's fiscal and macro-economic policy, the annual Division of Revenue Act etc. The MFMA also calls for consultation with other organs of state such as other municipalities that may be affected by the budget, as well as with the local community.

4.2.3.2.1 The mayor

The mayor of the MMM has a range of general financial duties including to:

- Take all reasonable steps to ensure that the MMM performs its constitutional and statutory functions within the limits of the MMM's approved budget;
- Submit a report (called a quarterly report) within 30 days of the end of each quarter to council on the implementation of the budget and the financial state of the MMM;
- Take all reasonable steps to ensure that the MMM approves its annual budget before the start of the year and that the MMM's service delivery and budget implementation plan (SDBIP) is approved within 28 days after the approval of the budget; and
- Ensure that the annual performance agreements for the MMM municipal manager and senior managers comply with the MFMA and are linked to the measurable performance objectives approved with the budget and to the SDBIP (S 53 of the MFMA).

Delegations of mayoral powers and duties are possible in terms of S 59 of the MFMA. It follows that the mayor, or the persons to whom he/she delegates his/her authority has the responsibility of ensuring that the environmental functions and environmental objectives set in the MMM's IDP and annual budget are executed and attained.

4.2.3.2.2 The municipal manager

The MMM's municipal manager is the accounting officer and must, for example, provide guidance and advice on compliance with the MFMA to the political structures (councillors) and officials of the MMM. The accounting officer has a number of very specific duties including to ensure that the resources of the MMM are used effectively, efficiently and in an economical way, and that unauthorised, irregular or fruitless and wasteful expenditure and other losses are prevented (S 62 of the MFMA). This holds true as far as the use of environmental resources is concerned (e.g. water and land) and as far as financial and human capital are used for the purpose of executing environmental functions. The accounting officer must further ensure that the MMM has and implements a tariff policy, a rates policy, a credit control and debt collection policy and a supply chain management policy, as discussed elsewhere in this section.

The accounting officer is also responsible for the assets of the MMM (including the safeguarding and maintenance of assets) and for its liabilities. He or she should ensure that the MMM has and maintains a system of internal control of assets and liabilities – including an asset and liabilities register (S 63 of the MFMA). Asset management is a key performance imperative for effective environmental management, as a number of key environmental performance indicators depend on sound technologies to achieve environmental norms and standards.

The accounting officer is responsible for the management of the expenditure of the MMM and for budget implementation and he or she must ensure that the MMM has and maintains an effective system of expenditure control, including procedures for the approval, authorisation, withdrawal and

payment of funds (ss 65 and 69 of the MFMA). This is also a key environmental performance indicator in association with the procurement processes, as the timely purchasing and delivery of stock items are key to sustained environmental performance of wastewater treatment works (WWTWs), for instance.

4.2.3.3 Financial reporting

Financial reporting is required in terms of various provisions of the MFMA and its regulations. Financial reporting (monthly, annually, mid-year etc.) creates the opportunity for the MMM to assess the extent to which environmental activities and projects (as foreseen in its IDP, the SDBIP and the original budget, for example) have been effected and how these activities and projects progress.

Chapter 12 of the MFMA is devoted to financial reporting and auditing and makes provision for:

- Details on the preparation and adoption of annual reports,
- The preparation of financial statements,
- The disclosure of any allocations that the MMM may have received during a financial year (e.g. provincial or national grants) and
- Oversight reports on annual reports to be considered by the MMM's council, and for them to be made available to the public.
- The purpose of the annual report is:
 - To provide a record of the activities of the MMM during the financial year;
 - To provide a report on the MMM's performance (including its environmental performance) against the budget for the financial year; and
 - To promote accountability to the local community for decisions made throughout the year (S 121 of the MFMA).

The annual report must contain a range of information that is indirectly applicable to environmental management by the MMM (S 121(3) of the MFMA). The report must, for example, include:

- The MMM's annual financial statements;
- The Auditor-General's audit report on the above statements of the MMM;
- The annual performance report of the MMM prepared by the municipality in terms of the Systems Act;
- The Auditor-General's audit report in terms of the Systems Act;
- An assessment by the MMM's accounting officer of any arrears on municipal taxes and service charges;
- An assessment of the MMM's performance against the measurable performance objectives for revenue collection from each revenue source and for each vote in the approved budget for the relevant financial year;
- Particulars of any corrective action taken, or to be taken, in response to issues raised in the audit reports of the Auditor-General and the MMM itself;
- Any explanations that may be necessary to clarify issues in connection with the financial statements;
- Any information as determined by the MMM; and
- Any recommendations of the MMM's audit committee.

The MMM must further address any issues raised by the Auditor-General in an audit report (including any matter on environmental non-compliance or under-performance). This is the responsibility of the mayor (S 131 of the MFMA).

The MFMA, the Systems Act and the Municipal Budget and Reporting Regulations of 2008 further provide for the following relevant reports:

- Monthly Budget Statements in terms of S 71 of the MFMA. These reports reflect on the state of the MMM's budget and must be prepared by the MMM accounting officer. They are submitted to the mayor and the Free State Treasury;
- Mid-year Budget and Performance Assessment Reports – also called MFMA S 72 Reports. These reports are the responsibility of the MMM's accounting officer and must be done during the first half of the financial year. They reflect for example on the MMM's service delivery performance in the first half of the financial year. They are submitted to the mayor of the MMM, National Treasury and the Free State Treasury;
- Reports on failures to adopt or implement budget-related and other policies - also called MFMA S 73 reports. These reports are the responsibility of the MMM's accounting officer and must be done as circumstances demand. These reports are submitted to the Free State Treasury and reflect for example on any non-compliance of a MMM councillor or official with a budget-related policy such as the supply chain management policy;
- In-Year Reports (Schedule C of the Regulations) are monthly budget statements by the MMM; a quarterly report on the implementation of the budget and the financial state of affairs of the municipality; and a mid-year budget and performance assessment. The mayor must draft a report to accompany the In-Year Report. The content of both reports is prescribed in the Regulations; and
- A performance report, which is a product of the municipality's performance management, and which is included in the MMM's annual report. The performance report must reflect the performance of the MMM and of each external service provider during that financial year; a comparison of the performance with that of the previous financial year; and a description of measures taken to improve performance.

4.2.3.4 Reasonable expectations

The budget of the MMM must cater for the implementation of the project-based environmental objectives, strategies and projects that are incorporated into the IDP. Budgeting must be reasonable and priorities must be carefully considered, based on key risks and other relevant criteria.

The implementation of the EI&MP will have to be captured in the MMM's budgets. The MMM's reporting on financial performance – expenditure and revenue collection etc. – must clearly indicate the losses and/or gains because of poor or good environmental governing by the municipality. The MMM must also, as part of its reporting duties, report on the implementation of the items adopted from the EI&MP.

It is imperative that all the role players of the MMM who are tasked with an environmental responsibility that require a budget ensure that budgets are indeed generated and submitted.

4.2.4 Budget-related policy

The MFMA collectively describes 'budget-related policy' as policies of the MMM affecting or being affected by its annual budget. They are :

- The tariffs policy which the MMM must adopt in terms of S 74 of the Systems Act;
- The rates policy which the MMM must adopt in terms of the Local Government: Municipal Property Rates Act 19 of 2008; and the
- Credit control and debt collection policy, which the MMM must adopt in terms of S 96 of the Systems Act.

The MMM must also adopt a supply chain management policy in terms of the MFMA.

These budget-related policies are important fiscal instruments that can be used as incentives and disincentives to modify environmental behaviour. The nature and extent of fiscus-based environmental instruments are explored elsewhere in this report.

4.2.4.1 Rates and tariffs policies

A municipal tariff refers to a tariff for services (e.g. water services or waste removal services), which the MMM may set to provide services to the local community. Rates and tariffs include any surcharge on such a tariff. A municipal tax refers to property rates or other taxes, levies or duties that the MMM may impose (e.g. taxes for excessive industrial or household waste). In terms of S 75 of the Systems Act, the MMM must adopt by-laws to give effect to the implementation and enforcement of its tariff policy (S 75).

The rates and tariffs policies can open opportunities to the MMM to further change the environmental behaviour of people by right-sizing the cost of services rendered by the municipality, while financial incentives can also be offered to reward desirable behaviour.

4.2.4.2 Credit control and debt collection policy

The Systems Act demands of the MMM to adopt, maintain and implement a credit control and debt collection policy. This policy must provide, amongst other things, for indigent debtors in line with the MMM rates and tariff policy and any national policy on indigents; for the termination of services or the restriction of services when payments are in arrears; and for matters relating to the unauthorised consumption of services, theft and damages. This policy may differentiate between different categories of ratepayers, users of services, debtors, taxes, services and service standards and other matters as long as the differentiation does not amount to unfair discrimination (S 97 of the Systems Act).

4.2.4.3 Supply chain management policy

The MMM must adopt and implement a supply chain management policy in terms of the MFMA. The policy must be fair, equitable, transparent, competitive, and cost effective, and must comply with the prescribed regulatory framework. This policy must, for example, cover the range of supply chain management processes that the MMM and its municipal entities (e.g. CENTLEC) can use, including tenders, quotations, auctions and other types of competitive bidding, and state when the MMM may or may not use a particular process. The MMM's accounting officer must implement the policy and he or she must take all reasonable steps to ensure that proper mechanisms and the separation of duties are in place throughout the supply chain management system to minimise the likelihood of fraud, corruption, favouritism and unfair and irregular practices.

The accounting officer is responsible for taking the necessary steps to ensure that a contract or an agreement procured through the policy is properly enforced. The performance of contractors (including contractors rendering environmental services) in terms of any contract entered into in terms of this policy must be monitored on a monthly basis (S 116).

The 2005 Municipal Supply Chain Management Regulations deal in detail with the establishment and development of a municipality's supply chain management policies; demand management; acquisition management; logistics, risk, disposal and performance management; and matters such as ethical standards. Council must oversee the implementation of the supply chain management policy, for which purpose the accounting officer must, for example, submit an implementation report

within 30 days of the end of the financial year (Reg 6). The MMM must have a 'supply chain management unit' to implement the policy in line with the above requirements.

The policy must also stipulate to what extent the MMM supports the Proudly SA Campaign. It must further provide for an effective system of logistics management in order to provide for the setting of inventory levels, the placing of orders, the receiving and distribution of goods, stores and warehouse management, expediting orders, transport management, vendor performance, maintenance, and contract administration (Reg 39). The MMM's supply chain management policy must require that MMM offers obsolete computer equipment to the Free State Department of Education (Reg 40(2)(b)(iii)).

The MMM's supply chain management policy must also provide for an effective internal monitoring system in order to determine, on the basis of a retrospective analysis, whether the authorised supply chain management processes has been followed and whether the desired objectives are being achieved (Reg 42). It is also determined that the policy should establish a code of ethical standards for the MMM's officials and other role players involved in the implementation of its supply chain management policy. It should be clear from the above that it is possible for the MMM's supply chain management to reflect on environmental objectives and to acknowledge and caution against environmental risks, and for environmental protection to be part of the 'ethical standards' set in the MMM's procurement practices.

Relevant from an environmental management perspective is that the MMM may not act otherwise than in accordance with its supply chain management policy when:

- Procuring environmental goods or services,
- Disposing of environmental goods no longer needed, or
- When selecting contractors to assist with environment-related municipal services.

Reg 33 provides for the procurement of goods that necessitate special safety arrangements, which includes goods with the potential to harm the environment. The MMM's policy must restrict the acquisition and storage of goods in bulk (other than water) which necessitate special safety arrangements, including gases and fuel. Where the storage of goods in bulk is justified, such justification must be based on sound reasons, including the total cost of ownership and the cost advantages for the MMM.

Environmentally informed purchasing can also benefit the MMM in cases such as negotiated:

- Agreements that provide supplier-owned goods and services as far down the supply chain as is practicable;
- Take-back or even buy-back schemes for superfluous products, or even packaging and containers;
- Supplier-owned goods and services; and
- Training to MMM staff to handle the goods safely, and negotiated supplier audits to provide the assurance that procured facilities are functionally optimal and are being maintained as required.

The MMM's supply chain management policy must also provide for an effective system of risk management for the identification, consideration and avoidance of potential risks in the supply chain management system. Risk management in this context seems to be broadly understood and must according to the Regulations (Reg 41) include the following:

- Identify risks (including environmental risks) on a case-by-case basis;
- Allocate risks (including environmental risks) to the party best suited to manage such risks;

- Accept the cost of the risk where the cost of transferring the risk (including an environmental risk) is greater than that of retaining it;
- Manage risks (environmental risks included) in a pro-active manner and provide adequate cover for residual risks; and
- Assign (environmental and other) risks to the contracting parties through clear and unambiguous contracts.

4.2.4.4 Reasonable expectations

The budget-related suite of policies of the MMM offers opportunities to adopt and use the ideal instruments to improve the municipality's environmental performance.

It is to be expected that these policies will be reviewed and amended as necessary to identify opportunities for the improved collection of rates and taxes, consumer satisfaction, the procurement of environmentally sound service and product providers, and the prevention of losses due to the poor maintenance of and control over environmental services.

4.2.5 Service delivery and budget implementation plans (the SDBIP)

The MFMA describes the service delivery and budget implementation plan (SDBIP) as a detailed plan approved by the MMM's mayor for implementing the municipality's delivery of municipal services (including environmental services) and its annual budget (typically with budget items for environmental functions and projects).

The SDBIP is a tool that provides operational content to the end-of-year service delivery targets set in the MMM's budget and IDP. It determines the performance agreements for the municipal manager and all the senior managers, whose performance can subsequently be monitored through s 71 monthly reports as required by law (the MFMA) and evaluated through the annual reporting process. This instrument is aimed at performance management – including with respect to the environmentally relevant targets in the budget and the IDP.

The SDBIP provides a vital link between the mayor, the council and the administration of the MMM, and facilitates the process of holding management accountable for its performance – including its environmental performance. The SDBIP has been described as a '*management, implementation and monitoring tool*' (MFMA Circular 13 of 31 January 2005, Rev 2) that assists the mayor, councillors, the municipal manager, senior managers and the community to drive and monitor performance.

4.2.5.1 The legal mandate and prescribed content of the SDBIP

The MMM's SDBIP must indicate projections for the monthly collection of revenue to be collected, by source and operational and capital expenditure, by vote i.e. with reference to the appropriation of money to different departments or functional areas. It must also indicate service delivery targets and performance indicators for each quarter and any other matters that may be prescribed.

Importantly, the SDBIP gives practical effect to the MMM's IDP and its budget. The budget gives effect to the MMM's strategic priorities and is not a management or implementation plan. The SDBIP therefore serves as a 'contract' between council, the MMM's administration and the community, expressing the goals and objectives set by council as quantifiable outcomes that can be implemented by the administration over the next twelve months. The relevance of this for environmental governing and management by the MMM is that the SDBIP provides the basis for implementation and for measuring the performance of service-delivery against end-of-year targets and approved budgets.

4.2.5.2 Responsibility for the SDBIP

If the MMM has a properly formulated SDBIP this will ensure that appropriate information is circulated internally and externally for the purposes of monitoring the execution of the MMM's budget, the performance of senior management, and the achievement of strategic (environmental and other) objectives set by council.

The SDBIP enables the municipal manager to monitor the performance of senior managers, for the mayor to monitor the performance of the municipal manager, and for the community to monitor the performance of the MMM. The SDBIP should therefore determine (and be consistent with) the performance agreements between the mayor and the municipal manager, and the municipal manager and the senior managers, as determined at the start of every financial year and approved by the mayor. The SDBIP must also be consistent with outsourced service delivery agreements such as those established with municipal entities (for example CENTLEC), public-private partnerships (PPPs) and the like (MFMA Circular 13 of 31 January 2005, Rev 2).

4.2.5.3 Reasonable expectations

The SDBIP is a critical instrument to manage the IDP agenda and to track performance as far as environmental management and governance and the delivery on environmental targets and objectives are concerned. It is also an internal early warning system that aids the MMM to respond to environmental governing failures (e.g. environmental projects that are not implemented as scheduled).

The key challenge is to ensure that all the key environmental projects are indeed incorporated into the SDBIP, as a failure to do so amounts to a high risk of implementation failure.

4.2.6 Internal auditing

The MMM is expected to conduct internal audits for the purposes of internal control, performance management etc.

4.2.6.1 The internal audit unit

The MMM must have an internal audit unit (in-house, or outsourced) which must:

- Prepare a risk-based audit plan and an internal audit programme for each financial year;
- Advise the accounting officer of the MMM; and
- Report to the audit committee on the implementation of the internal audit plan and matters relating to:
 - Internal audits;
 - Internal controls;
 - Accounting procedures and practices;
 - Risk and risk management; performance management;
 - Loss control; and
 - Compliance with any applicable legislation; and
 - Must perform such other duties as may be assigned to it by the accounting officer.

4.2.6.2 The internal audit committee

The MMM must have an audit committee. The committee must be an independent advisory body that:

- Advises the entire MMM on matters relating to: internal financial control and internal audits; risk management; accounting policies; the adequacy, reliability and accuracy of financial reporting and information; performance management; effective governance; legal compliance; performance evaluation and any other issues referred to it by the MMM;
- Reviews the annual financial statements to provide the MMM with an authoritative and credible view of the financial position of the municipality; its efficiency and effectiveness and overall legal compliance;
- Responds to council on any issues raised by the Auditor-General (AG) in the audit report of the AG;
- Carries out financial investigations in the MMM;
- Provides assurance that the MMM is managing its affairs as required by law; and
- Performs such other functions as may be prescribed.

In terms of the Municipal Planning and Performance Regulations of 2001, the MMM must develop and implement mechanisms, systems and processes for auditing the results of performance measurements as part of its internal auditing processes (Reg 14). The MMM must annually budget for and appoint a 'performance audit committee' consisting of at least three members, of whom at least two may not be involved in the MMM. The audit committee above may also serve as the performance audit committee (Reg 14(2)(c)). The internal auditors of the MMM must on a continuous basis audit the performance measurements of the municipality and must submit quarterly reports to the MMM's municipal manager and the performance audit committee (Reg 14(1)(c)).

4.2.6.3 Reasonable expectations

The functions of the internal audit committee should be to include advice on environmental risk management, environmental performance management, effective local environmental governing, environmental law compliance, and responses to environmental findings by the Auditor-General, for example.

Only the environmental commitments defined in the strategic SDBIP are subject to internal audit verification. It is therefore imperative that the objectives of the EI&MP be translated as actions in both the IDP and SDBIP.

4.2.7 Performance management system (PMS)

The MMM is legally required to have a performance management system (PMS) that is commensurate with its resources, best suited to its circumstances, and in line with the priorities, objectives, indicators and targets contained in its IDP and the SDBIP (S 38 of the Systems Act).

The MMM is expected to promote a culture of performance management among its political and administrative structures and is expected to administer its affairs in an economical, effective, efficient and accountable manner. One of the objectives of the PMS, (as with the SDBIP) is to serve as an early warning indicator of under-performance (S 41(2) in terms of the requirements of the Systems Act). The PMS is not restricted to financial priorities, objectives, indicators and targets, and should hence also be seen as a valuable instrument to improve and monitor the environmental performance of the MMM.

4.2.7.1 Legal mandate and prescribed content

The PMS must be adopted before or at the same time as the commencement of the process of setting key performance indicators (KPIs) and targets in accordance with the MMM's IDP (Reg 8). The MMM must set key KPIs including input indicators, output indicators and outcome indicators in respect of each of the development priorities and objectives referred to in S 26(2) of the Systems Act. A KPI must be measurable, relevant, objective and precise (Reg 9(1)(b)). In setting KPIs, the MMM is required in terms of the Regulations to ensure that the local community is involved and that KPIs are set for all of the administrative units and employees and with every party with which the MMM has entered into a service delivery agreement (Reg 9).

The KPIs must be accompanied by performance targets that must be practical and realistic and must, for example, measure the efficiency, effectiveness, quality and impact of the performance of the MMM (Reg 12).

General KPIs are prescribed by the Regulations (Reg 10) and include:

- The percentage of households in the MMM with access to a basic level of water, sanitation, electricity and solid waste removal;
- The percentage of households in the MMM earning less than R1100.00 per month with access to free basic services;
- The percentage of the MMM's capital budget actually spent on capital projects identified for a particular financial year in terms of its IDP;
- The number of jobs created through the MMM's local economic development (LED) initiatives, including capital projects;
- The number of people from employment equity target groups employed in the three highest levels of management in compliance with the MMM's approved employment equity plan;
- The percentage of the MMM's budget actually spent on implementing its workplace skills plan; and
- Financial viability as expressed by specified ratios.

The MMM's PMS must do at least the following, as required by the Systems Act:

- Set appropriate KPIs as a yardstick for measuring performance, including the outcomes and impacts, with regard to the MMM's development priorities and objectives as set out in its IDP;
- Set measurable performance targets with regard to these development priorities and objectives;
- Monitor performance with regard to these development priorities and objectives and measure and review performance at least once a year;
- Take steps to improve performance with regard to those development priorities and objectives where performance targets are not met; and
- Establish a process of regular reporting to
 - The council and the rest of the MMM;
 - The public; and
 - Appropriate organs of state.

The KPIs must be reviewed annually as part of the overall performance review processes as well as when the MMM's IDP is reviewed (Reg 11). The MMM's performance must also be monitored, measured and reviewed. The regulations also require that the municipality must, after consultation with the local community, develop and implement mechanisms, systems and processes for the monitoring, measurement and review of performance in respect of the KPIs and performance targets set by it (Reg 13).

4.2.7.2 Responsibility for the PMS

The MMM's executive mayor must manage the development of the PMS and should assign responsibilities in this regard to the municipal manager. The MMM must further have mechanisms and processes in place to monitor and review its PMS (S 40 of the Systems Act).

The community must in terms of the Systems Act and the Municipal Planning and Performance Regulations of 2001 be involved in the development, implementation and review of the MMM's PMS and must have an opportunity to be specifically involved in the development of KPIs and performance targets for the MMM (S 42 and Chapter 4 of the regulations). The results of performance measurements in terms of the PMS must be audited as part of the MMM's internal auditing processes and annually also by the Auditor-General (S 45).

The MMM must also prepare a performance report for every financial year, which forms part of the MFMA annual report discussed previously. This report feeds into the annual reports on municipal performance of the MEC for local government in the Free State Province and of the Minister of Co-operative Government and Traditional Affairs (CoGTA).

4.2.7.3 Reasonable expectations

The indicators and targets set for the administrative units, employees and service delivery agents of the MMM should include environmental indicators and targets and must reflect the objectives of the EI&MP. The MMM's mechanisms, systems and processes must provide for reporting to council at least twice a year, which should enable the early detection of indications of environmental under-performance, or poor environmental governing, and create opportunities for corrective measures where under-performance is identified.

Environmental indicators²⁷ should include the following types of indicators:

- Environmental condition indicators (ECI) that define specific environmental condition indicators such as the level of *e-coli* in drinking water and effluent from waste water treatment works (WWTWs);
- Environmentally related operational indicators (EOI) such as the percentage of potable water lost as non-revenue water, or the flow of feed into a WWTW as a percentage of its design capacity; and
- Other legally required environmental indicators (ELI) that are not EOIs or ECIs, such as the number of qualified staff available to a WWTW.

4.2.8 Delegation system (internal delegations)

The Systems Act (S 59) demands of the MMM to develop an internal system of delegation that maximises administrative and operational efficiency and provides for adequate checks and balances. In accordance with this system:

²⁷ See ISO 14031 for more information on these indicators.

- Powers may be delegated, except for a listed few, to any of the MMM's other political structures, political office bearers, councillors or staff members (e.g. members in the Environmental Management Division);
- The persons and structures mentioned may be instructed to perform any of the MMM's duties (including duties in terms of national or provincial environmental law); or
- Any such delegation or instruction may be withdrawn.

A delegation or instruction must meet set requirements such as that it may not be in conflict with the Constitution or framework local government law and it must be in writing. It must further be reviewed when a new council for the MMM is elected.

The system of delegation does not divest the council of responsibility concerning the exercise of any power or the performance of any duty. Appeal procedures must be available when any person's rights have been affected by a decision taken by a structure, political office bearer, councillor or staff member of the MMM who acted in terms of a delegated authority. The appeal process is clearly outlined in S 62 of the Systems Act. There is also a duty on a political structure, political office bearer, councillor or staff member of the MMM to whom a delegating authority has been delegated to report to the delegating authority at such intervals as the delegating authority may require.

4.2.8.1 Reasonable expectations

Sound environmental local management and governance by the MMM requires a system of delegation that makes it possible for the most relevant structures and staff members of the municipality to execute certain environmental functions. Environmental delegations must be allocated cautiously and must take into account matters such as reporting lines.

