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Department:
Economic Development, Tourism and
Environmental Affairs
PROVINCE OF KWAZULU-NATAL



Vuthela
ILEMBE LED PROGRAMME

KwaDukuza Local Municipality



ASSET MANAGEMENT PLAN

BUSINESS UNIT:	ELECTRICITY
PERIOD:	2019 - 2028
DATE:	2 AUGUST 2019
VERSION NUMBER:	V2.1
PREPARED BY:	HILTON BAARTMAN

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V1.7	<i>Hilton Baartman</i>	Draft for review	29 May 2019
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SUBMITTED:



5 August 2019

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Hilton Baartman *IMQS Business Unit lead*

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Date:

6 August 2019

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Rob Childs *IMQS Project Director*

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Date:

APPROVED:

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Sibusiso Jali *Executive Director: Electrical Engineering*

.....
Date:

ACRONYMS AND INDEX

TABLE OF ACRONYMS:

AFS	Annual financial statement
AM	Asset management
AMP	Asset management plan
AR	Asset register
CAPEX	Capital expenditure
CRC	Current replacement cost
DRC	Depreciated replacement cost
EPWP	Expanded public works programme
ERM	Enterprise risk management
EUL	Expected useful life
FY	Financial year
IDM	iLembe District Municipality
IDP	Integrated development plan
EMP	Electricity master plan
KDM	KwaDukuza Local Municipality
KPA	Key performance area
KPI	Key performance indicator
LOS	Level of service
MLM	Mandeni Local Municipality
mSCOA	Municipal standard chart of account

MTREF	Medium term revenue and expenditure framework
No.	Number
OPEX	Operational expenditure
Pa	Per annum (yearly)
PAMO	Physical asset management office
PMU	Project management unit
R	Rand
RUL	Remaining useful life
SDF	Spatial development framework
SDBIP	Service delivery budget and implementation plan
SMME	Small, medium and micro-sized enterprises
SOS	Standard of service
HV	High voltage (Voltage including and above 33kV)
MV	Medium voltage (Voltage above 1kV up to but excluding 33kV)
EEDSM	Energy efficiency and demand side management

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E. EXECUTIVE SUMMARY

Summary of the main aspects of the plan: scope and objectives; strategic context and status; key challenges, risks and opportunities; and proposed short, medium, and long-term tactical responses.