4.2.9 By-laws

A by-law is an act or legislation passed by the municipality. By-laws regulate the behaviour of individuals and legal persons such as companies and industries in the jurisdiction of the municipality by creating duties and rights and by setting rules. When these rules are breached, the duties are not fulfilled, or someone's rights are affected, trespassers may be held accountable in terms of the MMM's by-laws. Fines may be issued or the matter may be taken to the Magistrate's Court (or the municipal court, once established).

The MMM's by-laws create legally enforceable law in the same way that any provincial or national act does. This is extensively discussed elsewhere in this report. While the MMM may decide to adopt specific by-laws, some by-laws are prescribed, for example a waste management by-law.

By-laws may be critical for the MMM to require community members and industries to act and operate in an environmentally sound manner and in a way that ensures that the MMM functions in accordance with the NEMA section two principles, for example.

The power to promulgate by-laws (the legislative authority of the council) vests in the council in terms of both the Constitution (S 156) and the Systems Act (S 11). The MMM is entitled to promulgate and administer by-laws 'for the effective administration of the matters which it has the right to administer'. Many of these matters are of environmental relevance, such as the control of air quality, noise control, and water and waste services. The extent of this 'right' of the MMM is determined by way of a review of the Schedule 4B and 5B items in the Constitution, but also by considering any functions that have been assigned to the MMM in terms of provincial and national legislation.

The MMM's environmental by-laws (e.g. waste, air quality or water services by-laws) may be enforced only after they have been published in the Free State Provincial Gazette. These by-laws

must also be accessible to the public. The MMM must by law compile and maintain a so-called 'municipal code,' which is a compilation of all of its by-laws. This code must be constantly updated and annotated and must be kept at the MMM's head office as the official record of all by-laws. The environmental by-laws of the MMM should form part of its code.

4.2.9.1 Reasonable expectations

Any municipality that embraces its management and governing functions will understand the importance of a suite of effective and up-to-date by-laws enabling it to regulate relationships and the behaviour of the community.

The implementation of the EI&MP of the MMM as well as the sound environmental governing practice by the municipality demand that several environmental by-laws be adopted, implemented and enforced. The nature and extent of by-laws as well as the enforcement of by-laws are unpacked elsewhere in this report.

4.3 The relevance of this section to the EI&MP

The EI&MP is an environmental management, governing and governance instrument that the MMM uses to regulate the behaviour and activities of others that it is mandated to govern and manage. While the EI&MP is not a statutorily prescribed instrument (such as, for example, the IDP, the annual budget or the SDBIP) its successful adoption and use depend on the content, scope, quality and effective integrated use of all the other prescribed local government and spatial instruments.

The exact relevance of the general management, governing and governance instruments alluded to depends ultimately on how and to what extent the MMM's councillors and officials package, adopt, and use the suite of instruments that is available. The relationship between the general management, governing, and governance instruments that South African municipalities must use and environmental management, governing, and governance is illustrated in Table 44.

Table 44. Local governance instruments and EI&MP interface

Local governance instrument	Relevance for the MMM EI&MP
Risk management system	<p>The MMM's risk management policy should include environmental risks to support objectives of the EI&MP.</p> <p>The EI&MP is to be informed by and aligned with any identified risks.</p>
The IDP	<p>Environmental objectives identified in the EI&MP must be 'scaled up' to feature as objectives in the IDP.</p> <p>The EI&MP must be fully aligned with the existing IDP. Future revisions of the IDP must be fully aligned with the EI&MP.</p> <p>The EI&MP must be aligned with existing statutory sector plans of environmental relevance.</p> <p>Future revisions of statutory sector plans must be aligned with the overarching environmental objectives set in the EI&MP.</p>

Local governance instrument	Relevance for the MMM EI&MP
The budget and financial reporting	<p>The implementation of the EI&MP demands that its objectives and required actions feature in the MMM budget.</p> <p>Financial reporting offers an opportunity to detect and address under-spending or other challenges related to expenditure towards EI&MP objectives.</p>
Budget-related policy	<p>Objectives set in the EI&MP must inform the MMM's budget-related policy, as these policies create financial instruments by means of which:</p> <ul style="list-style-type: none"> • Community and stakeholder behaviour can be changed or influenced; • Revenue can be raised e.g. for environmental governing purposes; • The MMM can put into effect the polluter-pays principle and environmentally sound procurement practices.
The SDBIP	<p>The SDBIP provides the basis for measuring performance in service-delivery against end-of-year targets and the implementation of the MMM budget.</p> <p>Service-delivery encompasses several environmental governing functions of the MMM reflected in the EI&MP e.g. waste and water services.</p>
Internal auditing	<p>The MMM's internal auditing:</p> <ul style="list-style-type: none"> • Is fundamentally risk based; • Provides assurance of environmental performance; • Provides assurance of effective local environmental governing; • Provides assurance of environmental law compliance improvement; • Verifies the MMM's responses to environmental findings by the Auditor-General.
The PMS	<p>The PMS requires of the MMM to develop and implement mechanisms, systems and processes for the monitoring, measuring and review of performance in respect of KPIs and performance targets set in the IDP.</p> <p>The PMS should include environmental indicators and targets as envisaged by the EI&MP.</p> <p>The MMM's mechanisms, systems and processes must provide for reporting to council at least twice a year; it should also enable the early detection of indications of environmental under-performance or poor environmental</p>

Local governance instrument	Relevance for the MMM EI&MP
	governing and should provide for corrective measures where under-performance is identified.
System of delegations	<p>The MMM's environmental functions (as identified in the EI&MP and law and policy) must be executed:</p> <ul style="list-style-type: none"> • At the most appropriate level; and • By the most suitable of the MMM's structures. <p>The MMM's system of delegations makes necessary delegations possible.</p>
By-laws	<p>The MMM's environmental by-laws are critical to force community members and industries to act and operate in an environmentally sound manner (as envisaged in the EI&MP); and in a way that ensures that the MMM functions in accordance with NEMA s 2 principles, for example.</p> <p>The MMM's environmental by-laws must be aligned with national and provincial environmental law.</p> <p>The MMM's environmental by-laws must be revised and amended as changes in law or circumstances demand.</p>

4.4 *Status quo* at the Mangaung Metropolitan Municipality

Table 45 reflects the nature and extent to which the MMM has indeed adopted the management and governance paradigm described in the preceding sections.

Table 45. Adoption, implementation and use of instruments for local environmental governing by the MMM

Local governance instrument	Adopted by the MMM (Yes/No)	The MMM implements and uses the instrument to achieve environmental objectives (Yes/No/Inconsistently, with significant room for improvement)	The nature and extent to which the MMM addresses environmental governing and management objectives
The IDP and statutory sector plans	Yes	Inconsistently, with significant room for improvement.	The MMM IDP inconsistently addresses environmental commitments in the IDP. Commitments related to waste management are comprehensive, while no commitments are made for waste- water treatment, for instance.
Municipal budgeting and financial reporting	Yes	Inconsistently, with significant room for improvement.	Budgeting is aligned with the IDP commitments. If the IDP

Local governance instrument	Adopted by the MMM (Yes/No)	The MMM implements and uses the instrument to achieve environmental objectives (Yes/No/Inconsistently, with significant room for improvement)	The nature and extent to which the MMM addresses environmental governing and management objectives
			commitments are inadequate, then so are the budget allocations.
Budget-related policies	Yes	Inconsistently, with significant room for improvement.	Budget-related policies do not really provide for appropriate payments for environmental services such as waste disposal, the provision of potable water and the treatment of wastewater, amongst other matters.
The SDBIP	Yes	Inconsistently, with significant room for improvement.	The SDBIP is aligned with the IDP commitments. If the IDP commitments are inadequate, then so are the budget allocations. The new streamlined strategic SDBIP limits the incorporation of detailed environmental commitments.
Internal auditing	Yes	No	Internal auditing is aligned with the IDP and SDBIP commitments. If the IDP and SDBIP commitments are inadequate, then so are the internal audit protocols.
Environmental indicators	No	No	The MMM does not really set detailed environmental indicators, and where some environmental indicators are set, they are not directed at environmental performance.
The PMS	Yes	No	The PMS is based on the IDP, budget, SDBIP, and indicators that are set per year. If any of these are inadequate, then so will the PMS be as well.
The system of delegations	Yes	No	The delegation of powers policy does not provide for the delegation of environmental powers and duties.
By-laws	Yes	Yes	The MMM has embarked upon an extensive programme to review and revise its portfolio of by-laws. This

Local governance instrument	Adopted by the MMM (Yes/No)	The MMM implements and uses the instrument to achieve environmental objectives (Yes/No/Inconsistently, with significant room for improvement)	The nature and extent to which the MMM addresses environmental governing and management objectives
			includes a suite of environmentally related by-laws. The enforcement of by-laws remains a challenge, though.

4.5 Conclusion

Local government in South Africa must, by virtue of provisions made in law, adopt and use specific management, governing, and governance instruments. These instruments are designed to discover the items that need to be managed and governed, the planning thereof, the allocation of budgets and performance indicators that are then linked to a performance management system and, finally, performance reporting. These tools are generally well developed and used by the MMM, but they are not generally employed to manage and govern environmental matters.

5 MANGAUNG METROPOLITAN MUNICIPALITY AND CO-OPERATIVE GOVERNMENT

5.1 Introduction

Environmental management and governing is a concurrent mandate of a number of organs of state across all three spheres of government. Co-operative government is the approach to ensuring general alignment of the governing effort between the line functioning administrative units of all three spheres of government.

The following legislation defines and specifies the requirements for co-operative government:

- The Constitution (Chapters 3 and 7),
- The Inter-governmental Relations Framework Act (13 of 2005) and its regulations,
- The Local Government: Municipal Systems Act (32 of 2000),
- The Local Government: Municipal Finance Management Act (56 of 2003); and
- The Local Government: Municipal Structures Act (117 of 1998) and
- The National Environmental Management Act (107 of 1998).

A range of legal requirements and arrangements stipulates procedures and institutions for co-operative government and good inter-governmental relations. The MMM must take these requirements for co-operative government into account in terms of its local environmental management, governing and governance effort to be effective, efficient and responsive.

5.2 Requirements and arrangements for co-operative government

Despite the importance of co-operative government in the local sphere of government, there are limited statutory rules and requirements that define co-operative environmental government between a municipality and other organs of state; and among the directorates and political and administrative functionaries of a municipality.

Instead, the law establishes some generic structures for co-operation, setting out broad objectives and principles to guide the interaction between organs of state, ensuring aligned decision-making and planning by them. A combined reading of the Constitution and local government and environmental law and policy indicates that in its environmental management and governing effort, the MMM must:

- In association with other organs of state ensure that all collaborate with one another to achieve common goals within a framework of mutual support;
- Collectively contribute to the well-being of people;
- Provide for effective, transparent, accountable and coherent environmental governing;
- Co-ordinate its environmental governing activities with the activities of other organs of state to avoid costly duplication;
- Be loyal to the Constitution, the Republic and its people;
- Respect the constitutional status, institutions and environmental powers and functions of the other government spheres i.e. the provincial (Free State) and the national spheres;

- Exercise its environmental powers and perform its functions in a manner that does not encroach on the geographical, functional or institutional integrity of government from another sphere (e.g. the Free State provincial government); and
- Co-operate with other organs of state (e.g. the provincial and national environmental authorities) and internally in mutual trust and good faith by: fostering friendly relations; assisting and supporting one another; sharing information; consulting on matters of common interest; and coordinating its environmental actions and by-laws with those of other organs of state.

5.2.1 Who should co-operate?

Co-operative government is required among all organs of state in South Africa and between their internal divisions, departments, or entities. In the local government context, a distinction is made between *inter*-governmental and *intra*-governmental co-operation.

Inter-governmental co-operation means co-operation among the line functioning units of the three spheres of government and between the MMM and other municipalities.

Intra-governmental co-operation for the purposes of the EI&MP refers to co-operation among the directorates, divisions and other sections in the MMM's organisational structure.

5.2.1.1 Intra-governmental co-operation

Section 51 of the Systems Act specifies that the 'organisation of municipal administration' must foster intra-governmental co-operation. The MMM must establish and organise its administration in a manner that facilitates the achievement of a number of overarching governance objectives. The MMM must establish and organise its administrative processes and structures in a manner that allows it to:

- Be responsive to the environmentally relevant needs of the local community of the MMM;
- Facilitate a culture of public service and accountability amongst the staff of the MMM;
- Be performance oriented and focused on the environmentally relevant objects of local government (e.g. sustainable service delivery) and its development duties;
- Ensure that the political structures, political office bearers and managers and other staff members of the MMM align their roles and responsibilities with the environmentally relevant priorities and objectives in the IDP;
- Establish clear relationships, and facilitate co-operation, coordination and communication between the political structures and political office bearers and the MMM's administration; and the political structures, political office bearers and administration of the MMM and the local community;
- Organise the structures and administration of the MMM in a flexible way in order to respond to changing priorities and circumstances relevant to the environment;
- Perform its environmental functions through operationally effective and appropriate administrative units and mechanisms, including departments and other functional or business units and when necessary, on a decentralised basis;
- Assign clear environmental responsibilities to manage and coordinate the MMM's administrative units and processes;
- Hold the municipal manager of the MMM accountable for the overall performance of the municipality's administration;

- Maximise the efficiency of communication and environmental decision-making in the administration of the MMM;
- Promote and facilitate co-operative environmental decision-making;
- Contribute to the smooth flow of environmental information within government and between the MMM and the community, with a view to enhancing the implementation of environmental policy and programmes;
- Delegate responsibility for environmental management to the most effective level in the administration of the MMM;
- Involve staff in management decisions relevant to environmental governing as far as is practicable; and
- Provide an equitable, fair, open, and non-discriminatory working environment.

The above suggests that much of what is necessary for good *intra*-governmental co-operation in the MMM's environmental governing effort depends on the structure of and the allocation and delegation of roles and responsibilities. The Systems Act (S 53) sets a number of obligations in this regard. The MMM must:

Define the specific roles and areas of responsibility of each political structure and political office bearer in the MMM and of the municipal manager.

These role and areas of responsibility must be defined in precise terms by way of separate terms of reference, in writing, for each political structure or political office bearer and the municipal manager. The terms of reference may include the delegation of powers and duties.

When defining the roles and areas of responsibility of the political structures, office bearers and the municipal manager, the MMM must determine:

- The relationships between the political structures and administration and the manner in which they must interact;
- Appropriate lines of accountability and reporting for those political structures and political office bearers and the municipal manager;
- Mechanisms, processes and procedures for minimising cross-referrals and unnecessary overlapping of responsibilities between those political structures and political office bearers and the municipal manager of the MMM; and
- Mechanisms, processes and procedures to facilitate interaction between political structures, political office bearers, the municipal manager, and other staff members of the MMM.

5.2.1.1.1 The MMM committees for intra-municipal co-operation

Inter-governmental committees are important structures to facilitate co-operative government and good working relationships. A number of municipal committees are provided for in the Structures Act that are relevant for environmental management, governing and governance by the MMM.

The national government's recent local government Back to Basics (B2B) Programme states that municipalities will be 'constantly monitored and evaluated' on the functionality of municipal committees as these structures are regarded as essential for good governing and governance'. The establishment of municipal committees must further comply with the 'criteria that govern the establishment of committees' as outlined in S 33 of the Structures Act. The establishment of a committee by the MMM must take into account:

- The extent of the functions and powers of the MMM;
- The need for delegation of those functions and powers in order to ensure efficiency and effectiveness in the performance of the MMM; and
- The financial and administrative resources of the MMM available to support the proposed committee.

5.2.1.1.1.1 The mayoral committee (Mayco)

The MMM's executive mayor has the authority in terms of S 60 of the Structures Act to appoint a mayoral committee (Mayco) from among the councillors to assist the mayor. The mayor may delegate specific responsibilities and powers to each member of the Mayco.

In principle, an environmental management, governing, governance oversight function, and related powers can therefore be delegated to a Mayco member. The Mayco must consist of the deputy executive mayor (if any) and as many councillors as may be necessary for effective and efficient management, governing and governance by the municipality. A maximum of twenty per cent of councillors (or ten) councillors may serve on the Mayco.

5.2.1.1.1.2 The executive management committee (EMT)

The MMM's council may in terms of S 44 of the Structures Act establish an executive committee. This committee is the principal committee of council and has a range of powers and functions including to identify and prioritise the needs of the MMM, and to recommend to council strategies, programmes and services to address priority needs through the IDP and estimates of revenue and expenditure, taking into account any applicable national and provincial development plans.

The EMT receives reports from other municipal committees, and then forwards those reports with recommendations to council. The EMT is responsible for the criteria in terms of which progress in the implementation of the MMM's strategies, programmes and services (including environmental strategies, programmes and services) are to be evaluated. Exco must oversee the sustainable provision of services to the communities of the MMM. The EMT meetings are called and chaired by the mayor. The EMT must report to council on all the decisions of the committee.

5.2.1.1.1.3 Ward committees

In terms of S 72 of the Structures Act, the MMM may establish ward committees to enhance participatory democracy. A ward committee consists of the councillor representing the ward in council, who acts as the chair of the committee, and not more than ten other persons representing the community.

These ward level needs often include environmental matters such as waste, parks, noise, and access to water, and they are often recorded in the IDP. A ward committee has functions and powers relevant to the environment in which people live and work.

5.2.1.1.1.4 Section 79 committees

The MMM's council may in terms of S 79 of the Structures Act establish one or more committees for the effective and efficient performance of any of its functions and powers. This means that the MMM can establish a S 79 committee devoted to environmental management, governing and governance issues. The S 79 environmental committee often consists of (a) councillor(s) and environmental experts from the community.

Section 79 committees often have short life spans as they are convened to address specific issues. They do not have any decision-making powers, but they can make recommendations to council.

5.2.1.1.1.5 **Section 80 or portfolio committees**

As in the case of S 79 committees, the council may appoint a committee of councillors to assist the executive mayor. The difference between a S 79 and a S 80 committee is that members of the community, experts, and others (e.g. municipal officials) may serve on S 79 committees but S 80 committees are reserved for councillors only. Section 80 committees are also called 'Portfolio committees'. The number of portfolio committees per municipality is limited to the number of members of the Exco or the Mayco.

The executive mayor appoints the chair of a portfolio committee from the Exco or Mayco members. The executive mayor may delegate any powers and duties of the Exco, or the mayor, to a portfolio committee, but may change or revoke any decision made by it. A portfolio committee must report to either the Exco or the executive mayor depending on the directions applicable. Portfolio committees do not report to council. These committees are usually permanent committees dedicated to a specific area of the municipality's work (e.g. environmental management, governing, and governance). Portfolio committees advise the executive mayor on policy matters (e, g. sustainable service delivery planning) and make recommendations to council.

The MMM established the following S 79 and 80 committees:

- Finance, IDP and performance management;
- SMME and rural development;
- Planning;
- Community and social services;
- Transport and public safety;
- Economic development;
- Human settlements;
- Corporate services;
- Environmental management, parks and solid waste; and
- Infrastructure and public works.

5.2.1.1.1.6 **The oversight committee**

The oversight committee is created in terms of the MFMA (S 129) and the Structures Act (ss 33 and 79). The executive mayor and other members of the Mayco and the Exco may not serve on the oversight committee.

The committee can include community representatives. The task of the committee is to review the MMM's Annual Report and prepare a draft oversight report for the council. Representatives from the Auditor-General must be invited to each meeting and the municipal manager must attend each meeting.

5.2.1.1.1.7 **The municipal public accounts committee (MPAC)**

The municipal public accounts committee is contemplated by the MFMA (S 129) and established in terms of the Structures Act (S 79). This committee must function in accordance with the guidelines set by National Treasury.

The committee is accountable to the council, and the members and the chairperson are appointed by council resolution. The mandate of this committee is to prepare a draft oversight report while council through the adoption of a term of reference may assign other responsibilities.

5.2.1.1.8 The audit committee

Every municipality must have an audit committee in terms of the MFMA (S 166). The council must approve the terms of reference of the committee.

The audit committee is an independent advisory body appointed by and accountable to council. No councillors may serve on this committee but council must appoint the chairperson. Officials may serve on the audit committee. The committee must meet at least four times per year and has access to all financial records and other relevant information of the municipality. The audit committee must advise the council on a range of issues and review the annual financial statements. It should carry out such investigations into the financial affairs of the municipality as are requested by council and must respond to council on any issues raised by the Auditor-General in the MMM's audit report.

5.2.1.2 Involvement of traditional leadership

The leaders of traditional authorities that observe a system of customary law within a municipality may participate in the proceedings of council (S 81 of the Structures Act). Traditional leaders must be allowed to attend and participate in any council meeting if they indicate the wish to do so. It is not compulsory, however, for traditional leaders to participate in the activities of a municipality.

In the case of the MMM, the MEC for local government in the Free State Province must identify the traditional leaders who may participate in the proceedings of council. Before council takes a decision on any matter that directly affect the area of a traditional authority, council must give the leader of that authority the opportunity to express a view on the matter.

5.2.1.3 The nature and extent of fragmentation at the MMM

Environmental management, governance and governing functions are fragmented across different directorates, sub-directorates and divisions of the MMM. The co-ordination and alignment of the environmental management, governing, and governance effort, as envisaged by the principles of co-operative government, are compromised by the absence of any processes and or structures to facilitate alignment across these divides.

The profundity of the extent of the fragmentation is illustrated by the analysis of the municipal role players in:

- Environmental management processes (see Table 46),
- Environmental compliance processes (see Table 47),
- Environmental governance (see

- Table 48) and
- Environmental governing processes (see Table 49).

Table 46. Environmental management functions of the MMM

Directorate	Sub-directorate/Division
Office of the Deputy Executive Director: Operations	PMU: EPWP
	Inter-governmental Relations
	Alternative Funding
Planning	Environmental Strategic Planning
	Environmental Implementation
	Environmental Assessment
Social Services	Micro-Laboratory Services
Corporate Services	Human Resources Development

Table 47. Compliance management functions of the MMM

Directorate	Sub-directorate/Division
Office of the Deputy Executive Director: Operations	Establishment of Entities/Business
Engineering Services	Roads and Storm Water
	Water
	Sanitation
Planning	Architectural Services
	Fresh Produce Market
Human Settlements	Mixed Development
	Project Management
	Informal Settlements
	Land Development
Social Services	Horticultural Services
	Zoo and Kwaggafontein
	Natural Resource Management
Corporate Services	Facilities Management
Strategic Projects	Strategic projects
Economic and Rural Development	Tourism
	Rural development
	SMME

Directorate	Sub-directorate/Division
Waste and Fleet Management	Landfill Site Management
	Solid Waste Management
	Fleet Services

Table 48. Environmental governance functions of the MMM

Directorate	Sub-directorate/Division
Organisational Planning & Performance Management	Organisational Planning & Performance Management
	Risk Management
	Internal Audit
	Institutional Compliance
Finance	Asset Management
	Rates and Taxes
	Supply Chain Management
	Asset Management
Corporate Services	Facilities Management
	Individual Performance Management
Strategic Projects	City Services Monitoring and Evaluation
Economic and Rural Development	Tourism
	Rural Development
	SMME

Table 49. Environmental governing functions of the MMM

Directorate	Sub-directorate/Division
Planning	SDF
	Development Applications
	Transport Planning
	Urban Design
	Building and Zoning Control
	Enforcement
Social Services	Water Quality Management
	Pollution Control
	Compliance
	Arts and Heritage
	Fire and Rescue
Public Safety	Law Enforcement
Corporate Services	Legal Services
Waste and Fleet Management	Compliance

5.2.1.4 The need for a more co-ordinated approach to environmental management, governance and governing

It is imperative that the MMM explores opportunities to co-ordinate and align its environmental management, governance and governing processes as is intended by the principles of co-operative government.

A total restructuring of the environmental management, governance and governing is not feasible, while a co-operation forum, similar to the one established to co-ordinate the EPWP programme of the MMM may be a solution (see Figure 19).

The proposed structure provides for the municipal manager to chair the co-ordination forum, while the political and administrative interests are also represented.

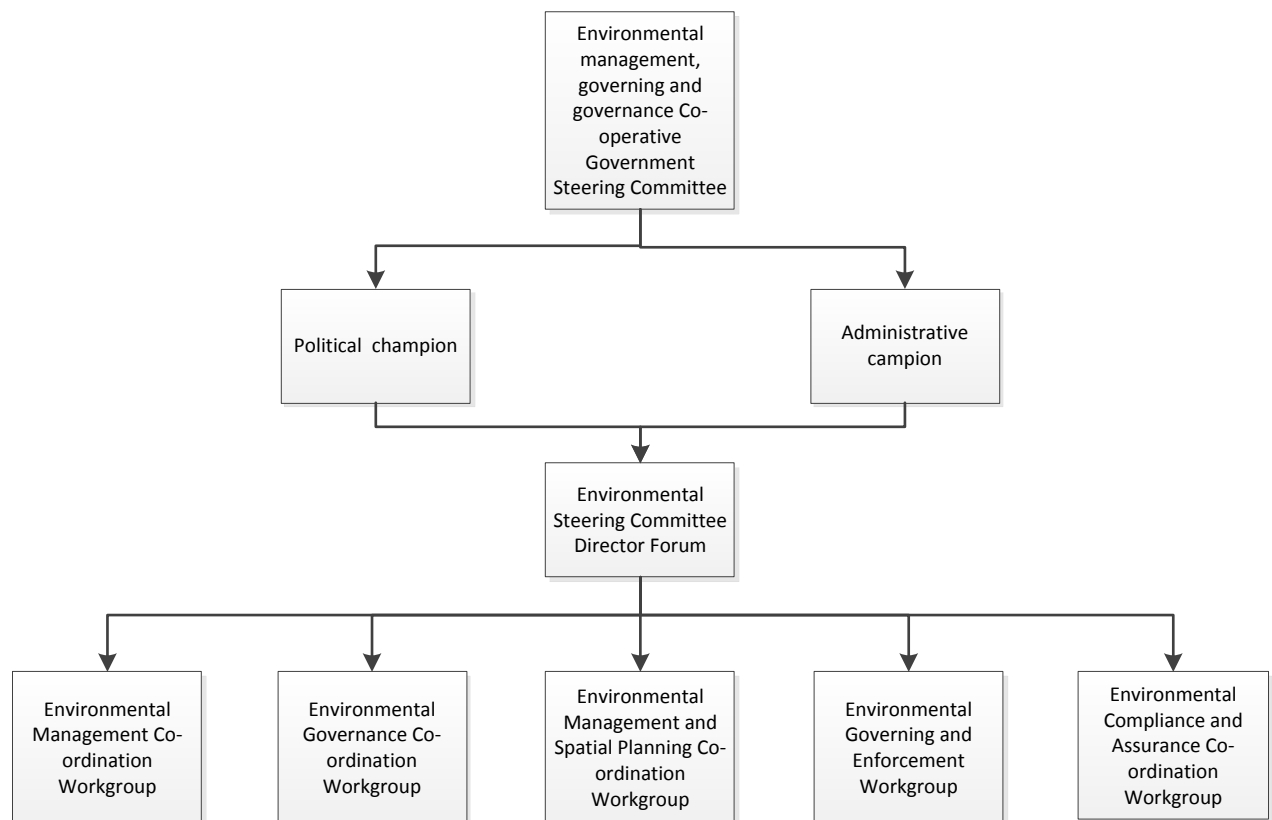


Figure 19. Environmental management, governing, and governance co-ordination structure

5.2.2 Inter-governmental co-operation

The general planning and environmental governing principles in South Africa are clear about the need to align all the environmental plans and policies of government. The White Paper on Local Government states that one of the strategic purposes of co-operative government is to co-ordinate and align priorities, budgets, policies, and activities across interrelated functions and sectors.

The MMM must align all of its environmentally relevant priorities, policies, by-laws and activities with those of surrounding municipalities and the provincial and national authorities. The environmental plans, policies, by-laws and activities of the MMM must also be aligned with the NEMA principles and the environmental implementation and/or management plans of all the relevant national and provincial departments.

The Systems Act, for example, also dictates that the IDP of the MMM must be aligned with and should complement the development plans and strategies of other affected municipalities and other organs of state (e.g. the Free State Province), to give effect to the principles of co-operative government.

The MMM must also report specific matters to the line functions of the national and provincial governments, while it must also comment on the regulatory processes administered by them. In some instances, municipalities are also mandated to co-govern others in association with line functions of the provincial and national spheres of government.

5.2.2.1 The MMM and national government

The relationship between the MMM and national government relates amongst other matters to:

- The alignment of the policies, plans, programmes and instruments such as by-laws with national policies, programmes and legislation;
- The MMM's participation in a number of programmes sponsored by national government departments such as but not limited to the EPWP, housing, waste management etc.;
- Reporting performance to national government departments,
- Co-governing by the MMM, where the latter has the executive mandate to co-govern with departments of the provincial and national spheres such as environmental authorisations and air quality licences; and
- Commenting on the processes administered by national and provincial departments such as the issuing of environmental authorisations by the latter.

5.2.2.2 Reporting to national departments

In terms of S 107 of the Systems Act, the Minister may require the MMM to submit to a specified national organ of state such information concerning their affairs as may be required in the notice, either at regular intervals, or within a specified period. Several financial and environmental statutes and their regulations require reporting of this kind to different provincial and national government departments. These requirements include the following examples:

- Executive mayors must report annually on the involvement of communities and community organisations in the affairs of the municipality (e.g. in their IDPs, PMSs and budgeting processes) (S 56 of the Structures Act);
- Every municipality must prepare for each financial year a performance report reflecting, among other things, the performance of the municipality and the measures taken to improve performance (S 46 of the Systems Act). In some instances the performance report is expected to refer to performance in specific environmental sectors such as waste (S 13(3) of the NEM:WA). The performance report must form part of the annual report of the municipality as required in terms of S 121 of the MFMA;
- Municipalities must report to the Minister of DEA to enable him or her to generate an Annual Performance Report on Sustainable Development in terms of Agenda 21 (S 26(2)(a) of the NEMA). This report must include information on air quality management, for example (S 17 of the NEM:AQA);
- The DEA may require that a municipality must provide it with information regarding the monitoring of the conservation status of biodiversity in its area as well as positive and negative trends affecting the conservation status of various elements of biodiversity (S 49 of the NEM:BA);

- The municipality must annually report to the South African Heritage Resources Agency on the maintenance and development of heritage resources (S 9(2)(b) of the NHRA);
- If the municipality has taken steps to curtail an emergency incident it must as soon as is reasonably practicable send a comprehensive incident report to the DEA and the Department of Water Affairs in terms of S 30(10) of the NEMA and S 20(3) of the the NWA respectively; and
- Municipalities may be required in terms of a range of environmental authorisations and the conditions attached thereto to report specified information to the competent authorities and in some cases to the interested and affected communities.

5.2.2.3 Local government commenting on national legislation and authorisations

Local government must comment on environmental legislation drafted by national or provincial legislatures, should the proposed legislation affect the status, powers and functions of a municipality such as the MMM. The same applies to the publication of national norms and standards pertaining to municipal service delivery.

The MMM must also comment on environmental assessment reports before an environmental authorisation is issued in terms of S 24 of the NEMA. The competent authority must be informed that a proposed development is in line with the MMM's land-use plans, its IDP, SDF or EMF and any other relevant plans, before an environmental authorisation is issued. Municipalities may also be expected to indicate to the competent authority that they are in a position to render the services necessary to a proposed development e.g. water and electricity services, sewage and waste management services.

In other instances, environmental legislation provides that municipalities must consult with or comment on actions or proposed decisions by departments of the other two spheres of government. Some of these instruments have been summarised in Table 50 by Nel, Du Plessis & Du Plessis in Du Plessis (ed) (2015: 158-161).

Table 50. Mandatory duties to consult or communicate with others

LEGAL MANDATE			MUNICIPALITY		
National/other structures	Provincial structures	Act	Consult	Comment	Recommended action where the Act is not clear
Fire Association: development of strategy		S 5(2) National Veld and Forest Fire Act	x		
National Department of Environmental Affairs: invites comments during EIA process	Provincial Department of Environmental Affairs: inviting comments during EIA process		x		Register as an interested and affected party to comment/appoint dedicated environmental official and provide name to environmental impact assessment (EIA) practitioner
Minister of Energy: develops Integrated Energy Plan (IEP)		S 6(3) National Energy Act 34 of 2008	x	x	Must take note of IEP in IDP; Minister must take note of IDP
Minister of Environmental Affairs: appoints a person to assist a municipal council to evaluate a matter relating to the protection of the environment (in writing or oral)		S 10 NEMA	x		
Minister of Environmental Affairs: before issuing a directive regarding pollution prevention etc.	MEC before issuing a directive regarding pollution prevention etc.	S 28(4) NEMA	x		
Deputy Director-General of Environmental Affairs: designates an area as a recreational area		Reg 5(3) GN R1399 of 2001	x		

LEGAL MANDATE			MUNICIPALITY		
National/other structures	Provincial structures	Act	Consult	Comment	Recommended action where the Act is not clear
where vehicles may be used for recreational purposes in a coastal zone					
Minister of Water and Environmental Affairs: drafts environmental management frameworks (EMFs)	MEC (in consultation with)	GN R547 of 2010	x	X	Ensure input Participate in the public participation process
Minister of Agriculture, Forestry and Fisheries: declares a protected area or an area as a controlled forest area		Ss 9 & 17 National Forests Act 84 of 1998		X	Respond to notice for comments and objections
Minister of Water and Environmental Affairs: norms and standards that apply to the management and conservation of biological diversity			x		
Minister of Environmental Affairs: adopts or approves a biodiversity framework, bioregional plan or biodiversity management plan		S 47 NEM:BA	x		Register as an interested party and participate in the public participation process – no obligation to consult directly with municipalities
National Energy Regulator: makes guidelines or rules or publishes codes of conduct		S 19(1) Electricity Regulation Act	x		
Minister of Energy: issues regulations regarding		S 38(4) National Nuclear	x		

LEGAL MANDATE			MUNICIPALITY		
National/other structures	Provincial structures	Act	Consult	Comment	Recommended action where the Act is not clear
developments surrounding nuclear installations		Regulator Act			
Minister of Water and Environmental Affairs: issues norms and standards for local protected areas		S 11(2) NEM:PAA	x		
Minister of Water and Environmental Affairs: declares an area as a priority area – national air quality officer	MEC declares priority area – provincial air quality officer	S 19 NEM:AQA	x		

5.2.2.4 Representation in Parliament

The MMM is indirectly represented in Parliament. A maximum of ten local government representatives are appointed to participate in the National Council of Provinces (the NCOP) in Parliament. The South African Local Government Association SALGA appoints them to represent the three categories of municipalities. The representatives do not have voting powers, though.

While the MMM is directly represented in the NCOP, a formal channel exists by way of which the MMM can voice matters of environmental concern at parliamentary level. It is important for the MMM to be actively involved in the activities and decisions of the SALGA-Free State.

5.2.2.5 National co-operative government forums

The *Inter*-governmental Relations Framework Act provides for the establishment of *inter*-governmental bodies such as the President's Co-ordinating Council, national *inter*-governmental forums, provincial *inter*-governmental forums, municipal *inter*-governmental forums, and processes to foster inter-governmental relations.

The ministerial political (MINMEC) and technical (MINTEC) structures were set up through the *Inter*-governmental Relations Framework Act to facilitate a high level of policy and strategy coherence among the three government spheres. They also co-ordinate environmental management and local government affairs. The MINMEC: Environment is a standing *inter*-governmental body consisting of the Minister of DEA, the provincial Executive Councils (MECs) responsible for environmental management functions and SALGA (organised local government). The MINMEC meets quarterly. The MINTEC: Environment is a standing *inter*-governmental body that provides technical input into the MINMEC. The MINTEC consists of the DG of DEA, the heads of provincial departments responsible for environmental management functions, and the SALGA. The MINTEC also meets quarterly.

The committee for Environmental Co-ordination was originally established in terms of S 7 of the NEMA. The purpose of the committee is to promote the integration of the environmental functions of the relevant organs of state. The intention was for this committee to align the activities of the DEA with those of other government departments and to assist with the alignment of strategic plans. The MMM's environmental management, governing and governance interests and concerns may in principle be raised at this level via the SALGA-Free State, but especially via the national SALGA representatives serving on the MINTEC and the MINMEC: Environment.

5.2.2.5.1 The MMM and the Free State Provincial Government

Several opportunities and processes exist in the Free State Provincial Government that allow for co-operation between the MMM and the provincial authorities on matters of local environmental management and governing.

5.2.2.5.2 Provincial and inter-municipal structures

The Free State Premier's Coordinating Committee is co-chaired by the Premier and the Provincial Chairperson of SALGA-Free State. Its members are the MEC responsible for local government, the SALGA, district municipalities, the metropolitan municipality (the MMM) and the Office of the Premier. The Premier's Co-ordinating Committee is the provincial executive responsible for inter-

governmental relations in the Free State Province. The Premier's Technical Co-ordinating Forum has the same membership and it supports the Co-ordinating Committee of the Premier.

The Free State Province also established the MEC/Local Government Association (MECLOGA) in 2000. The MEC for Local Government and Housing chairs the MECLOGA and the management committee of the FRELOGA (Free State Local Government Association), representing organised local government in the Province. A technical support structure was also established, comprising the Head: Local Government and Housing, the CEO and managers of FRELOGA, and the directors and chief directors of the Department of Local Government and Housing. This structure is called the Technical MECLOGA.

MECLOGA accordingly forms a provincial *inter*-governmental structure and an *inter*-governmental relations forum devoted to local government affairs. The purpose of MECLOGA is to promote and facilitate effective and efficient *inter*-governmental relations between the functional area of 'local government and housing' in the Free State Province, organised local government (SALGA-Free State) and the speakers and municipal managers of municipalities in the province. The MECLOGA meets once per quarter with the agenda being determined by the MEC for Local Government and Housing in consultation with SALGA-Free State and municipalities. Some of the issues discussed at MECLOGA are raised by the MIN/MECs responsible for local government where the MEC for the Free State also sits. MECLOGA must report to the Premier's Co-ordinating Committee, which in turn reports to the Presidential Co-ordinating Council.

As far as could be established neither the Department for Co-operative Government, Traditional Affairs, Human Settlements, nor DESTEA have specific programmes or structures that are dedicated to environmental governing by the province's municipalities. The overarching strategic objectives of the DESTEA are focused on compliance with environmental law, effective waste management, improved air quality management, and biodiversity conservation on state-owned and privately owned land.

The absence of a programme or structure for local environmental management, governing and governance in the Department implies that municipalities such as the MMM must raise environmental matters via provincial and other inter-municipal structures in the Free State Province that are focused on general local government affairs.

5.3 The *status quo* at the MMM and implications for the EI&MP

The authors of this EI&MP did not succeed in conclusively determining the *status quo* regarding the nature and operation of the various internal and external co-operation structures and processes at and by the MMM. Observations made during the fieldwork sessions suggest that the environmental management, governance and governing processes at the MMM are fundamentally fragmented and often disjointed.

The recommendation is to establish under the auspices of the municipal manager a co-ordination structure and process that provides a forum for the political and administrative interest groups, while providing an integrated forum for the diverse functions of environmental management, governing, and governance.

5.4 Conclusion

Successful implementation of the EI&MP depends on the level of alignment, co-ordination, and co-operation between:

- Different organs of state within and beyond the administrative boundaries of the MMM; and

- Between the relevant plans, policies, and programmes of these organs of state.

Co-operative environmental management, governing, and governance must counter a fragmented approach to the environmental management, governing, and governance agendas. Environmental management, governing and governance by the MMM demand both *intra*- and *inter*-governmental co-operation and good *inter*-governmental relations between:

- Directorates and other divisions of the MMM (*intra*-governmental), and
- The MMM and other municipalities and organs of state such as the Free State provincial government (*inter*-governmental).

6 MANGAUNG METROPOLITAN MUNICIPALITY AND GOVERNMENT GOVERNANCE

Municipalities in South Africa are governed by Municipal Councils. The Mangaung Council is therefore the governing body of the Mangaung Metropolitan Municipality and the custodian of its powers, duties and functions, both legislatively and administratively. Essentially, the Council performs a legislative and executive role. The Constitution of the Republic of South Africa, 1996, Chapter 7, S 160(1) defines the role of the Council as being:

- Making decisions concerning the exercise of all the powers and the performance of all the functions of the municipality;
- Electing its chairperson;
- Electing an executive committee and other committees, subject to national legislation; and
- Employing) personnel that are necessary for the effective performance of its functions.

The Municipal Council comprises the governing and decision making body of the municipality, whilst municipal officials and staff focus on implementation. The Council determines the direction for the municipality by setting the course and allocating the necessary resources. The Council establishes the policies, and municipal staff ensure that those policies are implemented. The decisions made at Council or committee level are often the result of a lot of research, consultation and advice from staff, residents, business people, and interested parties. Often there are competing interests and financial constraints that must be considered (Mangaung Metropolitan Municipality, 2014/15).

6.1 Political and administrative governance

6.1.1 Political governance

The Mangaung Metropolitan Municipality is governed by a council led by an executive mayor. All major policy and administrative decisions are presented, resolved and implemented after the approval of the council. The political system in the municipality is functioning well in that all major committees and participatory organs in the Metro are fully functional. The municipality has a functional oversight committee that meets regularly to consider policy direction and to track the performance of the municipality.

There is a functional audit committee that periodically provides advice to the council. There is a Municipal Public Accounts Committee that continues to interrogate municipal performance and thus assist the municipality to act in a manner that assists service delivery. The annual report is publicized for scrutiny by and comment from the public as well (Mangaung Metropolitan Municipality, 2016-17).

6.1.1.1 Political structure of the Mangaung Metropolitan Municipality

The political structure of the municipality is composed of the following political principals:

- Executive mayor;
- Deputy executive mayor;
- Speaker: councillor; and
- Chief whip: Councillor and ten members of the mayoral committees responsible for the following portfolios:
 - Finance;
 - Corporate Governance and Integrated Development Planning;

- Agriculture and Rural Development;
- Human Settlement;
- Environmental and Waste Management;
- Economic Development and Spatial Planning
- Health and Social Development;
- Infrastructure and Engineering Services;
- Community Safety, Emergency, Transport and Fleet Services; and
- Municipal Public Accounts.

The Mangaung Council consists of 97 elected public representatives of whom 49 are ward representatives and 48 represent their political parties on a proportional basis (Mangaung Metropolitan Municipality, 2016-17).

6.1.1.1.1 Political decision-making

A routing system of matters reserved to the council is followed, namely:

Reports are initiated by the Heads of Departments and submitted to the Corporate Secretariat Sub-Directorate. The reports are covered with a yellow cover page, numbered, headed and registered in the Council Item Register Book to indicate that the reports have been entered as an item into the system.

The items are sent to the city manager for scrutiny. The city manager engages with the reports, indicates under comments whether the reports are recommended for consideration to the executive mayor, signs them and then forwards them to the executive mayor for political engagement. The executive mayor then under comments on the yellow cover page indicates whether he/she approves the items, whether the items should be served on an agenda of the relevant section 80 Committee meeting, or whether the items should go to the council, signs the yellow forms and sends them back to the Corporate Secretariat Sub-Directorate.

The items with the yellow cover page, now fully completed with all the necessary comments and signatures, are then included in the agenda of the next ordinary/special agenda of the Mayoral Committee, where all the approved items are placed on the agenda of the council to serve before the council for final approval.

Items on the agenda of the ordinary meetings of the Mayoral Committee and the council are categorised as follows, namely:

- Section A - Items for consideration
- Section B - Items in terms of delegated power
- Section C - Items for information

Once the council has decided on a report, it is then a resolution of the council. The city manager executes the decision/resolution taken by the council by issuing execution letters to the relevant Departments (Mangaung Metropolitan Municipality, 2014/15).

6.1.2 Administrative governance

The municipal administration is divided into many different directorates and sub-directorates, all of which deliver specific services. Some sub-directorates focus on service delivery, whilst others are more concerned with internal affairs, such as the Corporate Services. Broadly speaking, directorates

are divided into two categories – those that are funded by property rates and those that are funded by income from tariffs.

The administration of the Municipality is based on nine departments, as well as an executive support office, which is vested in two Deputy Executive Directors in the Office of the City manager, namely: Strategic Planning and Operations and Performance Monitoring and Evaluation.

The administration is headed by the city manager as the Chief Accounting Officer. The day-to-day management of the municipality is carried out by staff under the direction of the City manager and Heads of Departments. The city manager and heads of departments have broad and general management responsibilities such as making sure staff are kept abreast of council's direction and identifying gaps in service delivery. Together with the council they must monitor progress on set goals and priorities (Mangaung Metropolitan Municipality, 2016-17).

6.1.2.1 Top administrative structure

The administration was made up of the following Departments headed by members of the Executive Management Team²⁸:

- City manager;
- Head: Corporate Services;
- Head: Finance;
- Head: Engineering Service;
- Head: Strategic Services and Projects;
- Head: Social Development;
- Head: Planning;
- CEO: Centlec (entity); and
- Deputy Executive Director: Organisational Planning and Performance Management.

This executive management team meets on a weekly basis to deal with pertinent service delivery matters.

Two additional posts of Head: Rural Development and Planning, and Head: Fleet and Waste Management were created as a measure to improve service delivery (Mangaung Metropolitan Municipality, 2016-17).

²⁸ Prior to the merger with Soutpan and Naledi.

6.2 Intergovernmental relations

The City participates in the Intergovernmental Forum at national and provincial level. The municipality participates actively in the Premier Coordinating Forum and the Members of Executive Council Local Government Association to raise challenges facing the municipality with other municipalities, provincial government departments and the South African Local Government Association Free State Provincial Chapter. Further, the city is a member of the Forum of Heads of Departments in the province.

At national level, the municipality participates in Human Settlements and Cooperative Governance and Traditional Affairs Minister and Members of Executive Councils, which are platforms to provide progress in implementing the Urban Settlement Development Grant, as well as the Back to Basics Programme, and teases out the impacts and outcomes thereof.

The benefit of participating in these structures is highlighted in opportunities to be harnessed by the municipality in fostering strategic partnerships with government departments (Mangaung Metropolitan Municipality, 2014/15).

6.3 Relationship with municipal entities

The municipality has established a municipal entity, CENTLEC, to provide electricity services to its citizens and manage and maintain public lighting on behalf of the City. The decisions of CENTLEC are taken by a duly constituted Board of Directors and through the business plan and Sale of Business agreement. The entity accounts to the city through the executive mayor (Mangaung Metropolitan Municipality, 2014/15).

6.4 Overview of public accountability and participation

As provided for in legislation, the municipality convened a series of meetings using a ward clustering system to induce communities to participate actively in the unfolding, planning, monitoring and budgeting processes.

The Municipal Systems Act (32 of 2000) (MSA) states that the Integrated Development Plan (IDP) must include a vision for the long-term development of the municipality and development priorities, which must be aligned with national and/or provincial sector plans and planning requirements. In terms of the MSA and Municipal Finance Management Act (53 of 2003), the Municipality must review its IDP and the organisational scorecard on an annual basis, whilst on the other hand compiling the Service Delivery and Budget Implementation Plan (SDBIP) for each year.

Annual reports address the performance of the Municipality against its performance measures as outlined in the SDBIP. The SDBIP primarily captures the annual delivery agenda of the municipality as spelt out in the IDP and the budget. In synchronisation with the deeply entrenched culture of public participation, the setting of the delivery for the period under review was highly participatory. The participation in the IDP as well as the budget encompassed involvement in the planning for the development and budget allocation including the implementation of programmes and projects that require community involvement for them to be sustainable and have the lasting impact (Mangaung Metropolitan Municipality, 2014/15).

6.4.1 Public meetings

The Mangaung Metropolitan Municipality consults with the public throughout the financial year about the IDP, tariffs, the annual reports and the by-laws. The Municipality had 49 wards, and 49 ward

committees that are functional²⁹. Because of the vast size of the Municipality, the wards are clustered to enable the municipality to reach a wider audience and consult with the public effectively. The Municipality advertises its public meetings in local newspapers and via local radio stations, as well as on the municipal website.

The following is a list of documents published and made available to the public yearly:

- The annual and adjustments budgets and all budget-related documents;
- All budget-related policies;
- The Annual Report;
- All Performance Agreements required in terms of section 56 of the MSA;
- All Service Delivery Agreements;
- All municipal tenders;
- All weekly quotations of the Municipality;
- All quarterly reports tabled in the Council in terms of section 52(d);
- All vacancies on the staff of the Municipality;
- Information about tourism and places of interest in Mangaung;
- Contact information for all directorates and sub-directorates;
- The IDP;
- The SDBIP;
- The Spatial Development Framework; and
- Council Resolutions (Mangaung Metropolitan Municipality, 2014/15).

6.4.2 Ward committees

Ward committees in the Metro serve as interfaces between the community and the municipality. They pick up day-to-day service delivery issues in wards and through the ward councillor they advance those issues for Council attention. Ward committees are the single most important institutional arrangement to ensure the continuance of an efficient and result-based participatory system.

Public engagements in the city provide opportunities for the public to contribute to, interrogate and engage with the setting of municipal priorities. Further, the municipality organises feedback sessions to report back on issues that communities have raised and how the municipality is responding. The municipal IDP contains a section that addresses issues raised by communities and municipal responses (Mangaung Metropolitan Municipality, 2014/15).

6.5 Performance management system (Metro strategic environmental performance management)

The Mangaung's Performance Management System (PMS) is the primary mechanism used in monitoring, reviewing and improving the implementation of the IDP, and in gauging the progress made in achieving the objectives set out in the IDP. It links the municipality-wide to the individual

²⁹ Prior to the merger with Naledi and Soutpan.

level of performance. Furthermore, the IDP informs the development of key areas of performance and targets across all performance levels.

This ensures the appropriate alignment between organisational and individual performance. Performance management forms part of a strategic management approach to ensure integration with the municipal strategy, planning and budgeting. This process enables the municipality to improve planning and budgeting, effectively monitor and measure performance, and transparently and convincingly report on achievements.

Legislation that governs performance management in local government includes the MSA; the Municipal Planning and Performance Management Regulations, 2001; the Municipal Finance Management Act (53 of 2003); and the Municipal Performance Regulations for Municipal Managers and Managers directly accountable to Municipal Managers, 2006 (Mangaung Metropolitan Municipality, 2016-17).

6.5.1 Municipal Systems Act 32 of 2000

The MSA requires all municipalities to promote a culture of performance review through the establishment of a PMS. The PMS must set out key performance indicators and targets, and also monitor, review and report on municipal performance, based on indicators linked to the IDP, including the national indicators prescribed by the Minister responsible for Local Government (Mangaung Metropolitan Municipality, 2016-17).

6.5.2 Municipal Finance Management Act 53 of 2003

The MFMA requires the Mayor to ensure that the performance agreements of sections 56 and/or 57 employees comply with the requirements of the MSA to promote sound financial management, and are linked to measurable performance objectives approved with the budget and included in the SDBIP, which outlines the strategic scorecard of the municipality. In addition, the MFMA sets out the reporting obligations of the municipality on the budget and the implementation of the IDP (Mangaung Metropolitan Municipality, 2016-17).

6.5.3 Municipal Planning and Performance Management Regulations, 2001

The Municipal Planning and Performance Management Regulations, 2001 require that a municipality ensures that the PMS complies with the requirements of the MSA, demonstrates the operation and management of the PMS, clarifies roles and responsibilities, and ensures alignment of employee performance management and the IDP processes (Mangaung Metropolitan Municipality, 2016-17).

6.5.4 Municipal Performance Regulations for municipal managers and managers directly accountable to municipal managers, 2006

In August, CoGTA promulgated regulations for S 57 employees, setting out how the performance of municipal managers must be planned, reviewed, improved and rewarded. The regulations make provision for the conclusion of written employment contracts, performance agreements and personal development plans.

The Municipality's process of establishing and developing the PMS ensures integration between strategic planning and performance management, by linking the planned IDP priorities and objectives to the indicators and targets used to measure performance. In addition, the process promotes alignment between planned organisational performance, as reflected in the IDP, organisational scorecards and individual performance as contained in the individual performance agreements (Mangaung Metropolitan Municipality, 2016-17).

6.5.5 Implementation of the Performance Management System in Mangaung

The PMS in the Municipality is implemented in a manner that reflects the relationship of organisational to individual performance. At the municipal level, the PMS incorporates the IDP and sector plans, and these are translated into the SDBIP, which is the municipal scorecard. In terms of legislative prescripts, the city manager is the custodian of the municipal scorecard and agrees with the executive mayor on the delivery aspects of the scorecard. The audit committee reviews the performance of the city manager in implementing the organisational or city scorecard.

Organisational performance is monitored through assessment of progress on the implementation of the SDBIP (the municipal scorecard) and reported on the SDBIP through quarterly reports. The quarterly SDBIP reports are consolidated to inform the municipality's annual performance report and ultimately the annual report for submission to the Auditor-General, the MEC for Local Government and other relevant stakeholders as legislated by the MSA. At the directorate level, all business plans serve as a linkage between organisational and individual performance. Effectively, the sector plans form the foundation for the development of business plans, which in turn inform the development of the individual Head of Directorate's (S 57 employees') scorecards, which are an endorsement of the city manager's scorecard. All the S 57 employees sign performance agreements for the financial year, as required by the MSA. The signing of performance agreements and the development of scorecards is an element of performance planning, which is part of the Municipality's PMS cycle that covers performance planning, coaching, reviewing and rewarding stages (Mangaung Metropolitan Municipality, 2016-17).

6.5.6 Managing the Performance Management System in Mangaung

6.5.6.1 Audit Committee

The Mangaung Local Municipality has established an audit committee in terms of S 166 of the MFMA, which is made up of five members. The audit committee is an independent body that advises the executive mayor, other office bearers and the municipal manager. The audit committee through its chairperson reports to the council (Mangaung Metropolitan Municipality, 2016-17).

6.5.6.2 Oversight Committee

The oversight committee is elected from members of the council. It is composed proportionally out of members of the different political parties represented on the council and reports to the council through its chairperson. At the base of oversight and reporting arrangements for Mangaung is the integrated IDP, which outlines the short- to long-term, big, and bold objectives and outcomes. The IDP contextually informs the planning approach, business plans, programmes, and projects (Mangaung Metropolitan Municipality, 2016-17).

6.5.6.3 Internal audit

The internal audit plays an internal performance auditing role, which includes monitoring the functioning of the PMS and compliance with legislative requirements. The internal audit role also involves assisting in validating the evidence provided by heads of directorates in support of their performance achievements (Mangaung Metropolitan Municipality, 2016-17).

6.5.6.4 Executive mayor and Mayoral Committees

The executive mayor and mayoral committees manage the development of the municipal PMS and oversee the performance of the city manager and heads of department (Mangaung Metropolitan Municipality, 2016-17).

6.5.6.5 Performance Panel

The city has approved a Policy on Managing the Performance of Section 56 Managers that provides for the establishment of a performance panel that will assist the executive mayor in reviewing the reported performance of the city (Mangaung Metropolitan Municipality, 2016-17).

6.5.6.6 Council and Section 79 Committees

S 79 Committees play an oversight role. They consider reports from the mayoral committee on

- The functions of different portfolios, and
- How these functions affect the overall objectives and performance of the Municipality (Mangaung Metropolitan Municipality, 2016-17).

6.5.6.7 The community

The community members play a role in the PMS through the annual IDP consultation processes, which are managed by the Office of the Speaker, working in close conjunction with the IDP and Organisational Performance Unit. MMM also encourages communities to comment on draft annual reports (Mangaung Metropolitan Municipality, 2016-17).

6.6 Conclusion

The Municipality must continuously review its PMS in accordance with the evolving nature of performance management. The current performance management policy will as a result need to be updated to comply with legislative requirements and aligned with the PMS across the entire Municipality (Mangaung Metropolitan Municipality, 2016-17).

6.7 Corporate governance

Good governance is not complete without effective oversight structures. To this end, the municipality has established the following oversight structures:

- Municipal Public Accounts Committee;
- Audit Committee;
- Internal Audit Unit;
- Risk Management Unit; and
- Risk Management Committee.

The above structures are fully operational and report to the council on their operations regularly (Mangaung Metropolitan Municipality, 2016-17).

6.7.1 Risk management

The Municipal Finance Management Act (53 of 2003) places an injunction on the municipality to maintain an effective, efficient and transparent system of risk management.

It is the municipality's policy to ensure that informed decisions are made with regards to service delivery activities by appropriately identifying and considering both risk and opportunities.

A risk management committee has been established and performs its responsibilities in accordance with its approved Charter and advises management and the audit committee on matters related to risk management in the City.

To this effect all departments work together in a consistent and integrated manner with the overall objective of reducing risks to acceptable and manageable levels.

The following are twelve strategic risks that need to be managed:³⁰

- High poverty and unemployment levels in the City;
- Threatened sustainability and financial viability of the City;
- Lack of an integrated built environment;
- Inadequate service delivery;
- Inadequate housing opportunities;
- An ineffective public transport system;
- Climate change and environmental degradation;
- Inadequate social and community services;
- Reputation risk;
- Fraud and corruption;
- Inadequate Information Technology and Communication; and
- An inability to assure good governance.

The following are challenges in implementing risk management:

- The cost of controlling the risk; and
- Perceiving the controlling of risk as an add-on function (Mangaung Metropolitan Municipality, 2014/15).

6.7.2 Anti-fraud and corruption

The municipality has a fraud prevention plan that outlines the municipality's approach to curtailing the likelihood of fraud occurring, its prevention, as well as the early detection thereof.

Numerous awareness sessions on fraud-related matters are held. Apart from fraud prevention awareness sessions, the city also has information sessions on codes of conduct and ethics.

The anti-fraud and corruption unit investigates all reported allegations of fraud, and issues reports. Depending on the outcome of the investigation, cases may be further referred to the South African Police Services, HAWKS and the South African Revenue Services, *etc.*

The municipality has established an audit committee that periodically reviews and advises on the internal controls of the municipality. The audit committee is administratively supported by the internal audit unit.

³⁰ The municipality resolved after review that the risks that were identified during the 2012/13 financial year remained the same and relevant for the 2013/2014 financial year, the identified twelve strategic risks were linked to the strategic objectives. The risks were all rated and an action plan was developed to mitigate these risks. Strategic risk maturity progress was then compiled for 2013/14.

The internal audit unit works in collaboration with both the risk and the anti-fraud units to strengthen the municipality's efforts to manage risks and combat fraud and corruption. The unit conducts internal audit reviews or investigations and submits its findings in the form of internal audit reports to both the municipal manager and the audit committee for consideration (Mangaung Metropolitan Municipality, 2014/15).

6.7.3 Capacity

6.8 Back to Basics Approach

The Back to Basic Strategy is essentially a programme geared towards guiding municipalities on what need to be done to discharge the developmental mandates assigned to municipalities by the Constitution of the Republic of South Africa, 1996. A comprehensive account of the *status quo* of local government was compiled after extensive research and informed by a monthly survey of how municipalities were discharging their responsibilities, how they interfaced with stakeholders and communities, and the effectiveness of their good governance institutional arrangements.

The strategy outlines five key performance areas that structure the Back to Basic Approach and should be followed to progressively improve the performance of municipalities. These are basic services – creating decent living conditions, good governance, public participation, financial management and institutional capacity. The following relates to institutional capacity:

- Ensuring that the top six posts (Municipal Manager, Finance, Infrastructure Corporate Services, Community Development and Development Planning) are filled by competent and qualified persons;
- Ensuring that the municipal organograms are realistic, underpinned by a service delivery model, and affordable;
- Ensuring that there are implementable human resources development and management programmes;
- Ensuring that there are sustained platforms to engage organised labour in order to minimise disputes and disruptions;
- Acknowledging the importance of establishing resilient systems such as billing; and
- Maintaining adequate levels of experience and institutional memory (Mangaung Metropolitan Municipality, 2016-17).

6.9 Recommendations for the EI&MP

It is imperative that the programmes and actions defined in terms of this EI&MP are performance tracked by means of the PMS and corporate governance instruments alluded to in this chapter.

6.10 Conclusion

The importance of the municipal performance management system (PMS) and corporate governance processes is explained in this chapter. The EI&MP programmes and actions also need to be performance tracked and assured by means of the PMS and corporate governance processes to ensure sustained planning and delivery.

7 MANGAUNG METROPOLITAN MUNICIPALITY AS A GOVERNING ENTITY

This section focuses on the powers and arrangements of the MMM to govern others in terms of environmental mandates and authorities. It also sets out steps that should be taken to induce the Council's own staff members, who fulfil numerous environment-related functions in a decentralised and fragmented dispensation, to work together as far as environmental management, governing and governance are concerned

This section explains how the law commands and enables local environmental governing by the MMM and how its authority to govern must result in the municipality's adopting and implementing a number of locally based environmental governing instruments. vThese include environmental by-laws, enforcement structures, voluntary and compulsory environmental plans, and environmental policies. The focus is therefore on the authority and mandates of the MMM to 'regulate' and 'steer' others.

7.1 Introduction

The Constitution, local government and environmental legislation provide local government with the authority to govern. South African local government has extensive and autonomous governing powers when compared with those provided in the pre-1994 dispensation.

Chapter 7 and schedules 4B and 5B of the Constitution and the Systems Act provide the mandate for local government to govern as one of the spheres of government. The courts have also pronounced on the constitutionally entrenched environmental governing authority of municipalities in recent years. Furthermore, the governing authority for specific environmental sectors such as air quality management, biodiversity conservation, protected areas and cultural heritage can under specified conditions be assigned to the MMM. In other words, while the 'original' governing powers of the MMM are covered in the Constitution and local government law, provincial (Free State), and national governing entities can also delegate additional governing powers to municipalities in terms of national and provincial environmental sector laws.

The MMM has two distinct 'governing' functions:

- The legislative authority (i.e. the power to pass by-laws); and
- The executive authority (the range of measures its executive adopts such as municipal policies, enforcement structures, voluntary and compulsory environmental plans, guidelines etc.

The MMM needs to have effective and efficient legislative and executive processes, structures and arrangements in place to effectively govern others.

7.2 The legislative authority of the MMM

The legislative authority of municipalities refers to their power to pass enforceable (local) laws that are generally referred to as by-laws. The MMM may make and administer (implement, enforce etc.) by-laws for the effective administration of the matters it has the right to administer in terms of S 156 (2) of the Constitution, as well as for matters assigned to it.

The matters which the MMM has the authority to govern are listed in schedules 4B and 5B of the Constitution (see Table 51). Many of these powers are relevant to the environment. The MMM should have comprehensive and effective by-laws to govern all these matters.

Table 51. Schedule 4B and 5B areas of local government competence

Schedule 4B	Schedule 5B
Air pollution	Amusement facilities
Building regulations	Billboards and the display of advertisements in public places
Electricity and gas reticulation	Cemeteries, funeral parlours and crematoria
Fire-fighting services	Cleansing
Local tourism	Control of public nuisances
Municipal airports	Fencing and fences
Municipal planning	Licensing and the control of undertakings that sell food to the public
Municipal health services	Local amenities
Municipal public transport	Markets
Municipal public works	Municipal abattoirs
Storm water management systems in built-up areas	Municipal parks and recreation
Trading regulations	Municipal roads
Water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposals	Noise pollution
	Pounds
	Public places
	Refuse removal, refuse dumps and solid waste disposal
	Street lighting
	Street trading
	Traffic and parking

7.2.1 Municipal by-laws

This section explores the following sub-themes:

- The municipal legislative process,
- Standard and model draft environmental by-laws, and
- Environmental by-laws and the municipal code.

Environmental by-laws such as by-laws on waste-water discharge, smoke control, water supply services, scheduled trades, air pollution control, public nuisances, municipal health and building regulations are critical instruments for local government. Environmental by-laws enable the MMM to define the rules and regulations applicable to everyone in its area of jurisdiction and they also establish the authority for the municipality to implement and enforce them. The MMM has the freedom and flexibility to define the content of by-laws as long as they are aligned with applicable national or provincial legislation.

The MMM therefore has the legislative powers to:

- Generate and adopt by-laws that regulate the environmentally related issues listed in schedules 4B and 5B of the Constitution;
- Adopt and amend any standard draft environmental by-laws published by the Free State provincial or national authorities; and

- Generate and adopt by-laws that are required in terms of national sector legislation such as the NEM:WA and the NEM:AQA.

Table 52 lists some of the environmental by-laws that are required in terms of national environmental legislation:

Table 52. Environmental by-laws required in terms of national environmental law

MMM by-law required for:	Legislation	Section / Regulation
Regulation of activities as Water Services Authority	WSA	S 21
Management of any local heritage sites	NHRA	S 54
Air quality: identification of substances in ambient air	NEM:AQA	Reg 11(1)(a) GN 579 in GG 33342 of 2 July 2010
Local standards for ambient air emissions	NEM:AQA	S 11(2)
Local standards for compacting and storage of solid waste	NEM:WA	S 9(3)
Noise control regulations	ECA	Minister of DEA to be requested to issue by-law on behalf of the MMM
Any matter which the MMM deems necessary or expedient to deploy its fire brigade services effectively	Fire Brigade Services Act 99 of 1987	S 16(1)
Spatial land-use management	SPLUMA	S 32 (to be passed for the enforcement of the MMM's land use scheme)
Municipal health services	Various health and environmental laws e.g. the NEM:WA and the National Health Act 61 of 2003	Various
Land transport	National Land Transport Act 5 of 2009	S 11(1)(c)(ii)

7.2.2 The municipal legislative process

Only a member or committee of the council may introduce a draft by-law to the council. Draft by-laws are usually developed by teams comprising of expert officials, consultants and legal experts. It is highly desirable to involve representatives of provincial and national government and to consult with neighbouring municipalities during the drafting phase. The language of an environmental by-law must be clear and its provisions unambiguous in order to ensure its effective implementation and enforcement. Key concepts must be defined and environmental by-laws should include penalty clauses in line with the fines prescribed and the jurisdictional determinations of the Department of Justice.

It is important to note that by-laws could make provision for wide-ranging powers. For example, they could make provision for MMM officials to have the right to:

- Conduct inspections and audits;
- Gain access to property, data and information;
- Conduct validations after any occurrence;

- Do periodic external reviews of the performance of regulated entities; and
- Monitor certain activities against standards such as but not limited to air quality standards, drinking water standards, sewer effluent standards and dust standards.

The environmental by-laws of the MMM could also authorise officials to provide technical assistance to transgressors to become compliant.

An environmental by-law must be endorsed by a resolution of the council in accordance with the MMM's rules and orders and with a supporting vote by the majority of council members. A by-law may not be adopted unless all council members have been given reasonable notice and the proposed by-law has been circulated for public comment in a manner that allows the public an opportunity to make recommendations on the proposed by-law. The final by-law must be published in the Free State Provincial Gazette and also in a local newspaper, when feasible. The Systems Act expects of the MMM to inform the local community of the contents of all new by-laws.

7.2.3 Standard and model draft environmental by-laws

A standard draft environmental by-law is in essence an 'exemplary by-law' that is drafted by the legal teams of the provincial or national line function departments. Municipalities are then free to adopt or modify these model by-laws as their own.

7.2.4 Environmental by-laws and the MMM's municipal code

The MMM must compile and maintain in a bound or loose-leaf form and electronically (i.e. on the municipality's website) copies of the final versions of all of its by-laws. This collection of by-laws is called the MMM's 'Municipal Code'.

7.2.5 The *status quo* of environmentally related by-laws at the MMM

The MMM recently reviewed and revised most of its by-laws. Many of these reviewed by-laws however need to be revisited to align them with the requirements of national environmental legislation. The MMM should also consider generating dedicated by-laws to regulate air quality, alien invasive species, and storm water management.

The *status quo* of the environmental by-laws of the MMM is explained in Table 53.

Table 53. Environment-related by-laws adopted by the MMM³¹

Name	Year	Status quo	EI&MP recommendations
Waste Management By-law	2013	Published	Review and revise the Waste Management by-law and align it with all the requirements of the NEM:WA, especially with respect to value-based waste management practices.
Air Quality By-law	No	No dedicated air quality by-law. Environmental health by-law covers air quality management matters.	Consider the need for a dedicated air quality-related by-law that aligns with the NEM: AQA. This by-law must address all the pertinent areas associated with air quality management such as norms and standards, the control of emitters and others causing air quality impacts, inspections and enforcement, emission monitoring, regional ambient monitoring, the analysis of data, trending, and the reporting of performance. This by-law should also be aligned with other pertinent by-laws that can affect air quality, such as the land use by-law and urban transport by-law, while key development policies also need to be aligned with this by-law.
Land Transport By-law	No	None	Consider a dedicated land transport by-law that aligns with national legislation. This by-law must also account for the mitigation of environmental impacts such as climate change impacts that are associated with improved land transport efficiencies.
Noise Control By-law	2016	Updated and published	This by-law regulates nuisance noise in the MMM area of jurisdiction.
Municipal Land-Use Planning By-law	2015	Published	Review this by-law to determine whether it is aligned with the SPLUMA. This by-law makes reference to the links between achieving environmental objectives and the general objectives of the SDF. These references are, however, very generic, failing to make specific provisions for achieving environmental protection.

³¹ The by-laws listed here were provided by MMM staff and those that were available in the public domain in July 2016.

Name	Year	Status quo	EI&MP recommendations
			<p>Review the current by-law to make provision for:</p> <ul style="list-style-type: none"> • The need to incorporate valued environmental resources flagged in the EMF or SoER into the SDF and LUMS • Explicit requirements to achieve the protection of valued environmental resources by means of the SDF and LUMS. • Recognising environmental conservation, or the protection of valued environmental resource areas as a legitimate land-use.
Fire-fighting Services By-law	2013	Published	<p>Review and revise the by-law to align it with the principles of the NEMA by providing opportunities to address any environmental impacts that may arise from fires and any responses to fires.</p> <p>Also ensure that pollution is prevented should loss of containment of flammable substances or other dangerous goods occur.</p> <p>Align the registration of storage facilities of flammable substances and dangerous goods with requirements to prevent pollution.</p>
Water Services By-law	2013	Published	<p>Review and revise the by-law to align it with the requirements of relevant national legislation. Also ensure that the by-law covers all the risks associated with supplying and assuring a safe drinking water supply to the people of the MMM. These risks range from upstream risk management, preventive maintenance of equipment, staff capacity, water quality monitoring and analysis, management of deviations, etc.</p>
Heritage By-law	No	None	<p>Consider the need for a heritage by-law that supplements the provisions of national legislation and provincial heritage management processes with a particular focus on local heritage resources and where the MMM occupies and or owns provincial and national resources. Ensure that this by-law optimises the complementarities with spatial management instruments especially.</p>
Environmental Health Services By-law	2013	Published	<p>Review and revise the by-law to align it with the requirements of relevant national legislation. Draft this by-law carefully to complement other environment-related by-laws, while optimising the complementarities with especially the spatial management instruments.</p> <p>Also ensure that the MMM includes measures to identify and control all sources of environmental pollution and degradation, regardless of the media.</p>

Name	Year	Status quo	EI&MP recommendations
Municipal Public Streets By-law	2016	Updated and published	The purpose of this by-law is to regulate the behaviour of people in public streets. It has an incidental environmental application insofar as it regulates the accumulation of waste in public streets. Waste by-laws, however, regulate waste management.
Numbering of Buildings By-law	2016	Updated and published	This by-law does not have any direct environmental implication.
Outdoor Advertising By-law	2015	Published	The MMM has drafted a detailed and comprehensive by-law to regulate Outdoor Advertising.
Parking By-law	2013	Published	This by-law does not have any direct environmental implication.
Public Amenities By-law	2016	Updated and published	Review and revise this by-law to control litter and waste as well as to protect fauna and flora.
Public Nuisance By-law	2016	Updated and published	This by-law regulates numerous nuisances that relate to environmental quality.
Sporting Facilities By-law	2014	Published	Review and revise this by-law to align it with the Waste By-law as far as sports event-related waste is concerned. The by-law should also provide for arrangements to green sporting events in line with accepted event greening principles and practices.
Tariff By-law	2013	Published	Review and revise this by-law to ensure that the appropriate rates and tariffs are levied for environmental services in order to change the environmental behaviour of people.
Traffic Regulations By-law	2016	Updated and published	Review and revise this by-law to regulate black smoke emitted by vehicles and the transportation of hazardous materials and dangerous goods.
Unightly and Neglected Buildings and Premises By-law	2014	Published	This by-law has an incidental environmental application.
Electricity Supply By-law	2016	Updated and published	Review and revise this by-law to introduce demand-side management arrangements and to improve the energy efficiency of energy users.

Name	Year	Status quo	EI&MP recommendations
Swimming Pools By-law	2016	Updated and published	Review and revise the Swimming Pool By-laws to provide for the safe handling and storage of chlorine and other chemicals at swimming pools, especially where chlorine gas is used.
Building Regulations By-law	2016	Updated and published	The 2016 version of this by-law includes a range of environmental requirements such as the protection of storm water and requirements related to industrial effluent discharge. The 2016 version of the standard, however, does not address the following critical environmental issues: <ul style="list-style-type: none"> • Energy efficiency requirements for new buildings and buildings to be upgraded; • Special arrangements for buildings that are listed as heritage resources; • Arrangements and facilities to separate waste at source; and • Requirements to store and handle hazardous materials.
Cemeteries By-law	2016	Updated and published	The 2016 version of this by-law does not define any measures to manage the potential environmental impact associated with cemeteries such as but not limited to ground water quality, as well as alien and invasive species.
Control of Collections By-law	2016	Updated and published	This by-law does not have any direct environmental implication.
Credit Control and Debt Collection By-law	2013	Published	This by-law has an indirect application to environmental management by the MMM and should be reviewed and revised when the MMM adopts and implements fiscus-based environmental management instruments to change environmental behaviour.
Disaster Management By-law	2016	Updated and published	The 2016 version of the by-law makes no explicit reference to any arrangements related to environmentally related disasters such as veld fires, destructive storm events, floods, droughts and climate change, amongst others. Also no reference is made to preventing or mitigating the environmental impacts that are associated with disasters and any related waste management needs. The by-law also does not address any prevention, mitigation and adaption strategies related to environmental disasters.
Discharge of Industrial Effluent By-law	2016	Updated and published	This by-law needs to be reviewed and revised along with the Buildings By-laws as the latter also contains effluent standards to ensure alignment. This by-law should also be aligned with the Tariff by-law to ensure that dischargers pay the most appropriate fees for waste water discharge and treatment processes.

Name	Year	Status quo	EI&MP recommendations
Encroachment on Property By-law	2016	Updated and published	This by-law does not have any direct environmental implication.
Events By-law	2016	Updated and published	Review and revise this by-law to align it with the Waste By-law as far as event-related waste is concerned. The by-law should also provide for arrangements to green events in line with accepted event greening principles and practices.
Fresh Produce Market By-law	2016	Updated and published	Review and revise the by-law so that it also addresses the following environmental concerns: <ul style="list-style-type: none"> • Waste management in alignment with the Waste by-law; • Pest control arrangements; • The management of hazardous materials such as but not limited to the ammonia-cooled refrigeration plant.
Informal Settlements By-law	2013	Published	Review and revise this by-law to align it with the services by-laws such as for waste, sanitation and water supply-related services.
Informal Trading By-law	2016	Updated and published	Review and revise this by-law to align it with the Waste By-law.
Initiation Schools By-law	2016	Updated and published	This by-law does not have any direct environmental implication.
Keeping of Animals By-law	2016	Updated and published	This by-law does not provide for the practice of using municipal land for grazing purposes. Review and align this by-law for alignment with national legislation that regulates the well-being of animals. Align this by-law with the Waste by-law to deal with excrement disposal and the disposal of carcasses.
Municipal Parks By-law	2016	Updated and published	This by-law regulates access to and the use of parks. Review and revise this by-law to include arrangements to classify, manage and protect urban parks. Align this by-law with the spatial instruments that afford the protection of urban open space.

7.3 The executive authority of the MMM

The executive authority of municipalities ranges from the mandate to enforce compliance to its by-laws to the generation and application of a range of administrative instruments such as policies, plans programmes and strategies.

7.3.1 The enforcement of by-laws

An environmental by-law can be enforced once it has been published in the Free State Provincial Gazette.

Different laws empower and mandate the MMM to enforce environmental legislation and legislation that may have an environmental application. The MMM must enforce its own environmental by-laws but it may also acquire the additional authority and mandate to enforce national and provincial environmental laws as well.

The typical instruments by means of which the MMM can execute its enforcement functions include:

- The establishment of municipal police services and courts;
- The appointment of environmental management inspectors (EMIs) and dedicated enforcement officers in the MMM responsible for waste and air quality management, for example; and
- The use of administrative enforcement mechanisms such as compliance notices and fines.
- The enforcement of by-laws presupposes the existence of a number of role-players who need to function in concert to ensure effective enforcement. The role-players include:
 - Case officers who are investigating the merits of a case and who generate case documents,
 - Technical or subject matter experts who provide the requisite subject matter inputs;
 - Legal experts who ensure that proper legal procedures are adhered to and
 - Court officials who take care of court proceedings.

7.3.1.1 Municipal police services

The South African Police Service Act (68 of 1995) makes provision for the appointment of municipal police officers who, among other things, may enforce by-laws and other legislation assigned to local government.

7.3.1.2 Municipal courts

Municipal courts are lower courts with the explicit jurisdiction to hear cases related to municipal affairs. In terms of S 112 of the Systems Act, the National Prosecuting Authority may authorise a staff member of the MMM to institute criminal proceedings and to prosecute contraventions of municipal environmental by-laws or other environmental legislation that the MMM has the authority to administer.

Municipal courts in other metropolitan municipalities offer a range of services in addition to prosecution, such as providing:

- Information on traffic fines;
- Information on by-laws;

- Assistance to the public prosecutor,
- Enforcement-related customary care e.g. handling of public inquiries.

7.3.1.3 Municipal EMIs and dedicated enforcement officers

The DEA may designate municipal officials of the MMM as environmental management inspectors (EMIs). The EMIs must enforce specific environmental mandates in terms of the NEMA and the specific environmental acts (SEMA) such as the NEM:BA, the NEM:AQA, the NEM:PAA and the NWA. An MMM EMI would be able to enforce compliance with atmospheric emission licences and to act against illegal operators in terms of the NEM:AQA. An EMI officer may also enforce noise control standards, including regulations to control dust and offences related to odours.

In addition to the EMI mandates, the Minister of DEA or the MEC may delegate certain additional powers and duties in terms of the NEMA or a SEMA to the MMM. Such a delegation must be in writing, may be subject to conditions, and 'does not prevent the exercise of the power or duty or the performance of the duty by the Minister' or MEC himself or herself.

The DG of DEA may also delegate a power or a duty vested in him or her provided for under the NEMA or a SEMA to a holder of an office in the MMM. The nature of this delegating authority implies that the MMM may receive specific environmental mandates that differ from those of other city administrations in South Africa

In terms of S 32(3) of the SPLUMA, the MMM may designate a municipal official or appoint any other person as an inspector to investigate any non-compliance with its land-use scheme, and must issue each inspector with a written designation or appointment in the prescribed form, stating that the person has been appointed.

In addition, the Minister of Agriculture, Forestry and Fisheries may designate an MMM official to combat weeds in the MMM's area of jurisdiction. This official may typically issue a direction order to a land user to control weeds and invader plants. The MMM as water services authority must control the activities of water services intermediaries and may serve directions in case of non-compliance.

7.3.2 Administrative executive instruments

Administrative executive instruments that are available to the MMM include the development and adoption of environmental plans, municipal policies, programmes and strategies.

7.3.2.1 Environment-related sector plans

While they are neither legal instruments nor local law in the true sense of the word, several of the MMM's non-spatial planning instruments 'govern' and thus bind the community in the same way that an environmental by-law does. Most of these plans are adopted as sector plans that are incorporated into the IDP of municipalities.

The requirements of these IDP sector plans are then adopted and implemented as IDP and SDBIP commitments, performance tracking, risk management and internal audit processes. These sector plans are addressed in Chapter 8 of this EI&MP.

7.3.2.2 Environmental policies, strategies and programmes

The executive authority of the MMM also compels and enables it to develop and implement suitable local environmental policies, strategies and programmes. The details of how these policies (other than the ones required by law), strategies and programmes should be developed and what the content should look like are not prescribed. The executive authority of the MMM is such that the

municipality has flexibility and significant scope to determine what it needs and how it wants to approach the process. However, the foundational principles of local government law will apply.

All of the MMM's policies, strategies and programmes must typically be aligned with any such instruments that exist at the national and provincial levels, while community involvement is also important.

The policies that have been generated by the MMM are listed in Table 54. These policies are important instruments, as the municipality's adherence to and its implementation of the requirements of a municipal policy is mandatory. Sector-based policies also allow intra-municipal alignment of the co-operative government effort on matters such as water services and waste management.

Table 54. Environment-related policies adopted by the MMM³²

Name	Year	Status quo	EI&MP recommendations
Revised Rates Policy	2016/2017	Adopted	Review and revise this policy to ensure that the appropriate rates and tariffs are levied for environmental services in order to change the environmental behaviour of people
Credit Control Policy	2016	Adopted	This policy has an indirect application to environmental management. Review and revise this policy should the MMM adopt and implement fiscus-based environmental management instruments to change environmental behaviour.
Tariffs Policy	2016	Adopted	Review and revise this policy to ensure that the appropriate rates and tariffs are levied for environmental services in order to change the environmental behaviour of people
Property Rates Policy	2016	Adopted	Review and revise this policy to ensure that the appropriate rates and tariffs are levied for environmental services in order to change the environmental behaviour of people
Supply Chain Management Policy	2016	Adopted	Not determined.
Urban Open Space Policy	2004	Adopted	This policy should be reviewed and revised in line with the revised environmental management instruments generated on 2015/2016 for the MMM, such as the SoER, the EMF, the EI&MP, the MOSS and the SDF.

³² The policies listed here are those provided by MMM staff and those that were available in the public domain in July 2016. It is quite feasible that policies exist that have not been traced by the authors.

Name	Year	Status quo	EI&MP recommendations
Delegation of Powers Policy	2008	Adopted	The Delegation of Powers Policy is a key document to allocate responsibilities and authorities (Powers). This policy needs to be reviewed and revised to ensure that all the principal environmental management, governing and governance responsibilities are correctly defined and allocated to the relevant positions. This document is a key instrument to overcome some of the challenges experienced with a decentralised and fragmented environmental management dispensation.
Environmental Policy	2004	Adopted	The 2004 version of the Environmental Policy of the MMM is scheduled to be reviewed and revised in association with the 2016 version of the EI&MP.
EPWP Policy and Implementation Plan	2015	Adopted	The 2015 version of the EPWP policy is a modern and relevant policy aimed at co-ordinating common objectives across a fragmented and decentralised mandates. This policy should inform the 2016 version of the Environmental Policy.
Risk Management Policy	Not dated	Draft	This draft Risk Management Policy defines the MMM's approach to enterprise-wide risk assessment and management. The draft policy does not make any explicit provision for the identification, assessment and management of environmental risk exposures to the MMM. Review and revise this draft policy to expand the scope of risk assessment and management by the MMM to address environmental risk exposures.
Youth Development Policy	2015	Draft	This policy defines the approach of the MMM towards youth development. This policy recognises that all sectors, including the environmental sector, are relevant to youth development programmes. The role of the youth is a well-established concept, while numerous youth-based development programmes in the environmental and waste management sectors are available for adoption and implementation. This policy could be reviewed and revised to make an explicit reference to the linkages

Name	Year	Status quo	EI&MP recommendations
			between environmental management, governing and governance, and the youth.
Indigent Policy	2015	Final Draft	This policy does not have any direct or indirect application to environmental management, governing and governance.
Adopt a Park Policy	2015	Final Draft	This policy provides the framework for involving civil society in caring for the open spaces of the MMM. This is an important policy that supports the open space and protected area systems as well as the waste management programmes.

7.3.3 The *status quo* of executive powers of the MMM

The general enforcement effort of the MMM is highly fragmented, inefficient and ineffective, while it also has not yet established a metropolitan police unit and court. Enforcement in the MMM is also not adequately resourced with suitably qualified staff.

The MMM also does not have a comprehensive enforcement policy to direct and co-ordinate its enforcement effort.

The MMM does have a suite of related policies that co-ordinate the functions of officials operating in a fragmented and decentralised administrative dispensation. More policies need to be generated, however, to co-ordinate enforcement in environmental matters in the MMM.

7.4 The importance of this chapter to the EI&MP

This chapter is important to the EI&MP because the role of the MMM as an environmental regulator is one of the key focus areas that must be addressed by this EI&MP.

The MMM has both regulatory and executive powers to give effect to its role as an environmental regulator in association with the other spheres of government as provided for by the co-operative government framework.

The MMM uses numerous instruments to legislate and drive environmentally responsible behaviour. It generates by-laws that should be aligned with national and provincial laws, while it formulates policies and IDP sector plans also to direct the behaviour. The MMM also relies on spatially based instruments to regulate or guide behaviour such as the LUMS, SDF, EMF, SoER etc.

The executive powers of the MMM include the duty to enforce adherence to legislated measures such as by-laws by means of a range of enforcement powers and instruments.

Policies are needed to ensure that the MMM staff adopt a co-ordinated approach within the existing fragmented and decentralised management system. The MMM needs a series of co-ordinated and aligned policies to ensure that environmental management, governing and governance are executed by all the line-function directorates and smaller units of the MMM.

The EI&MP must ensure that the MMM fulfils its duty as one of the environmental regulators in South Africa.

7.5 Reasonable expectations

The key expectations are that the MMM:

- Generates, adopts and enforces all the environment-related by-laws that it is mandated to have.
- Ensures alignment of these by-laws with national and provincial legislation;
- Has an efficient, co-ordinated and integrated approach that is supported by all the requisite instruments and structures to enforce adherence to its by-laws;
- Reforms its current fragmented enforcement structures, processes and mandates;
- Generates an integrated and holistic enforcement policy to co-ordinate the effective co-ordination of the enforcement effort by the MMM;
- Has the requisite skilled staff to give effect to its legislative and executive mandates; and
- Will generate a suite of requisite policies to align the legislative and executive processes of the MMM.

7.6 Conclusion

This chapter has explored the role of the MMM as an environmental regulator within the framework of co-operative government.

Numerous gaps, inconsistencies and inefficiencies that impede the successful conclusion of this role have been identified. These gaps are addressed in the EI&MP.

8 INTEGRATED ENVIRONMENTAL MANAGEMENT AND SPATIAL TOOLS³³

This chapter of the EI&MP explores the interface between environmental management, governing and governance efforts by the MMM, and a range of other instrumentation that can be used to achieve environmental objectives. The first section argues that other instrumentation is also at the disposal of local governments to achieve environmental objectives in addition to the law-based instruments and the classical municipal management and governance instruments. These instruments are:

- The classical plan-do-check-based environmental management instruments;
- Spatially based instruments; and
- Fiscal instruments.

These instruments need to be carefully aligned and staged to ensure effective environmental management, governing and governance performance by the MMM. A key lesson is that many of the classical environmental management, governing and governance instruments that are routinely adopted and used by local government are nothing more than discovery and information-based instruments that do not have any standing to drive environmental management, governing and governance performance. What is key is the innovative and sustained linkages between and the forward feed of pertinent environmental issues to be managed by means of either the classical municipal and management and governance instruments, spatial planning tools, or fiscal instruments.

8.1 General principles of environmental management and governance instruments

The following principles that underpin the adoption and use of environmental and management instruments have been gleaned from Nel *et al.* (2015:91-165)³⁴. An understanding of these principles is imperative to designing, developing and implementing a successful environmental management and governance system for any South African municipality. The following statements are relevant:

- Local government has a large number of environmental management and governance tools at its disposal, some of which are required by law, while others are adopted and used on a voluntary basis;
- No one environmental management, governing and governance tool has the capability to be the panacea for all the environmental management and governance instruments;
- Municipalities need to select, adopt and use the most efficient and effective suite of available instruments to ensure effective environmental management and governance; and
- Municipal officials and politicians often do not have the requisite skills and experience to consider and use this plethora of instruments.

An effort is made in this report also to provide the context of any recommendations that may be made in the EI&MP, so as to help the end-users of this report to embark on the journey of transforming the MMM into an effective environmental management institution.

³³ Read Chapter 8 with the contextual analysis of instruments in Chapter 1.

³⁴ See Nel, JG., du Plessis, W. & du Plessis, AA. 2015. Key elements for municipal action. (In du Plessis, AA. Environmental Law and Local Government in South Africa. Cape Town: Juta. 41-90).

8.2 Linkages between some environmental management and governance and other instruments

Local government in South Africa has access to a range of instrumentation or tools that can be adopted and used to ensure effective environmental management, governing and governance. These tools can generally be classified into:

- Environmental management and governance discovery and information-based tools,
- The classical local government management and governance tools,
- Spatially based tools and d) the classical plan-do-check-act based environmental management tools (see Figure 20).

In addition to these tools, local government can also adopt and use legislation-based governing tools such as by-laws and enforcement and fiscus-based instruments.

To increase the likelihood of both better decisions and sustained improved environmental management, governing and governance performance by municipal officials and politicians alike, information and operationally based instruments need to be augmented by instruments that have:

- Process,
- Multiple stakeholder-based checks and balances, and
- A legal mandate and enforcement capability in place.

The environmental management and governance discovery and information-based tools, the spatially based tools; the classical plan-do-check-act based environmental management tools and the fiscus-based tools are explored in this chapter, while the classical local government management and governance tools are unpacked in Chapter 4.

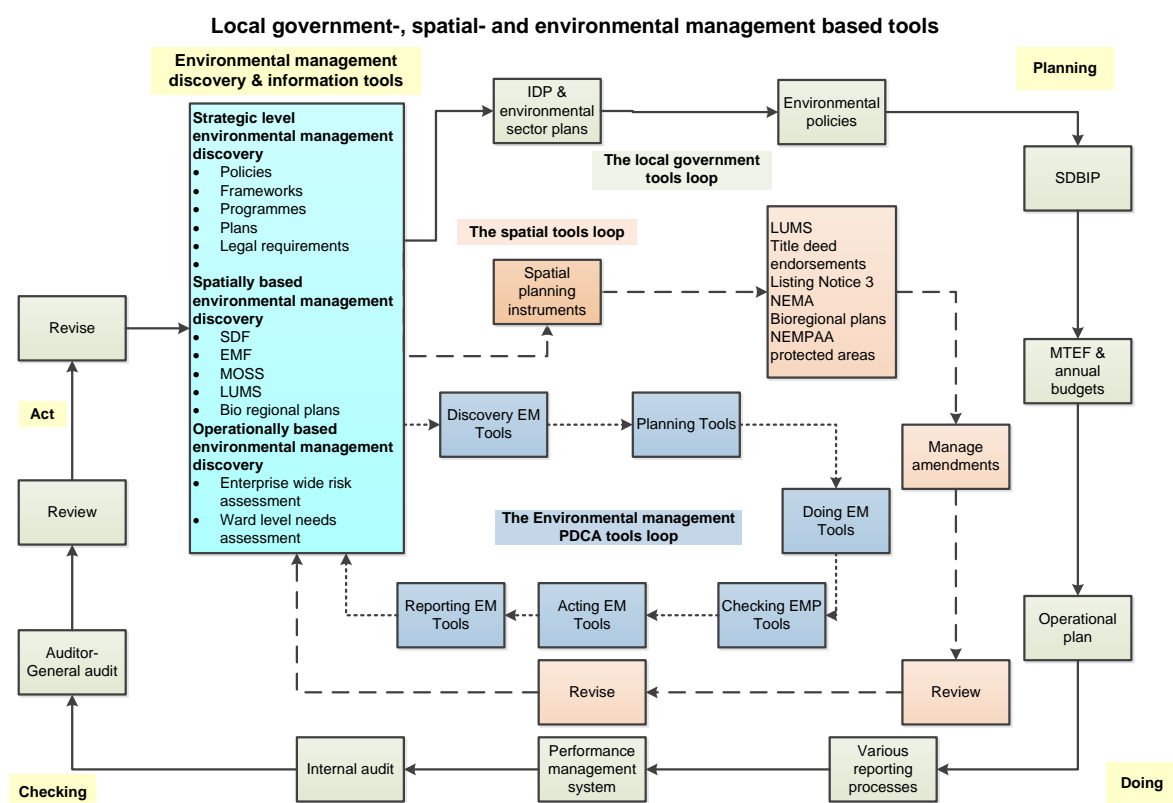


Figure 20. A typology of instruments available to South African municipalities

8.3 Environmental management and governance discovery and information-based instruments

Environmental management information-based tools (see Figure 20) are tools to gather information that decision makers and planners can use. The challenge with information-based instruments is that experience has shown that readily available information does not necessarily result in better decisions that contribute to sustainability and the protection of valued environmental attributes.

These environmental discovery and information instruments can be classified as:

- Strategic,
- Spatial; and
- Operationally-based discovery and information-based tools.

8.3.1 Strategic-level information instruments

The strategic-level information instruments include policies, frameworks, programmes, plans and some legal requirements, among others. The strategic-legal information-based instruments that frame this EI&MP are explored in Chapter 3 of this report. They normally provide the context for and frame environmental management, governing and governance processes.

The alignment of environmental management, governing and governance with these strategic-level instruments is paramount to ensuring an integrated and co-ordinated environmental management, governing and governance approach as required by the quest for co-operative government across the spheres of government and the line functions of a particular organ of state.

8.3.2 Spatially-based discovery and information instruments

The spatially-based environmental discovery instruments include instruments such as:

- The spatial development framework (SDF);
- The environmental management framework (EMF),
- The metropolitan open space system (MOSS); and
- Bio-regional plans, critical biodiversity plans, protected areas, threatened ecosystems etc.

Figure 21 illustrates the nature and extent of the spatially based information instruments.

The operationally based discovery and information-based tools include amongst others: enterprise-wide risk assessments and management programmes, and ward-level IDP needs assessment identification. Both of these instruments need to inform the IDP process on an annual basis.

It is therefore imperative that the enterprise risk management and the ward-level IDP needs assessment must include environmental risks and needs in their portfolio of items that need to be discovered.

THE LINKAGES BETWEEN SPATIALLY BASED ENVIRONMENTAL DISCOVERY TOOLS, MUNICIPAL MANAGEMENT TOOLS AND SPATIAL ENTRENCHMENT OPTIONS

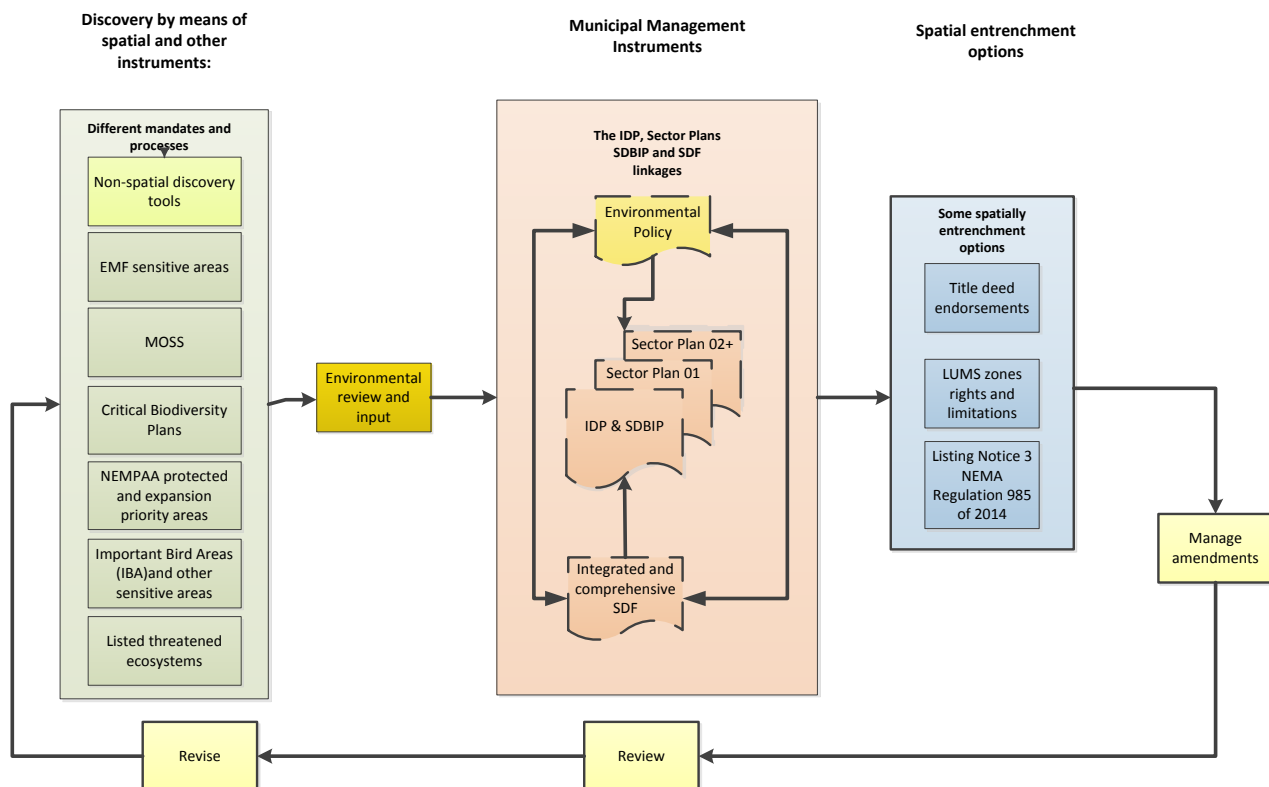


Figure 21. The relationship between information, municipal management and spatial entrenchment tools

8.4 The classical municipal management and governance instruments available to environmental management and governance

The discovery and information-based instruments (see Figure 20 and see Figure 21) on their own accounts are not designed to ensure effective environmental management and governance by the local government sector.

These instruments need to inform instruments that drive action that can be enforced, or those that offer legally binding rights and limitations. The classical municipal based management and governance instruments such as the municipal policy, the IDP with sector plans and the SDBIP package of plans and arrangements when combined with:

- Some legal based instruments such as by-laws and enforcement mechanisms; and
- Spatially based instruments that offer rights and impose conditions are the instruments of choice to achieve effective environmental management at the municipal level.

Environmental objectives as identified by means of the discovery and information based instruments, need to be operationalised by at least one of the four potential operational instruments:

- A metropolitan-wide environmental policy,
- The IDP-SDBIP-SDF package,
- Spatially based entrenchment instruments; and
- By-laws.

8.4.1 Municipal-wide policies³⁵

Municipal policies are normally formulated to direct and drive routine operations and actions, while strategies, programmes and projects are implemented and managed by means of the IDP-SDBIP-SDF package of instruments.

Metropolitan policies must be implemented and adhered to, while they are also widely consulted and referenced by other line management directorates when they generate sector-specific policies, frameworks and programmes. It is therefore imperative that this EI&MP is supported by an environmental policy for the MMM to ensure sustained conformity to routine operations and processes.

8.4.2 The IDP-SDBIP-SDF instrumentation package

The IDP-SDBIP-SDF package is normally used for project type initiatives of local government. During its analysis phase, the IDP must be informed by the environmental management discovery and information-based instrument initiatives, the enterprise-wide risk assessment and management process, as well as the ward-level needs analysis that precedes every IDP review.

Once these environmental issues are on the IDP agenda, they need first to be translated into broad strategies, and then into detailed projects. The IDP projects adopted are then implemented by means of the SDBIP. The SDBIP combines the IDP objectives into implementable forms such as KPIs, budget allocations; a performance management system, reporting processes and also internal audit verification processes.

It is clear from this analysis that all identified environment-related projects need to be included in the IDP and then also in the SDBIP to ensure that they are indeed implemented and managed, while more routine environmental management and governance processes are provided for and driven by a metropolitan wide environmental policy.

It is also imperative to understand the relationship between the IDP and the SDF. The latter is the spatial representation of the former. The general expectation is that the key sensitive and valued environmental features and attributes that are incorporated in other information-based spatial tools will be incorporated into the SDF. The SDF in itself does not provide binding commitments. To become binding the spatial intentions recorded in a SDF need to be incorporated into the relevant IDP.

Municipalities also need to generate a number of environmental and other sector-based IDP plans such as but not limited to the:

- Integrated waste management plan (IWMP),
- Air quality management plan,
- Water services plan and
- Climate change mitigation and adaptation plan, amongst others.

The risk to effective environmental management and governance by municipalities is that these sector-based IDP plans may be 'stand-alone' plans that are managed by the responsible line directorates. Their key issues may then not be incorporated into the IDP-SDBIP package of plans.

³⁵ See Chapter 7 for an analysis of municipal policies.

Critical environmental projects and intentions reflected in a SDF that are not elevated to the IDP and SDBIP level of instrumentation do not get implemented and managed, while routine environmental processes that are not driven by a sound sector-based policy do not get adhered to. It is therefore imperative that officials and politicians who are tasked with environmental management and governance mandates and duties need to ensure that the critical issues are indeed incorporated into the IDP and SDBIP package of plans.

The incorporation of environment-related issues into the IDP and SDBIP package of plans is most suited for shorter-term and project-based initiatives. IDPs and SDBIPs are reviewed and revised on an annual basis and the agendas are changed accordingly. These instruments are therefore not a viable option for longer-term to permanent environmental management and governance requirements.

Spatially based land-use instruments that offer rights, pose limitations and control land-use, as well as conservation-based instruments may be more appropriate.

8.5 Spatially-based land-use control instruments and environmental management

Municipal environmental management and spatial planning have important and mutually supportive interfaces that offer significant opportunities to leverage the complementarities and synergies that the integrated adoption and use of these two disciplines have to offer. The synergies arise from the fact that municipal environmental management requires a spatial approach to managing and protecting valued environmental attributes and features, while the rendering of key ecosystem services should be a legitimate land uses that should be provided by means of a land use scheme.

General environmental management practice and theory have also evolved to a stage where environmental management and spatially based tools, including land use planning tools, are to be increasingly integrated in terms of their respective applications.

The three spatially based instruments that offer some form of enforcement of environmental management and governance are illustrated in Figure 21. They include:

- Land use zoning;
- Title deed endorsements; and
- Listing Notice 3 NEMA activities.

8.5.1 Land use zoning

Spatial planning and zoning (land-use management, or forward planning) provide a 'blue print' or template that defines and directs a desired current and future land-use profile to establish sustainable urban and rural areas.

The land-use planning and zoning provisions of the SPLUMA provide for the consideration of environmental parameters during land-use planning and zoning processes. Spatial planning can therefore play an important role in urban and rural environmental management and governance by identifying areas where environmental attributes such as sensitive, ecologically valuable areas and conservation areas can be protected as legitimate land-uses with defined rights and limitations that are applicable.

Changes to rights and restrictions that apply to land-use zones require a land-use rezoning and may also be subjected to a lifting of restriction application, offering some relative level of protection.

8.5.2 Title deed endorsements

Restrictive endorsements (title deeds with restrictive conditions) and the registration of servitudes on title deeds also pose opportunities for effective environmental management. Restrictions can be used to create no-go areas, to protect sensitive environmental attributes that are located on a cadastral land unit or units, and for other comparable purposes.

The lifting of restrictions on title deeds also requires a process to be followed before any amendments can be made, offering some form of security to the arrangement.

8.5.3 NEMA listing notices 3 and conservation instruments

The NEMA Listing Notice 3 published in terms of R 38282 of 2014 makes provision for the identification of geographical areas in provinces where any new activity triggers a basic assessment and an environmental authorisation.

This instrument in effect means that environmental protection is offered to maintain the *status quo* and that changes are permissible only by means of a NEMA S 24 environmental authorisation with conditions attached to it, and possibly also a legally enforceable environmental management plan (EMP).

The identified geographical areas of the Free State that enjoy the Listing Notice 3 form of protection are:

- A protected area identified in terms of NEMPAA, excluding conservancies;
- National protected area expansion strategy focus areas;
- World heritage sites;
- Sensitive areas as identified in an adopted environmental management framework;
- Sites or areas identified in terms of an international convention;
- Critical biodiversity areas;
- Biodiversity plans adopted by the competent authority or in bioregional plans;
- Core areas in biosphere reserves; and
- Areas within ten kilometres of national parks or world heritage sites, or five kilometres from any other protected area identified in terms of NEMPAA, or from the core area of a biosphere reserve.

8.5.4 The Importance of spatial tools to the EI&MP

The aligned and integrated adoption and use of both environmental and spatial planning instruments provide for a balanced approach to development and environmental protection.

Local government has access to a number of instruments to manage land-use in the boundaries of its area of jurisdiction. These tools can be classified into:

- Municipally-based management and governance tools e.g. the IDP and SDBIB, etc.;
- Classical environmental management tools e.g. the so-called plan-do-check and acting-based tools;
- Spatial tools such as the SDF, EMFs, bioregional plans, the MOSS and land-use management schemes; and

- Conservation-based tools such as the range of protected areas provided for by South African legislation.

Spatial tools/instruments can serve to:

- Inform decision makers in order that they may achieve a balance between development and environmental protection;
- Control land-use and development by means of granting zoning-based land-use rights, or by posting restrictions on land-use; and
- Manage environmental impacts on sensitive environmental attributes.

The adoption of land-use planning instruments to protect valued environmental attributes offers the following benefits:

- It recognises the allocation of land for environmental protection and use purposes as a legitimate land-use;
- Eco-system services such as flood abatement, biodiversity corridors, climate change mitigation, recreational purposes, and water recharge and cleansing services, amongst others, are deemed to be a recognised form of using the land;
- It directs planners and decision makers to make development decisions that can be environmentally sustainable;
- It allocates rights and imposes restrictions to regulate specific activities on defined portions of land in the urban and rural landscapes of municipalities;
- Amendments to existing land-use rights or to restrictions can be made only by means of a legally defined process;
- Proposed changes to land-use can trigger other environmental instruments such as environmental impact assessments (EIA), environmental management plans (EMPs), public participation (PP) and environmental authorisations (EAs) that can regulate or mitigate the impacts on valued environmental attributes.

It is imperative that municipalities adopt and provide for measures and powers to utilise the benefits offered by spatially based instruments in general and land-use planning in particular to achieve a balance between development and environmental protection.

8.6 The *status quo* at Mangaung Metropolitan Municipality

8.6.1 Environmental management, governing and governance discovery and information-based instruments

The current environmental management and governance effort of the MMM is not necessarily aligned with the current strategic-level national and provincial policies, frameworks, programmes and plans, as well as the latest versions of applicable environmental law. The reason for this is that the environmental management instruments that were in place at the time of the generation of this report were published in 2004.

The commissioning of a range of new environmental management and governance instruments in 2015 and 2016 is an attempt to ensure the alignment of the MMM's instrumentation with these strategic documents.

The MMM commissioned the following revised instruments in the 2015/2016 period the:

- EMF;
- SoER;
- EI&MP;
- MOSS;
- IWMP; and
- The climate change adaptation and mitigation plan, while it also embarked upon a by-law revision process.

8.6.2 The classical municipal management, governing and governance instruments available to environmental management and governance

The MMM has an effective suite of the classical local environmental management, governing and governance tools that are required by law. These tools, such as risk assessments, the SDF/IDP, the SDBIP, BEPP and PMS, are routinely reviewed and revised.

An analysis of the most recent versions of these instruments suggests the following:

- Key environmental management, governing and governance elements are not routinely included in these instruments, which means that they are not formally managed in terms of the municipal planning instrumentation;
- Some of the environmental management, governing and governance issues that are adopted in the IDP have inappropriate indicators against which performance is measured; and
- Different directorates have different performance levels in terms of which environmental management, governing and governance commitments are recorded and managed in terms of these instruments.

It is imperative that the persons tasked with environmental management, governing and governance portfolios understand and use these instruments to plan for, deliver and assess the performance of their environmental portfolios.

8.6.3 Spatially-based land-use control instruments and environmental management

Previous generation land-use zoning and land-use authorisation processes are in place and enforced for the Bloemfontein area of the MMM by means of the Bloemfontein Town Planning Scheme. The MMM was at the time of writing this report in the process of generating a new, SPLUMA-compliant land use management scheme with a land-use zoning scheme for the entire area under its jurisdiction.

The MMM used the following instruments to regulate land use in terms of the Bloemfontein land use scheme:

- The setting of restrictive conditions when land use rights are allocated to specific cadastral units;
- The zoning of land-use, establishing rights to use specific units of land for specific purposes;
- The consolidation and sub-division of erven;
- The granting of special consent use; and
- A land-use infringement penalty system to penalises infringements of land-use rights.

At the time of writing this report no evidence was found that MMM used land-use control instruments to achieve environmental objectives. This absence of alignment between spatial land-use planning instruments and the general environmental management effort of two sub-directorates that report to the same director is a cause for concern.

8.7 Integrated environmental management tools

Integrated Environmental Management (IEM) calls for and makes provision for the integrated use of a suite of planning, doing, checking and reporting management tools (P,D,C &R) that aim to guide all sectors of society toward sustainable development. The implementation and integration of tools are informed by the needs of stakeholders and decision-makers in accordance with the stage of activity in the life-cycle of development. The tools also assist policy and processes related to integrated environmental management, sustainable development and the environmental outcome of management decisions. It is imperative to understand the differences between the support tools, where they are applicable, and their specific use for effective integration and management. The nature and extent of the PDC&R tools are illustrated in Table 55.

Table 55. Examples of PDC&R environmental management tools

ANALYTICAL (OR DISCOVERY) AND PLANNING INSTRUMENTS (P)	CRITERIA AND STANDARDS INFORMING ANALYTICAL AND PLANNING INSTRUMENTS	MANAGEMENT OR DOING INSTRUMENTS (D)	CHECKING AND ACTING INSTRUMENTS (C) & (A)	REPORTING AND COMMUNICATION INSTRUMENTS (R)
Environmental, social, sustainability and heritage impact assessment	Legislation and national standards i.e. SANS standards and guidelines	Environmental, sector and social management plans and programmes	Environmental and social monitoring and measuring	Interested and affected party-based and statutory reporting. Environmental and social communication
Strategic environmental assessment (SEA)	Department of Environmental Affairs (DEA) Guidelines for SEAs	-	-	-
Policy analysis	National or provincial requirements, norms and standards	Policy implementation instruments	Policy performance monitoring	Internal and external policy performance communication and reporting
Strategic scenario planning	National policies and guidelines	Strategic management plans and policies	Implementation of plan and performance tracking	Internal and external communication and reporting
Environmental risk assessment	ISO 31000 risk assessment guidelines	Environmental risk management plans, administrative instrumentation, i.e. standard operating procedures, disaster management plans	Inspection, analysis and records, monitoring and measurement	Statutorily required emergency reporting
Base-line environmental studies and carbon and ecological footprint analysis	Guidelines for base-line studies, sampling and testing, and Global Reporting Initiative (GRI) requirements	Sectoral environmental management plans and programmes	Environmental monitoring and measuring, environmental auditing	SoERs, Environmental Outlook Reports and Triple-Bottom-Line Reports

ANALYTICAL (OR DISCOVERY) AND PLANNING INSTRUMENTS (P)	CRITERIA AND STANDARDS INFORMING ANALYTICAL AND PLANNING INSTRUMENTS	MANAGEMENT OR DOING INSTRUMENTS (D)	CHECKING AND ACTING INSTRUMENTS (C) & (A)	REPORTING AND COMMUNICATION INSTRUMENTS (R)
Environmental impact and aspect assessment	ISO 14001-based environmental management systems (EMS)	Implementation instruments such as operational control, management plans etc.	Monitoring and measurement, audits and management review	Statutory and voluntary reporting
Legal compliance base-line assessment	Applicable requirements in legislation, regulations, norms and standards and in permit or licence conditions	Legal compliance management plans	Legal compliance verification and legal compliance audits	Legal compliance reports, internal performance reports and external (provincial or national government) performance reports

8.7.1 Importance of this section in the EI&MP

South African municipalities often adopt and implement voluntary PDC&R-based instruments to support their environmental management, governing and governance programmes.

8.7.2 The *status quo* at Mangaung Metropolitan Municipality

The MMM adopted and implemented an environmental management system (EMS) for its Fresh Produce Market. This EMS was also certified for conformity to the international standard ISO 14001: 2004. The MMM has failed to maintain the EMS and its certification has lapsed.

The MMM also commissioned a legal compliance audit in 2004 and waste audits in 2014/2015.

The MMM has no record of adopting or using any other voluntary environmental management, governing and governance instruments.

8.8 Municipal fiscal instruments and funding opportunities

The constitutional assignment of powers and functions to local government, together with a municipality's IDP commitments, have a direct bearing on the local government fiscal framework. Ideally, the local government fiscal framework should provide municipalities with access to revenue sources required for the services they are responsible for. In terms of the fiscal arrangements contained in chapter 13 of the Constitution, municipalities are responsible for raising their own revenue through service fees, property rates, surcharges and other taxes or levies. These 'ordinary' sources of funding, as included in Table 56, are often seen as insufficient to fund all of the mandates and functions of a municipality.

Table 56. 'Ordinary' sources of local government funding

Source of local government funding	Constitutional provisions	Governing legislation
Municipal own revenue sources:		
Rates on property	S 229 and 227(2)	Municipal Property Rates Act
Surcharges on fees for services provided by or on behalf of the municipality	S 229 and 227(2)	Municipal Fiscal Powers and Functions Act
Service charges/ fees	S 229 and 227(2)	Municipal Systems Act Municipal Finance Management Act Electricity Act and Electricity Regulation Act National Water Act Provincial land use planning ordinances
Other taxes, levies or duties	S 229 and 227(2)	Municipal Fiscal Powers and Functions Act
Administrative fees		Municipal Systems Act
Fines		National Road Traffic Act

Source of local government funding	Constitutional provisions	Governing legislation
Borrowing	S 230A	Municipal Finance Management Act
Credit control and debt collection		Municipal Systems Act
Transfers from national and provincial government:		
Local government equitable share of nationally collected revenues	S 214 and 227	Inter-governmental Fiscal Relations Act The annual Division of Revenue Act
Fuel levy sharing with metropolitan municipalities	S 229(1)(b)	The annual Taxation Law s Amendment Act
Conditional grants from national government	S 214(c), 226(3) and 227(1)(c)	Inter-governmental Fiscal Relations Act The annual Division of Revenue Act The annual National Appropriation Act
Conditional grants from provincial government	S 226	The annual Division of Revenue Act The annual Appropriation Act of the relevant province

8.8.1 Importance of this section in the EI&MP

Fiscal instruments are an important method for effecting positive environmental behaviour by way of providing either a disincentive or an incentive to behave in a certain manner. Environmentally related fiscal incentives could for instance include measures such as financial rewards for recycling waste. An example of this would be the recycling of glass bottles for which a refund may be claimed when taken to a recycling facility. Fiscal disincentives, however, create a financial burden which discourages pollution. This may include measures such as being taxed proportionally to the amount of waste generated. Fiscal instruments are therefore flexible and their application can be differentiated to achieve multiple outcomes such as addressing social inequality (differentiated taxes or levies for instance between different income groups), while also promoting positive environmental behaviour (such as water saving or waste reduction). For these reasons, fiscal instruments play an important role in the broader environmental management sphere, which aims towards the realisation of socio-economic and ecological sustainability.

8.8.2 Profile of potential opportunities

While the 'ordinary' sources of funding are generally seen as insufficient to fund all of the mandates and functions of a municipality, there are a number of alternative sources that may be available to those innovative municipalities that have the foresight, suitable capacity and skills to unlock and leverage alternative income. These alternative sources of funding include, amongst others, additional charges and special tariffs, additional transfers from national and provincial government grants and other grants from private funders, collaborative agreements such as PPPs, and loans and bonds. Each area of service delivery has unique potential opportunities for generating alternative income.

8.8.2.1 Water supply services

One of the approaches to water resource management provided for in the NWA is concerned with the pricing of South Africa's water resources. The Act provides for the introduction of economic instruments as a means of encouraging water conservation and the reduction of waste. Provision is also made for introducing incentives and disincentives to promote effective and efficient water use. In the light of the above, the Waste Discharge Charge System (WDCS) was introduced as a focussed intervention designed to internalise costs associated with waste and to encourage a reduction in waste and the minimisation of detrimental impacts on water resources.

There are potential opportunities for municipalities to access alternative capital from the WDCS such as the newly proposed Future Infrastructure Build Charge (FIBC), which is to support the development of water resources infrastructure supplying the basic water requirements of municipal water users in rural areas, whether this is the entire scheme or a portion of a municipal supply system. The FIBC will provide for the costs of investigation, planning, design, construction and pre-financing of new infrastructure and the betterment of already existing infrastructure.

In accordance with the Norms and Standards in respect of tariff for water services which was promulgated in terms of the Water Services Act 108 of 1997 (WSA), a water services institution must, when determining its revenue requirements on which tariffs for water services are based, take into account at least the need to:

- Recover the cost of water purchases;
- Recover overhead, operational and maintenance costs;
- Recover the cost of capital not financed through any grant, subsidy or donation;
- Provide for the replacement, refurbishment and extension of water services works; and
- Ensure that all households have access to basic water supply and basic sanitation.

A water services institution may use any source of funds, including any funds received from municipal rates and taxes or from transfers from national or provincial government or from any other source, to subsidize a water services tariff. Furthermore, a water services institution must consider the right of access to basic water supply and the right of access to basic sanitation when determining which water services tariffs are to be subsidized.

8.8.2.2 Sewage service and waste water treatment

The tariff charged for sewage removal is generally linked to property market value. An alternative approach adapted by local government to a property market value tariff has, however, been implemented by some municipalities. In these municipalities, sewage tariffs are based on the volume of effluent disposed to the sewer. Such an approach has the benefit of incentivising water saving, as the amount paid for the sewage service is directly linked to the amount of effluent discharge. In one municipality the following calculation method was used:

Water consumed through the Water Meter is used for the measure of the volume of effluent to the sewer.

The implication is that all water used in the home other than the volume of municipal water used for irrigation is disposed to the sewer.

Thus a 70% calculation (which is an estimate) of water through the water meter is rated for effluent.

This applies to everyone whether one has a Garden Rhapsody Grey Water Re-Using System for irrigation purposes or not.

For domestic full properties (standard single residential properties) 70% of water consumption is charged to a maximum of 35 kℓ of sewage per month (70% of 50 kℓ water = 35 kℓ of sewage)

8.8.2.3 Refuse removal

The NEM:WA directly allows for linking economic instruments to specific waste streams to serve as incentives or disincentives to encourage a change in behaviour towards the generation of waste and waste management by all sectors of society. The National Pricing Strategy for Waste Management (NPSWM) is a legislative requirement of the National Environmental Management: Waste Amendment Act 26 of 2014, and gives effect to the National Waste Management Strategy (NWMS), which advocates the use of full-cost accounting by municipalities to determine the complete cost of waste service provision (this includes operational and capital expenditure for collection, credit control, monitoring and enforcement, interest payments and depreciation).

The NPSWM proposes a range of methodologies for the setting of waste management charges to provide an enabling environment for waste recycling and to contribute to the recycling economy in South Africa, through the recovery, re-use and recycling of waste. National tariff-setting guidelines (the Solid Waste Tariff Setting Guidelines for Local Authorities and the Municipal Solid Waste Tariff Strategy) are also available to assist local authorities with the implementation of their chosen solid waste removal pricing structures. These guidelines, however, do not currently incorporate all of the methodologies proposed by the NPSWM, because they precede this document.

8.8.2.3.1 Tariffs and taxes

All waste generators typically pay the same amount for municipal waste collection (via general taxation or municipal rates/levies) regardless of how much waste they generate. This implies that the household does not pay per unit of waste generated or collected; i.e., the household faces zero costs at the margin for generating additional waste for disposal (usually to landfill); and thus has no incentive to reduce waste generation, or separate waste for recycling. A possible solution proposed by the NPSWM is to charge variable rates, based on the quantity of waste collected i.e. volumetric tariffs.

8.8.2.3.1.1 Volumetric tariffs

Quantities of waste generated should ideally be assessed based on weight. It is argued that this will give the household an incentive to avoid higher charges by reducing waste generation or separating waste for recycling, and possibly even an incentive to alter purchasing patterns toward products with less packaging (or recyclable packaging). Therefore, volumetric tariffs not only encourage recycling as an alternative to having waste collected for disposal to landfill, but they can also encourage households to reduce the amount of waste generated in the first place. Volumetric tariffs on their own, however, will not necessarily reflect the external costs associated with waste generation.

The NPSWM makes the argument that volumetric tariffs should ideally consist of two components: one aimed at ensuring full financial cost recovery of services, and a second component reflecting external costs (aimed at internalising environmental externalities). In addition, higher charges should apply to the collection of hazardous wastes, so as to stimulate a change in the composition of waste toward less hazardous forms of waste. Suggested methods for implementing such volumetric charges have been included in the 2012 Municipal Solid Waste Tariff Strategy. The most sophisticated version of this requires weighing equipment on collection vehicles to weigh each

households refuse. More crude versions are based on consumers purchasing special bags, with a surcharge which goes to the municipality.

The municipality will collect waste in these bags only. The more refuse generated the more bags have to be bought by the household. One approach adopted by a municipality in South Africa, for example, charges households for each 240 litre container collected by the municipality. In addition, households receive a percentage rebate on the total amount charged. The amount of the rebate depends on the property value. Methods such as these may serve as guidance for other municipalities such as MMM.

8.8.2.3.1.1 Waste disposal taxes

Another alternative is to address external costs at the disposal stage through disposal taxes, e.g. through a tax on landfilling (over-and-above landfill tipping fees) or incineration, rather than at the collection stage. The external costs of disposal to landfill (including social and environmental impacts, such as those on air, water and soil) are not currently built into landfill tipping fees. The result is an artificially low cost of landfilling, which makes recycling and recovery unattractive alternatives. The NPSWM suggests that landfill taxes reflecting these external costs would raise the costs associated with landfilling, thereby creating incentives to seek alternatives.

8.8.2.3.2 Subsidies

There is increasing evidence that a coherent combination of tax- and subsidy-based instruments is far more effective than implementing any single instrument in isolation. One such subsidy-based instrument is a recycling subsidy, in which government provides a payment either per unit or per kg of material recycled, or as a lump-sum grant to communities or recycling centres. Alternatively, government could provide tax credits or rebates for recycling whereby it provides tax relief to anyone who recycles or who invests in recycling infrastructure. Subsidies can also be in the form of grants to provide financial incentives for the improvement of various aspects of solid waste management, including research and development.

Other possible instruments include preferential tax treatment for commendable waste management practices or initiatives, and tax credits to industries using recycled materials. Finally, various forms of support can be provided to stabilise the market for recyclable materials, such as price supports for the establishment of materials banks; the guarantee of an income for a recycling plant or facility; or the institution of investment grants, accelerated depreciation, and soft loans designed to encourage private enterprises to implement resource recovery activities.

8.8.2.4 Electricity

Municipalities play a role as either generators or distributors of electricity. Tariffs charged for the distribution of electricity to households form a large component of municipal income. It could be argued that municipalities are disinclined to seriously implement demand-side management and renewable energy initiatives, as these initiatives threaten this traditional income stream. In its role as a distributor, there are certain demand-side initiatives that a municipality could implement to reduce electricity consumption.

8.8.2.4.1 Demand-side management

Demand-side management (DSM) is the planning, implementing and monitoring of activities to encourage consumers to use electricity more efficiently, including both the timing and the level of electricity demand. Market-based instruments are used to promote electricity efficiency, mainly in the form of tariff increases. The National Energy Regulator (NERSA) determines municipal tariff guidelines in terms of which municipalities may apply for approval for an electricity tariff increase. In

the context of the South African electricity crisis, there have been substantial electricity price increases from Eskom over the last five years. As municipalities are paying more for electricity, these price increases have led to significant electricity tariff hikes across the country. While the observed drive for electricity price increases was essentially not environmentally motivated, it may give rise to definite positive environmental outcomes, as this creates an incentive towards greater electricity efficiency.

8.8.3 The *status quo* at Mangaung Metropolitan Municipality

The functions of the demand-side management division are divided into two sub-functions; rates and taxes and sundry charges. The rates and taxes arrangements of the MMM do not make specific provision for environmental rates and taxes. Tariffs raised for the three major services rendered by the municipality, namely water supply, sewerage and refuse removal, need to be sufficient to cover the expenses associated with the rendering of each service concerned.

8.8.3.1 Water supply tariff

A two-part tariff structure for water use is charged, namely a fixed basic charge and a charge based on total consumption. The charge based on total consumption is also divided into two pricing structures, one for domestic purposes and one for non-residential (business, industrial or commercial) purposes.

8.8.3.1.1 Domestic users

Non-metred domestic users are billed at a fixed amount per month, while metred domestic users are billed as follows:

- An availability charge may be payable on all properties, where a connection to the water reticulation network is possible but not in use.
- Registered Indigents receive 10 kl of water subsidised every month as determined by council on an annual basis.
- Users are billed on a fixed charge per month (R/Month).
- Customers are billed for consumption based on the amount of water used by way of a step tariff per kilolitre usage.

8.8.3.1.2 Business/commercial/industrial users

In order to restrict consumption, an inclining block-rate tariff structure with a basic fee is applied. Users are billed as follows:

- An availability charge is payable on all properties, where a connection to the water reticulation network is possible but not in use.
- Users are billed on a fixed charge per month (R/Month).
- Users are billed for consumption based on the amount of water used by way of a step tariff per kilolitre usage.

All other water-related services offered by the council are charged at a tariff as determined by the Council annually during the budget process.

8.8.3.2 Sewage tariff

The tariff levied by the MMM is based on the category and size of the property and is therefore directly linked to the market value of each property. Special tariffs may also be levied for specific

developments and informal settlements and additional charges may be levied for trade waste. MMM could therefore also consider incorporating a volumetric component to their pricing structure as is done by some municipalities in the country.

8.8.3.3 Refuse removal tariff

Refuse removal charges are linked to the market value and erf size of the property. Part of the determination of tariffs also relates to the number of removals per week. Special tariff arrangements may also be determined and approved by council from time to time for specific developments and/or informal settlements.

In the light of the proposed NPSWM methodologies for the setting of waste management charges (as discussed above), there is an opportunity for innovation with regard to the current pricing structure.

8.8.3.4 Electricity tariff

The MMM applies to NERSA for electricity tariff increases in accordance with NERSA's municipal increase guideline. The last electricity tariff increase was approved on 4 August 2015 for the 2015/16 financial year.

8.8.3.5 Social grants and free basic services

In terms of the South African Constitution all customers should have access to basic services. Free basic municipal services are those municipal services necessary to ensure an acceptable and reasonable quality of life and which, if not provided, could endanger public health or safety or the environment. Currently the free basic services provided to the domestic customers in the MMM are as follows:

- The extent of the monthly indigent support granted to indigent households must be based on budgetary allocations for a particular financial year and the tariffs determined for each financial year.
- The general threshold for indigent support is restricted to qualifying households with a combined income amount determined by council at the beginning of every financial year and will be applied for the duration of that particular financial year.
- The municipality recognises the following rates and service charges for indigent support:
 - Electricity;
 - Water;
 - Refuse removal;
 - Sewage;
 - Property rates; and
 - Pauper burials.

MMM makes use of a three-tiered pricing structure to give effect to these socially based policy commitments: Users who are incapable of making any contribution towards the consumption of services and who are fully subsidised; users who are able to afford a partial contribution and who are partially subsidised only; and users who can afford the cost of the services in total. The rendering of services that are not financed in terms of the rates and taxes is provided for in terms of the sundry charges system.

8.9 Recommendations for the EI&MP

It is recommended that MMM explores alternative fiscal instruments and funding opportunities in order to maximise its income and reach its full revenue generation potential. The municipality must at all times be in a financial position where it can, at a minimum, cover the costs of maintaining the delivery of services.

The municipality should, however, also strive towards greater environmental sustainability in the rendering of its services, and the approach followed for revenue generation should reflect this need. Pricing strategies should therefore incorporate environmental concerns, and not only economic concerns. Ideally, fiscal strategies should be given preference where economic, social and ecological benefits coincide. Furthermore, the MMM must ensure that inter-governmental fiscal transfers are consistent with the increased demand placed on the delivery of free basic services and other indigent policies.

8.10 Conclusion

The MMM needs to review and revise the adoption and use of its suite of management, planning, governing and governance tools to ensure that its environmental management, governing and governance duties are indeed planned for, delivered, verified and improved. The suite of instruments to be used for this purpose includes, amongst others:

- Information-based instruments;
- The classical local government tools;
- Spatially based tools;
- Plan, do, check, and report tools; and
- Fiscus-based tools.

9 THE ENVIRONMENTAL IMPACT AND MANAGEMENT PLAN (EI&MP)

This EI&MP was generated at the programmatic level in line with the generic format of the IDP. The EI&MP commitments are classified into ten KPAs. Each KPA is then unpacked as objectives, strategies, key performance indicators, measurement units, five-year targets, two-year targets and projects.

The following KPAs are defined:

- The MMM as a regulated entity (KPA-01), see Table 57 ;
- The MMM as a regulatory entity (KPA-02), see Table 58;
- The MMM and co-operative environmental government, (KPA-03), see Table 59;
- The MMM and corporate governance (KPA-04), see Table 60 ;
- The MMM and natural resource management (KPA-05), see

- Table 61;
- The MMM rendering environmental services (KPA-06), see Table 62;
- The MMM and environmental education and training (KPA-07), see Table 63;
- The MMM and key environmental infra-structure management (KPA-08), see Table 64;
- The MMM and sustainable local economic development (KPA-09), see Table 65; and
- Cross-cutting environmental management, governing and governance matters (KPA-10), see Table 66.

The Environmental Policy supports this EI&MP, while all the KPAs are elaborated in Chapters 1 to 8. It is imperative to also read the corresponding sections in the preceding chapters to gain an understanding of the nature and extent of each KPA.

Also, read this EI&MP in association with all the recommendations made throughout this EI&MP and especially so with the recommendations made per directorate or sub-directorate offered in Chapter 3, Table 30 to Table 43.

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Table 57. Key Performance Area 01: The MMM as a regulated entity

Objectives	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM is to be an environmentally compliant metropolitan municipality	Adopt and implement a programme to make all MMM staff aware of their environmental legal duties as far as adherence to the NEMA principles and the duty of care and reasonable measures doctrines are concerned.	Demonstration by all identified staff of the MMM that they adhere at all times to the NEMA principles and the duty of care and reasonable measures doctrines. Processes and measures in place to ensure that all identified staff are required to adhere at all times to the NEMA principles and the duty of care and reasonable measures doctrines.	The % of all the identified staff of the MMM who are in a position to demonstrate that they apply the NEMA principles and the duty of care and reasonable measures doctrines when they execute their tasks.	100% of all the identified staff of the MMM are in a position to demonstrate that they apply the NEMA principles and the duty of care and reasonable measures doctrines when they execute their tasks.	30% of all the identified staff of the MMM are in a position to demonstrate that they apply the NEMA principles and the duty of care and reasonable measures doctrines when they execute their tasks.	Awareness of MMM staff of the need to apply the NEMA principles and the duty of care and reasonable measures doctrines when they execute their tasks.
	Establish a cross-disciplinary and inter-departmental working group and generate a comprehensive protocol to:	Establish a functional cross-disciplinary and inter-departmental working group and an approved protocol to manage all the life-cycle	A functional and inclusive working group that oversees the sound management of environmental authorisations	An effective and efficient protocol and structure in place at the MMM providing assurance that the MMM does indeed manage all environmental	The protocol and the working group are established to manage all environmental authorisations including applicable norms and	The development of a protocol and The establishment of a suitable structure to manage all environmental authorisations including applicable

Objectives	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	<p>a) manage all developmental or other proposals requiring any environment-related authorisation³⁶ or the adherence to norms and standards</p> <p>b) to manage the life-cycle phases of environmental authorisations under the auspices of the Directorate Environmental Management.</p>	phases of environmental authorisations including applicable norms and standards.	<p>across all functions of the MMM.</p> <p>A comprehensive protocol that directs the behaviour of the environmental authorisation working group that covers all the life-cycle phases of managing environmental authorisations, including applicable norms and standards.</p>	authorisations throughout their life-cycles including applicable norms and standards.	standards. throughout their life-cycles.	norms and standards. throughout their life-cycles
	Establish a programme to implement all the recommendations made by the CEM in the compliance verification report dated 2016 and expand the protocol to ensure sustained compliance to	<p>A 100% close-out of all the compliance recommendations flagged in the 2016 compliance report issued by the CEM.</p> <p>A protocol to ensure sustained compliance with</p>	<p>The percentage of compliance recommendations closed-out of the total of compliance recommendations made.</p> <p>Sustained compliance to</p>	<p>The MMM has achieved 100% compliance with all the compliance recommendations made in 2016.</p> <p>The MMM sustains demonstrated compliance with</p>	<p>The MMM has achieved 40% compliance with all the compliance recommendations made in 2016.</p> <p>The MMM has adopted a protocol to ensure sustained compliance with</p>	A programme to achieve compliance with the compliance recommendations and with applicable environmental law.

³⁶ Please note that the term 'environmental authorisations' is an inclusive term for all authorisations required in terms of all environmentally related national and provincial legislation, local by-laws, including mining related authorisations and all mandatory registrations.

Objectives	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	applicable law by the MMM.	applicable environmental law.	applicable environmental law.	applicable environmental law.	applicable environmental law.	
	Generate, adopt and implement a three-year environmental compliance verification or audit programme to verify compliance with applicable environmental law.	Percentage completion of the scheduled environmental compliance audits per year as scheduled in terms of the three-year compliance verification programme.	The percentage of the verification audit completed per year of total audits scheduled per year.	An effective environmental audit programme is in place at the MMM.	The MMM has generated, implemented and maintained the environmental compliance verification programme.	The development of an environmental legal compliance verification programme by the MMM.
	Define a policy and an IDP and SDBIP commitment that the MMM shall comply with all applicable environmental law at all times and that the MMM will track performance in terms of the MMM PMS and assurance programmes.	An effective environmental legal compliance programme that is managed and verified in terms of the MMM's IDP, SDBIP, PMS and assurance programmes.	An effective environmental legal compliance programme that is managed and verified in terms of the MMM's IDP, SDBIP, PMS and assurance programmes.	An effective environmental legal compliance programme that is managed and verified in terms of the MMM's IDP, SDBIP, PMS and assurance programmes.	An environmental legal compliance programme that is managed and verified in terms of the MMM's IDP, SDBIP, PMS and assurance programmes.	An environmental legal compliance verification programme.
	Generate, adopt and implement a programme to manage the life-cycles of all hazardous	The adopted and implemented programme.	The adopted and implemented programme.	The MMM effectively manages the life-cycle risks associated with hazardous substances and	The adopted programme to manage the life cycle risks associated with hazardous	Development and implementation of a programme.

Objectives	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	<i>substances and dangerous goods</i> that are: a) owned and used by the MMM; b) owned and used by persons operating in the jurisdictional areas of the MMM and c) transported through the MMM jurisdictional area.			dangerous goods throughout its area of jurisdiction	substances and dangerous goods throughout the MMM area of jurisdiction	

Table 58. Key Performance Area 02: The MMM as an environmental regulator, including enforcement of by-laws

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to be an effective environmental regulator for all the matters that the MMM has a mandate to regulate.	Continue with the <i>revision of all MMM by-laws</i> to: a) ensure that the Council has indeed drafted and approved all the potential environmental by-laws that it can have; and b) ensure that all the by-laws, current and new, are	A complete suite of environmental by-laws. Revised by-laws that are aligned with the NEMA and other related environmental legislation.	A complete suite of environmental by-laws. Revised by-laws that are aligned with the NEMA and other related environmental legislation.	The MMM has: a) a complete suite of by-laws that it can use to regulate environmental behaviour; and b) a suite of by-laws that are aligned with NEMA and other related environmental legislation.	The MMM has identified the gaps in its environmental by-law portfolio as well as those by-laws that need to be aligned with the NEMA and other relevant environmental legislation.	A by-law review and expansion project.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	aligned with NEMA and other relevant environmental legislation.					
	Review and revise the fragmented approach to <u>environmental enforcement</u> ³⁷ specifically and enforcement in general and integrate and align this function of the MMM by means of structural, process and capacity reforms.	An integrated and aligned enforcement function of the MMM.	An integrated and aligned enforcement function of the MMM.	The MMM has transformed its enforcement function to the extent that enforcement is structurally and procedurally aligned, integrated, effective and efficient.	The MMM has initiated an investigation into transforming its enforcement capability and has an approved reform strategy and action plan to be implemented.	A project to reform the enforcement function of the MMM.

Table 59. Key Performance Area 03: The MMM as a co-operative government role -player

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to be an effective co-operative government role-player in the field of	Holistically review the current participation ³⁸ of the MMM in national and provincial co-	A streamlined co-operative environmental	A streamlined co-operative environmental	The MMM fully discharges its duty to participate in the co-operative environment	Have an approved and resourced environmental co-operative environmental	Reform the involvement of the MMM as a key role-player in the environmental co-

³⁷ This includes the establishment of a municipal court, a municipal police force, and municipal EMIs.

³⁸ Participation also refers to the role of the MMM as a commenting authority.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
environmental governing.	operative government structures and processes against the actual defined duties and generate a programme to optimise the participation of the MMM in co-operative environmental government processes and structures.	government programme.	government programme.	government processes and structures.	government programme.	operative environmental governmental processes and structures.

Table 60. Key Performance Area 04: The MMM and corporate environmental governance

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to implement and ensure effective corporate governance processes for the environmental sector in line with the classical corporate governance	Ensure that the performance of all the environmental management, governing and governance commitments made in terms of the IDP and delivered by means of the SDBIP is tracked and assured by	All the IDP commitments are performance tracked and assured by means of the MMM corporate governance instruments.	All the IDP commitments are performance tracked and assured by means of the MMM corporate governance instruments.	All the IDP commitments are performance tracked and assured by means of the MMM corporate governance instruments.	The MMM has commenced with the process to performance track and assure environmental management performance by means of the MMM's corporate governance instruments.	A project to performance track and assure environmental management performance by means of the MMM's corporate governance instruments.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
instruments of local government.	means of the following MMM corporate governance instruments³⁹ : a) the performance management system; b) Internal audits; c) Statutory reporting; and d) the internal audit committee.					
To inform the Council of the MMM with sound environmental management, governing and governance advice.	Establish a S 79 Environmental Advisory Committee to inform the Council on matters related to environmental management, governing and governance.	An established and functional Environmental Advisory Committee.	An established and functional Environmental Advisory Committee.	An established and functional Environmental Advisory Committee.	The terms of reference for the S 79 Environmental Advisory Committee has been established and nominations have been called for.	The establishment of a S 79 Environmental Advisory Committee

³⁹ Also see the objective formulated under KPA-10.

Table 61. Key Performance Area 05: The MMM and natural resource management

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to effectively manage and protect valued natural and other resources.	Initiate a programme to identify the habitats of listed red data fauna and flora species that occur within the MMM area of jurisdiction and that do not enjoy any protection status and afford some form of protection by means of the IDP and environmental layer of the SDF or any other instrument.	The % of areas that do have listed red data fauna and flora species and that have been incorporated in the IDP and the environmental layer of the SDF of the MMM.	The % of known red data habitats that are reflected in the IDP and the environmental layer of the SDF.	50% of all identified areas with red data listed species are afforded some form of protection in terms of the IDP and the environmental layer of the SDF.	The MMM has commissioned a project to identify and manage all areas with red data species in its area of jurisdiction.	A project to identify and manage areas with known populations of red data species.
	Initiate a programme and action plan to adopt and implement the recommendations of the MOSS that was commissioned by the MMM. These provisions should at a	The approved programme and action plan with a protection strategy for open spaces, parks, protected areas, or ecological infrastructure.	The approved programme and action plan with a protection strategy for open spaces, parks, protected areas or ecological infrastructure.	Active management and protection of open spaces, protected areas, or ecological infrastructure. to sustain their social, environmental and ecological functions and services..	The areas that are to be protected and maintained as functional open spaces are identified with an approved management plan.	Generation of a programme and action plan to protect open spaces from being developed.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	<p>minimum include⁴⁰:</p> <p>a) the identified open spaces, parks and protected areas, or ecological infrastructure that require protection as well as</p> <p>(b) a network of parks open spaces and protected areas that must be protected from development demands,, and</p> <p>(c) Measures adopted to protect these open spaces by means of MMM's spatial instruments such as the environmental layer of the SDF, the IDP and the LUMS.</p>					
	Initiate a programme to identify and protect	The list of identified Grade III heritage resources that the	The list of identified Grade III heritage resources that the	All the listed Grade III heritage resources are	The MMM has commissioned a programme to	A project to identify, manage and protect all the Grade III

⁴⁰ See the objective to amend the defined status of open spaces in the MMM land use management scheme (KPA10).

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	<p>the Grade III heritage resources located within the MMM area of jurisdiction that the MMM:</p> <p>a) owns and or occupies, and</p> <p>b) must protect and manage as heritage resources of local interest.</p> <p>And to protect and manage them by means of the IDP and SDF or any other suitable local government instrument such as policies or by-laws..</p>	<p>MMM is responsible for managing and protecting.</p> <p>The % of listed Grade III heritage resources that the MMM is indeed managing and protecting.</p>	<p>MMM is responsible for managing and protecting.</p> <p>The % of listed Grade III heritage resources that the MMM is indeed managing and protecting.</p>	protected and managed by the MMM.	identify, manage and protect all Grade III heritage resources in its area of jurisdiction.	heritage resources of the MMM.
	<p>Initiate an Integrated Energy Efficiency Management Programme⁴¹ that:</p>	<p>The approved energy management programme and action plan.</p>	<p>The approved energy management programme and action plan.</p>	<p>An active and effective energy management programme with demonstrated energy savings.</p>	<p>The approved energy management plan.</p>	<p>Generation of</p> <p>a) a programme,</p> <p>b) an action plan and</p> <p>c) a number of energy-saving projects to improve</p>

⁴¹ Read this strategy with the strategy defined under KPA 10 that specifies the reduction of the MMM's carbon footprint.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	<p>a) Reduces the reliance on carbon-based energy;</p> <p>b) Improves the energy efficiency performance of MMM's energy using infrastructure such as but not limited to – buildings; mechanical equipment such as pumps, traffic lights etc.⁴²</p> <p>c) Enforces the MMM's requirements that all new buildings and structures comply with the energy efficiency standards;</p> <p>d) Drives the urban transport plan to improve the energy</p>	The % reduction of normalised energy use achieved by energy- efficient projects when compared to the pre-mitigated base-case scenario.	The % reduction of normalised energy use achieved by energy-efficient projects when compared to the pre-mitigated base-case scenario.			the energy efficiency profile of the MMM.

⁴² This strategy can be combined with a broader 'Greener Buildings' and a 'greener fleet' programme.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	efficiency relative to urban mobility. ⁴³					
	Effectively manage alien and invasive species in the jurisdiction area of the MMM.	To generate and adopt an Invasive Species Monitoring, Control and Eradication Plan (ISMC&E) as an IDP sector plan as required by legislation.	The approved ISMC&E.	The approved ISMC&E.	Implementation of all the provisions and recommendations of the ISMC&E.	Appointment of the consultants to generate the ISMC&E.
	Initiate a programme to protect, manage and improve all wetlands located in the MMM area of jurisdiction by recording all the wetland classes on the MMM's environmental layer of the SDF and determining the status of all the wetlands located in the MMM area of jurisdiction.	a) List of identified wetlands. b) The classification of wetlands. c) A geo-spatial record of all wetlands. d) Recording of high-value wetlands in the environmental layer of the SDF. e) Wetland management policy in place.	a) List of all identified wetlands. b) The classification status of wetlands. c) A geo-spatial record of all the wetlands. d) High-value wetlands with their protection status recorded in the environmental layer of the SDF. e) Council approved wetland	The MMM is actively managing all wetlands in terms of its IDP, SDF, SDBIB, PMS and performance assurance systems.	The MMM has commissioned a wetland management programme.	A wetland management project.

⁴³ This strategy can be combined with strategies to green the MMM fleet and the greening of urban mobility.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
			management policy in place.			
	Make provision for the National Freshwater Ecosystem Priority Areas (NFEPAs) in the environmental layer of the MMM's SDF.	The % of identified NFEPAs recorded in the environmental layer of the MMM SDF.	Number of NFEPAs located in the jurisdictional area of the MMM.	100% of all the identified NFEPAs located in the MMM area of jurisdiction are recorded in the environmental layer of the MMM's SDF.	The spatial extent of all the NFEPAs located in the MMM area of jurisdiction is determined.	Initiate a NFEPa delineation project and add to the MMM SDF.
	Make provision for the three threatened terrestrial ecosystems, the Bloemfontein Dry Grassland (vulnerable) , the Eastern Free State Clay Grassland (vulnerable) and the Vaal-Vet Sandy Grassland (endangered) in the environmental layer of the SDF.	The % in ha of identified Bloemfontein Dry Grassland, the Eastern Free State Clay Grassland and the Vaal-Vet Sandy Grassland recorded in the environmental layer of the MMM SDF.	The size in ha per identified veld type.	The MMM is protecting a representative sample of each threatened terrestrial ecosystem by means of available spatial tools such as the IDP, SDF and land use zoning.	The spatial extent of all the threatened terrestrial ecosystems located in the MMM area of jurisdiction is determined and mapped in the environmental layer of the SDF.	Initiate a project to: a) determine the spatial extent of the three threatened terrestrial ecosystems located within the jurisdiction of the MMM, and add them to the environmental layer of the SDF MMM SDF; b) Determine which areas should be protected from development by means of spatial tools.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	In line with the principle of co-operative government, get involved with the management of ground water resources within the MMM's area of jurisdiction. This programme includes ground water quality and use.	A report on the MMM's involvement in managing the ground water resources in its area of jurisdiction and a suitable action plan.	The report and action plan.	The MMM is actively managing ground water quality and use by means of its IDP, SDBIB and PMS systems in line with the principles of co-operative government..	The MMM has commissioned a study to determine how and to what extent the Council can get involved in securing the ground water resources (quality and use) in its area of jurisdiction.	A ground water resource management project in line with the principle of co-operative government.
	Initiate a programme to identify all pollution sources that can impact on the quality of ground water resources within the MMM's area of jurisdiction and manage these sources to ensure that ground water resources are protected.	The approved programme.	A programme that lists all the actual and potential pollution sources, the nature of the pollution and an action plan to manage these sources.	The MMM is actively managing potential pollution sources that can threaten ground water quality by means of its IDP, SDBIB, PMS and performance assurance systems.	The MMM has commissioned a ground water pollution source management programme.	A ground water pollution source management project.
	Initiate a programme to identify all pollution	Relevant surface water quality standards per water	The recognised measurement unit per selected surface	The MMM is actively managing pollution sources	The MMM has commissioned a surface water	A surface water pollution source

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	sources that can impact on the quality of surface water resources within the MMM's area of jurisdiction and manage them to ensure that controlled effluent discharged into surface water resources meets discharge standards.	quality indicator, that are relevant to the specific catchment area.	water quality parameter as required by water use licences.	that can threaten surface water quality by ensuring that the effluent meets water quality objectives in terms of its IDP, SDBIB, PMS and performance assurance systems.	resource management programme.	management project.
	Continue with the current programme to reduce revenue water losses throughout the MMM and manage this programme through the MMM IDP, SDBIP and PMS tools	The drivers of this programme (MMM Engineering) should formulate an appropriate KPI as the methodologies used to quantify savings of revenue water losses are contested.	The drivers of this programme (MMM Engineering) should formulate an appropriate MU as the methodologies used to quantify reductions in revenue water losses are contested	The drivers of this programme (MMM Engineering) should formulate a five-year target as this is a technical objective that must be supported by a detailed <i>status quo</i> analysis and detailed planning.	The drivers of this programme (MMM Engineering) should formulate a two-year target as this is a technical objective that must be supported by a detailed <i>status quo</i> analysis and detailed planning	The drivers of this programme (MMM Engineering) should formulate a range of projects to achieve their targets, including longer- and shorter-term targets.

Table 62. Key Performance Area 06: The MMM rendering sustainable environmental services

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM and Bloem Water to render effective, efficient and lawful potable water supply services on a sustainable basis to all the people of the MMM.	Ensure the long-term sustainable provision of potable water to all the people of the MMM through the MMM's IDP, SDBIP and PMS systems.	Sustainable access to a bulk water supply.	Assured access to water supply to meet the projected short-, medium- and longer-term water demand of the MMM.	Secured access to potable water resources for the people of the MMM.	All planning completed to secure access to potable water resources for the people of the MMM.	The responsible line management unit defines a range of projects to achieve the shorter- and longer-term targets.
		Aligned life-cycle and quality management processes to provide potable water to the people of Mangaung by both the WSPs: the MMM and Bloem Water.	Aligned potable water supply and management processes by both WSPs	Aligned management and service delivery processes by the two WSPs operational in the MMM area of jurisdiction.	All planning completed to ensure aligned management and service delivery processes by the two WSPs operational in the MMM area of jurisdiction.	The responsible line management unit defines a range of projects to achieve the shorter- and longer-term targets.
		Achieve Blue Drop certification for both WSPs.	Be awarded Blue drop certificates.	Both WSPs have been awarded the coveted Blue Drop Certification and management of the Blue Drop Status in terms of the MMM's IDP, SDBIP, PMS and performance assurance systems.	At least a 50% improvement in the overall Blue Drop score awarded for both the WSPs based on the score awarded for the year 2016 as managed in terms of the MMM's IDP, SDF, SDBIP, PMS	The responsible line management unit defines a range of projects to achieve the defined shorter- and longer-term targets.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
					and performance assurance systems.	
		Both the MMM and Bloem Water WSPs manage their processes in conformity with the water safety plans	Conformity with the water safety plan by the MMM and Bloem Water.	A 100% conformity with the water safety plan by the MMM and Bloem Water.	80% conformity with the water safety plan by the MMM and Bloem Water.	The responsible line management unit defines a range of projects to achieve the defined shorter- and longer-term targets.
		<p>Adopt and use relevant water quality and environmental operational KPIs from the Drinking Water Standards as well as water supply and incident and deviation response indicators to measure and track the performance of water supply services.</p> <p>Manage all these indicators in terms of the MMM's IDP, SDBIP, PMS and</p>	<p>Water Quality KPIs to be aligned with the Drinking Water Standards (SANS 241-2011;</p> <p>Water supply KPIs relate to the % of households and other users to whom water is provided for 98% of the time;</p> <p>Relevant KPIs in terms of the timeliness of responses to detected deviations</p>	<p>Water Quality targets set in terms of key parameters of the Drinking Water standards are achieved for 98% of the time expressed per calendar month;</p> <p>The MMM to set a KPI for water supply to the people of the MMM;</p> <p>All detected deviations in water quality to be communicated to the response team</p>	<p>A detailed water quality monitoring and measurement programme in place at the MMM.</p>	<p>The responsible line management unit defines a range of projects to achieve the shorter- and longer-term targets.</p>

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
		performance assurance systems.	in water quality parameters.	within 4 hours of detection and a response decision to be made within an additional 4 hours of the communication. Communication and/or an action plan to be launched within 4 hours of the communication.		
The MMM to render effective, efficient and lawful waste water treatment services.	Ensure the long-term sustainable provision of waste water management ⁴⁴ services that are lawful and that meet the demand through the MMM's IDP, SDBIP and PMS systems.	Achieve Green Drop certification for all WWTWs of the MMM.	A Green Drop certificate for each WWTW.	All WWTWs have been awarded the coveted Green Drop Certification and management of the Green Drop Status in terms of the MMM's IDP, SDBIB, PMS and performance assurance systems.	At least 50% improvement in the overall Green Drop score awarded for all WWTWs based on the score awarded for the 2016 year as managed in terms of the MMM's IDP, SDF, SDBIB, PMS and performance assurance systems.	The responsible line management unit defines a range of projects to achieve the shorter- and longer-term targets.

⁴⁴ See KPA-01 for the requirements to operate the WWTWS lawfully.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to render effective, efficient and lawful air quality management services.	Generate and adopt an Integrated Air Quality Management Plan (IAQMP) as an IDP sector plan as required by legislation and to manage it in terms of the MMM's IDP, SDBIB, PMS and assurance programmes.	The approved IAQMP.	The approved IAQMP.	Implementation of all the provisions and recommendations of the IAQMP	Appointment of the consultants to generate the IAQMP	Generation of an IAQMP for the MMM.
	Ensure long-term sustainable air quality monitoring services for the entire MMM area of jurisdiction through the MMM's IDP, SDBIP and PMS systems.	A comprehensive and reliable air quality monitoring infrastructure system that routinely measures the performance against the priority air quality parameters on a representative basis for the entire MMM area of jurisdiction.	A functional, reliable and representative air quality monitoring system for the MMM.	A functional, reliable and representative air quality monitoring system for the MMM.	Detailed planning for and acquisition of equipment to monitor air quality parameters on a representative basis, including the successful decommissioning the three original air quality management stations: Pelonomi, Bayswater Clinic and the Kagisanong Community Centre as managed in terms of the MMM's IDP, SDF, SDBIB,	The responsible line management unit defines a range of projects to achieve the shorter- and longer- term targets.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
					PMS and performance assurance systems.	
	Ensure the sustained analysis, evaluation and timely reporting of trended air quality performance in line with an air quality monitoring protocol that is part of an Integrated Air Quality Management Plan (IAQMP) for the MMM area of jurisdiction through its IDP, SDBIP, PMS and assurance systems.	<p>An approved integrated air quality monitoring protocol.</p> <p>Timely and correct reporting of air quality performance information in line with the approved air quality monitoring protocol.</p>	<p>The approved and adopted air quality monitoring protocol.</p> <p>Reporting of air quality information as scheduled in the air quality monitoring protocol.</p>	A sound set of air quality performance data and information for the MMM area of jurisdiction.	The completed and approved air quality monitoring protocol.	The responsible line management unit defines a range of projects to achieve the shorter- and longer-term targets.
The MMM to render effective, efficient and lawful waste management services .	Revise the last version of the Integrated Waste Management Plan (IWMP) to make provision for waste management of the entire MMM area of jurisdiction that provides for:	The approved IWMP.	The approved IWMP.	Implementation of all the provisions and recommendations of the revised IWMP.	Appointment of the consultants to revise the IWMP.	Generation of a revised IWMP for the MMM.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	a) All the requirements of the NEM:WA and applicable regulations; b) Compliance with all applicable waste and environmental legal requirements; and c) Driving the waste-to-worth programme in terms of the MMM's IDP, SDBIP and PMS systems.					
To ensure that the Emergency Management and the Disaster Management Services are capable of responding to all potential environment-related disasters and emergencies and to do so in an environmentally responsible and	Review and revise the current Emergency Management and the Disaster Management Plans to ensure that they are capable of responding to all potential environment-related disasters and emergencies, including climate	Revised Emergency Management and Disaster Management Plans.	Revised Emergency Management and Disaster Management Plans.	The MMM has Emergency Management and Disaster Management Plans: a) to respond to all environmental disasters and emergency situations; b) to mitigate and prevent harm to the environment that is caused by	The MMM has commenced with reviewing and revising the Emergency Management and Disaster Management Plans.	A project to review and revise the Emergency Management and Disaster Management Plans.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
compliant way, including the rehabilitation of land.	change impacts and to do so in an environmentally responsible and compliant way.			emergencies and disasters; c) to manage any waste that is generated lawfully; d) to restore and rehabilitate environmental damage caused by environmental disasters and emergency situations, and e) that includes responses to climate change impacts.		

Table 63. Key Performance Area 07: The MMM rendering effective environmental awareness and competence training, as well as communication.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to render effective environmental awareness and competence training to civil society and MMM	Ensure that the councillors of the MMM are aware of their fiduciary duties towards the environment.	An awareness-based training needs analysis (TNA).	The TNA.	All the councillors of the MMM are trained and aware of their fiduciary duty towards the environment.	The approved TNA, TS, and WSP for councillor awareness.	The TNA.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
staff, including councillors.		A training schedule (TS).	The TS.	Incoming councillors are also trained.		The TS.
		The revised work skills plan (WSP).	The WSP.			The WSP.
		% of councillors trained.	Percentage of councillors trained.			
	Ensure that MMM staff who are charged with environmental responsibilities are competent to execute their duties.	Training needs analysis (TNA).	The TNA.	All the identified staff of the MMM are trained and competent.	The approved TNA, TS, and WSP for MMM staff competence.	The TNA.
		A training schedule (TS).	The TS.			The TS.
		The revised work skills plan (WSP).	The WSP.			The WSP.
	Ensure that the line function managers whose operations are either controlled by law, or that may have significant environmental impacts, are	% of identified MMM staff trained.	% of identified MMM staff trained.			
		A training needs analysis (TNA).	The TNA.	All the identified line function managers of the MMM are trained and competent.	The approved TNA, TS, and WSP for the identified line function managers.	The TNA.
		A training schedule (TS).	The TS.			The TS.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	competent to execute their duties	The revised work skills plan (WSP). % of identified line function managers trained.	The WSP. % of identified line function managers trained.			The WSP.
	Ensure <i>that civil society</i> with a special focus on the youth and women is made aware ⁴⁵ of key environmental behaviour requirements.	Awareness training needs analysis (TNA). A training schedule (TS). % of identified interest groups made aware.	The TNA. The TS. % of line function managers trained.	All the identified interest groups are aware of their fiduciary duty towards the environment. Incoming councillors are also trained.	The approved TNA, and TS awareness programme for civil society.	The TNA. The TS. The WSP.
To expand the current EPWP programme to cover all the environment-related EPWP disciplines.	Expand the current EPWP and other environment-related internships, learnerships and scholarships.	The MMM has an effective and operational EPWP programme that covers all the environment-related disciplines.	MMM participation in all the environment-related EPWP disciplines.	The MMM has an effective and operational EPWP programme for all the environment-related EPWP disciplines.	The MMM is fully prepared to roll out EPWP programmes for all the environmental disciplines.	An expanded EPWP programme by the MMM.

⁴⁵ Please note: this objective can also be achieved by a comprehensive and sustained communication programme.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to implement an effective environmental communication strategy and plan that reaches MMM staff, politicians, private and public sectors as well as civil society.	Generate, adopt and implement a comprehensive and effective environmental communication strategy and plan that reaches all the relevant interest groups.	The approved communication strategy and plan. Communication performance in accordance with the approved environmental communication plan.	The approved communication strategy and plan. Communication performance in accordance with the approved environmental communication plan.	An effective, comprehensive and relevant environmental communication practice is in place at the MMM that reaches all the interest groups.	The approved environmental communication strategy and plan.	An environmental communication strategy and plan.

Table 64. Key Performance Area 08: Maintenance of key infrastructure to ensure sustained environmental performance

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
The MMM to maintain the performance of key infrastructure to ensure sustained environmental performance.	Revise and expand the current process and criteria of the Asset Management Sub-directorate to include the functionality and performance of environmentally critical assets ⁴⁶ in terms of operational and legal	A suite of asset management verification criteria that includes environmental legal and operational performance indicators.	The revised suite of indicators.	The Asset Management Sub-directorate has a fully entrenched suite of indicators to assess the asset value of assets, not only in terms of monetary criteria but also in terms of operational and	The Asset Management Sub-directorate has generated a suite of indicators to assess the asset value of key assets in terms of operational and legal environmental indicators, in addition to monetary criteria.	A project to revise the asset value assessment criteria used by the Asset Management Sub-directorate.

⁴⁶ Environmentally critical assets can amongst others include: waste water treatment infrastructure, drinking water infrastructure, waste management infrastructure, fleet monitoring and measurement infrastructure.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	environmental operational performance indicators in addition to the current finance-based parameters.			legal environmental indicators.		

Table 65. Key Performance Area 09: MMM and lawful and sustainable local economic development

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
To ensure that the LED projects of the MMM are lawful ⁴⁷ and that they contribute to sustainable development.	Review all the LED project proposals to ensure that they are justifiable for their contribution to the objective of sustainable development.	LED projects that have been justified and assessed for their contribution to sustainable development.	LED projects that have been justified and assessed for their contribution to sustainable development.	All the LED projects have been justified and assessed for their contribution to sustainable development.	The criteria against which LED projects are evaluated have been determined and approved.	A programme to ensure that LED projects contribute to sustainable development.

Table 66. Key Performance Area 10: Cross-cutting environmental governance, governing and management items

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
To ensure that the MMM adopts and uses the most effective	Adopt and use the traditional local government	All environment-related duties and projects are recorded, managed,	All the environmentally related duties and projects are	All environmental management, governing and governance	The MMM is managing at least the applicable legal requirements by	A project to deliver all environment-related duties by means of the IDP,

⁴⁷ The need to ensure that LED projects are executed lawfully is addressed by KPA-01.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
environmental governance, governing and management tools or a combination of tools.	tools⁴⁸ for effective environmental governance, governing and management throughout the MMM for all the environmental commitments that must be delivered, such as those required by law and those identified by other tools such as the EMF, SoER, MOSS, etc., including the IDP sector plans such as the IWMP, AQMP CCAMS, WSP etc.	tracked and reported by means of the following MMM official management instruments: a) the IDP, b) the SDBIP, c) the PMS and d) the performance assurance system, ⁴⁹ and are supported by appropriate environmental indicators.	managed by means of the IDP, SDBIP, PMS and assurance programme.	processes are entrenched, managed, tracked and reported by means of the principal local government suite of instruments.	means of the IDP, SDBIP, PMS and assurance programmes.	SDBIP, PMS and assurance programmes.
	Ensure that the requisite budget allocations are made for all the approved IDP-	All the environment-related projects defined in terms of the IDP are	Allocated budgets for all environmental objectives and projects defined in the IDP.	All the environmentally related projects defined in terms of the IDP are	All the environment-related projects defined in terms of the IDP are	A project to ensure all environmental projects and objectives are

⁴⁸ These tools include the: a) the IDP, b) the SDBIP, c) the PMS and d) the performance assurance system of the MMM. They include the adoption and use of representative environmental performance indicators such as: a) environmental condition indicators (ECI), b) environmental operational indicators (EOI) and c) environmental legal indicators (ELI).

⁴⁹ The performance assurance systems include: a) the risk management processes, b) the performance management system, c) the statutory reporting processes and d) internal audits and the work of the internal audit committee. Also see the objective formulated in terms of the Corporate Governance KPA.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	adopted environmental projects and initiatives.	supported by budget allocations.		supported by budget allocations	supported by budget allocations	supported by budget allocations.
	Reviews and revise the budget-related policies and adopt fiscus-based instruments to change the behaviour of persons regarding water use, the quality and quantity of waste water discharges, and waste disposal by charging market-related fees for the relevant services	The adoption and use of appropriate fiscal instruments to change the behaviour of persons.	The adoption and use of appropriate fiscal instruments to change the behaviour of persons.	The MMM has adopted and is effectively using a number of fiscal instruments to change the behaviour of persons using resources.	The MMM has identified the most appropriate fiscal instruments to change the behaviour of persons using resources.	A project to change the behaviour of resource users by means of fiscal instruments.
	Adopt and use the appropriate spatial tools ⁵⁰ for effective environmental governance, governing and management	The adoption and use of appropriate spatial instruments to protect valued environmental resources from incremental and	The adoption and use of appropriate spatial instruments to protect valued environmental resources from incremental and	The MMM has adopted and is effectively using spatial instruments to protect valued environmental resources from	The MMM has identified the mechanisms to adopt and use spatial instruments to protect valued environmental	A project to use spatial instruments to protect valued environmental resources from incremental and

⁵⁰ The spatial instruments include: a) the environmental layer of the SDF, EMFs, Bio-regional plans, C-plans, title deed restrictions and land-use management determinations.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	throughout the MMM.	often piecemeal developments.	often piecemeal developments.	incremental and often piecemeal developments.	resources from incremental and often piecemeal developments.	often piecemeal developments.
	Universally adopt and use the traditional P-D-C-A⁵¹ based tools for effective environmental management throughout the MMM.	The adoption and use of appropriate P-D-C-A tools to ensure effective environmental management.	The adoption and use of appropriate P-D-C-A tools to ensure effective environmental management.	The MMM has adopted and is effectively using P-D-C-A tools to plan, delivery, check and improve environmental performance.	The MMM has identified the P-D-C-A tools to plan, delivery, check and improve environmental performance.	A project to adopt and use P-D-C-A tools to plan, deliver, check and improve environmental performance.
	Ensure that the MMM risk assessment and management programme includes all the environmental threats to the metro.	A risk assessment and management process that includes all the environmental threats to the MMM.	A risk assessment and management process that includes all the environmental threats to the MMM.	The risk assessment and management process of the MMM includes all the environmental threats to the MMM.	The MMM has identified all the environmental risk exposures that must be managed in terms of its risk assessment and management process.	A project to ensure that all environmental risk exposures are identified, assessed and managed in terms of the MMM risk assessment and management process.
To ensure that the MMM adopts and implements a comprehensive environmental	Adopt and implement the draft MMM environmental policy to ensure	An approved environmental policy statement for the MMM.	An approved environmental policy statement for the MMM.	The MMM has implemented or adheres to all the commitments made	The draft environmental policy is approved by the Council.	A project to implement the environmental policy.

⁵¹ Plan, do, check and act-based environmental management tools.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
policy to co-ordinate, drive and guide environmental management and compliance by all the Directorates of the MMM.	sustained and universal adherence to the policy conditions by all the directorates and other units and functions of the MMM.			in its environmental policy.		
To calculate the carbon footprint of the MMM in order to launch an effective climate change mitigation strategy for the MMM.	Initiate a programme to calculate and reduce the carbon footprint⁵² of the MMM in terms of its IDP, SDBIP and performance management system.	An approved and adopted carbon footprint calculation for the MMM.	The determined carbon footprint of the MMM.	A clear understanding of the sources and quantities of carbon generated and emitted by the MMM itself as well as the citizens of the MMM, including an action plan to reduce the carbon footprint of the MMM.	Appointment of the consultants to determine the base-line carbon footprint of the MMM.	A project to determine the base-line carbon footprint of the MMM and projects to reduce it.
To revise the definitions of the land use categories provided for by the LUMS and the IDP/SDF of the MMM.	Revise the way that opens spaces, parks and protected areas are defined in terms of their utilitarian and hence	Redefined terms in the IDP, SDF and LUMS that recognise the environmental, social and ecological functions	Redefined terms.	The ecological, social and environmental functions of open spaces, parks and protected areas are recognised and	The terms of the IDP, SDF and LUMS are redefined in such a way as to recognise the ecological, social and environmental	A project to reform the IDP, SDF and LUMS definitions as they relate to ecological, social and environmental functions of open

⁵² Read this strategy with the strategy defined in terms of KPA-05 – the energy efficiency improvement strategy.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	developmental potential, as the open spaces, protected areas and parks do have ecosystem functions other than a development function.	of protected areas, open spaces and parks.		respected by all the planners and decision makers of the MMM.	functions of open spaces, parks and protected areas of the MMM.	spaces, parks and protected areas.
To green the series of large public events that the MMM organises on a regular basis.	Initiate a programme to green the series of large public events that is routinely organised by the MMM in terms of its IDP, SDBIP and performance management and assurance systems.	Adopt and use a recognised standard or guideline to inform the greening of events, that can be used as the benchmark against which performance can be assessed.	The extent of conformity to the adopted standard or guideline.	All major events organised by the MMM are greened to the extent that these events conform with the adopted standard or guideline.	An approved programme to green the public events organised by the MMM.	A project to green all public events arranged by the MMM.
To implement the recommendations of the climate change mitigation and adaptation plan.	Initiate a programme and action plan to adopt and implement the recommendations of the Climate Change Adaptation and Mitigation Plan that was	The approved programme and action plan.	The approved programme and action plan.	Active management of the Climate Change Adaptation and Mitigation Plan.	The adopted programme and action plan to operationalise the recommendations of the Climate Change Adaptation and Mitigation Plan.	Generation of a programme and action plan to implement the recommendations of the Climate Change Adaptation and Mitigation Plan.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	commissioned by the MMM in terms of the MMM's IDP, SDBIP, PMS and assurance systems.					
To ensure environmental management, governing and governance responsibilities are clearly defined.	Revise the Delegation of Powers Policy of the MMM to ensure that the responsibilities are clearly articulated for all the senior officials, including the executive mayor and the city manager.	The revised and approved Delegations of Powers Policy.	The revised and approved Delegations of Powers Policy.	The revised Delegation of Powers Policy is fully implemented and functional.	The Delegation of Powers Policy is revised and approved.	The revision of the Delegation of Powers Policy.
	Structure, align and integrate the fragmented functions, mandates and duties across the directorates and sub-directorates of the MMM to ensure comprehensive, effective and efficient environmental management, governing and	The clear, unambiguous and comprehensive definition of environmental management governing and governance functions, mandates and duties across all the Directorates and Sub-directorates of the MMM.	A clearly defined environmental roles and responsibilities matrix	All relevant employees of the MMM know what their environmental duties are and give routine effect to these duties and responsibilities.	The defined roles and responsibilities matrix is completed and approved.	The definition of roles and responsibilities for all key employees of the MMM.

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
	governance by the MMM.					
To ensure effective service delivery by the Directorate Environmental Management and all other directorates and sub-directorates that are directly tasked with environmental responsibilities.	Revise and reform the structure of the Directorate Environmental Management as well as the current practice whereby some environmental responsibilities are fragmented amongst other directorates and sub-directorates, to support the comprehensive, integrated, efficient, effective and co-ordinated delivery of environmental management, governing and governance services.	A reformed structure for environmental management, governing and governance by the MMM.	A reformed structure for environmental management, governing and governance by the MMM.	The MMM has a fully functional reformed structure to deliver environmental management, governing and governance services comprehensively, efficiently, effectively in an integrated and co-ordinated way.	An approved reformed structure for environmental management, governing and governance by the MMM.	Reforming the environment-related service delivery structure of the MMM.
To ensure the co-ordination and alignment of the environmental management, governing and	Ensure the co-ordination and alignment of the environmental management, governing and	A co-ordinated, aligned, co-operative structure for all the directorates and sub-directorates	A co-ordinated, aligned and co-operative structure for all the directorates and sub-directorates	A fully operational aligned, co-ordinated and co-operative environmental management,	Progress made with the establishment of an aligned, co-ordinated and co-operative environmental	A project to establish an aligned, co-ordinated and co-operative environmental

Objective	Strategy	Key performance indicator	Measurement unit	Five-year target	Two-year target	Project
governance functions of all the relevant directorates and sub-directorates.	<i>governance functions</i> across all the relevant directorates and sub-directorates by establishing an integrated, co-operative, co-ordinated and aligned structure that reports to the City manager.	involved with environmental management, governing and governance.	involved with environmental management, governing and governance.	governing and governance structure that reports to the City manager.	management, governing and governance structure	management, governing and governance structure

9.1 Conclusion and next steps

This chapter concludes with the first version of the 2016 revision of the MMM EI&MP. The EI&MP should be implemented by means of the MMM IDP in order to ensure that resources are allocated and performance tracked.

This EI&MP should be reviewed annually and revised when necessary.

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Northern Works Waste Water Treatment Works: General Authorisation 16/2/7/C522/D1

Guidelines

Solid Waste Tariff Setting Guidelines for Local Authorities of 2012

Licences

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Botshabelo F 1 Buy-back Centre: WML/BAR/29/2014

Chris Hani 3 Buy-back Centre: WML/BAR/28/2014

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Northern Landfill Site: 16/2/7/C522/D1/Z2/P478

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Listing Notices

Listing notice 3: List of Activities and Competent Authorities Identified in terms of Sections 24(2) and 24D of the National Environmental Management Act 107 of 1998

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Mangaung Metropolitan Municipality Water Loss Management Strategy of 2010/11

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Mangaung Metropolitan Municipality Rural Development Strategy

Mangaung Metropolitan Municipality Water Demand Management Strategy

Municipal Solid Waste Tariff Strategy of 2012

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Mangaung Metropolitan Municipality Metropolitan Open Space System of 2004

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National Climate Change Response White Paper of 2011

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End of this report