1	PLAN OBJECTIVES	Plan effective and efficient infrastructure-based service delivery with available resources.							
2	OPERATIONAL CONTEXT								
2.1	Municipal mandate	The Electrical Engineering Business Unit is mandated with the responsibility of ensuring that KDM provides access to an electricity service connection for all citizens as well as provide an acceptable level of lighting to all major roads, public open spaces and sports fields. Further to this, KDM is mandated to provide an acceptable level of reliable and quality of electricity supply. KDM must ensure that energy losses are reduced to be within legislated guidelines.							
2.2	Asset scope	The asset scope includes the electrical network assets belonging to KDM. It excludes electrical network assets and areas managed by Eskom (within the KDM boundaries). The KDM electrical network covers the vast majority of the wards. The bulk supply network consists of 14 main 33/11kV substations with 3 main intake points from Eskom.							
2.3	Developmental context of the municipality and key statistics	<p>The municipality has a predominantly urban population, estimated to be 281 052 people in 2018, and showing migration trends toward urban areas. KDM supply electricity to about 60 000 households with a total of 70 782 households having access to electricity with the KDM area. The latter number includes Eskom areas. KDM's licensed supply area covers 22 of the 29 wards which is mostly urban networks. The area has high unemployment but has identified tourism potential in some areas, as seen by the nodes in Figure E.1. The urban areas account for 83% of KDM.</p> <p>KDM is the economic hub of the iLembe District Municipality. The key industrial activity is commercial, followed by the manufacturing Business Unit and tourism. Located between two port cities (Durban and Richards Bay) provides KDM with an opportunity to benefit from trade and economic growth initiatives. KDM has a high revenue base and doesn't rely on grant funding for service provision.</p>							
2.4	Stakeholders	<p>The following are key stakeholders and their focus of interests in relation to the Business Unit:</p> <table border="1"> <tr> <td>Electricity consumers (<i>Residential, Commercial, Industrial, Agricultural, indigents</i>)</td> <td> <ul style="list-style-type: none"> Reasonable prices Information on faults Timely response to outages /complaints Safe and reliable supply of electricity Quality of power supply Resilience of the electrical network Availability of reliable public lighting </td> </tr> <tr> <td>Regulator and government</td> <td> <ul style="list-style-type: none"> Long term best interests of consumers Economic efficiency Compliance with statutory requirements Accurate and timely information </td> </tr> <tr> <td>Landowners and communities hosting our assets</td> <td> <ul style="list-style-type: none"> Safety Easement conditions Appropriate access arrangements Employment opportunities </td> </tr> </table>		Electricity consumers (<i>Residential, Commercial, Industrial, Agricultural, indigents</i>)	<ul style="list-style-type: none"> Reasonable prices Information on faults Timely response to outages /complaints Safe and reliable supply of electricity Quality of power supply Resilience of the electrical network Availability of reliable public lighting 	Regulator and government	<ul style="list-style-type: none"> Long term best interests of consumers Economic efficiency Compliance with statutory requirements Accurate and timely information 	Landowners and communities hosting our assets	<ul style="list-style-type: none"> Safety Easement conditions Appropriate access arrangements Employment opportunities
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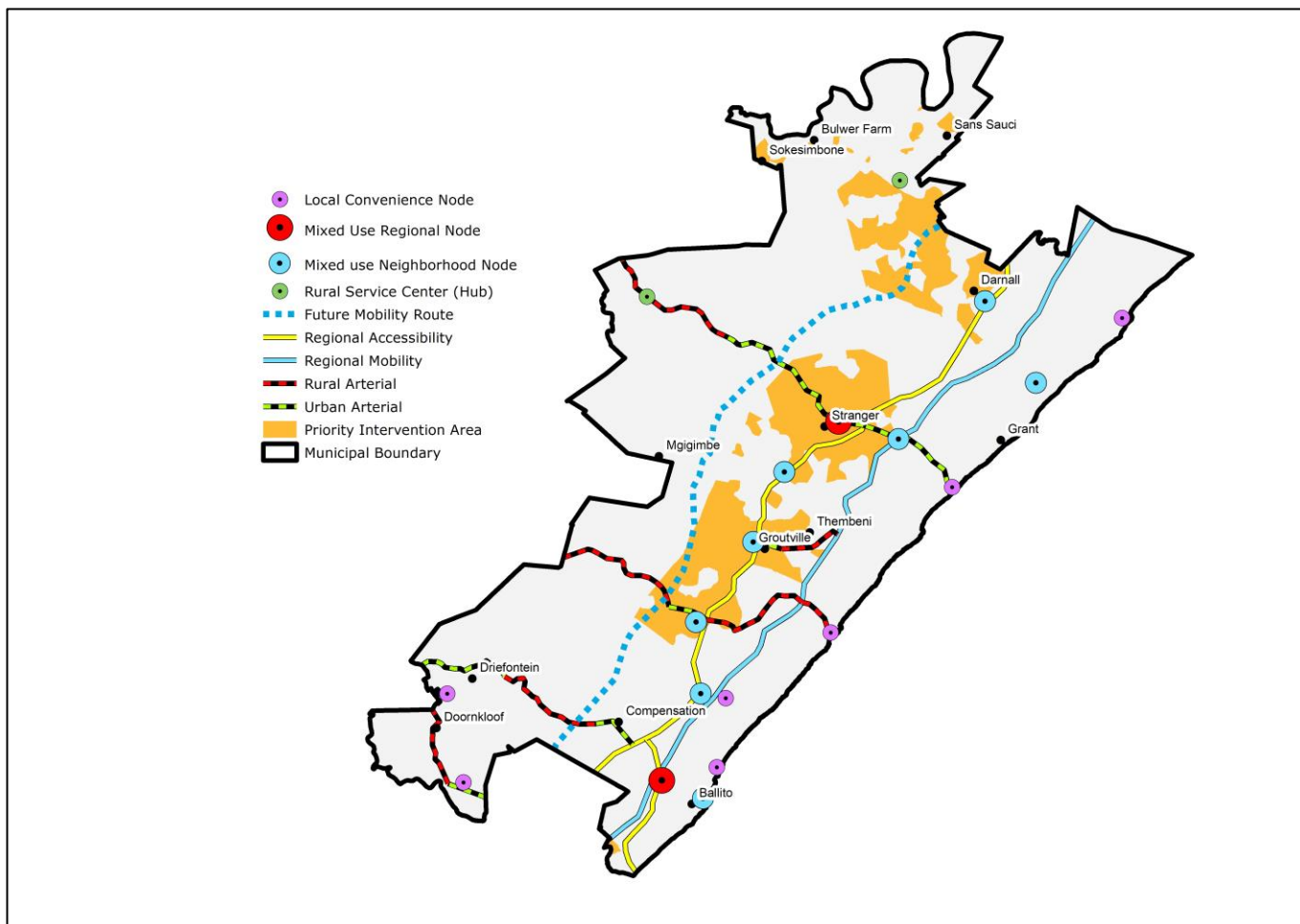
		Electricity retailers (bulk service connections) and distributed generators	Line charges Reliability of supply Contractual arrangements How we manage customer complaints Ease of doing business with us
		Properties developers	New-connection policies and costs Timely network expansion
		Service providers	Safe working environment Maintenance and design standards Maintaining good contractual relationships Clear forward view of work
		Department of transport	Public safety Minimising environmental impacts Support for economic growth Control of assets in road reserve
		Eskom	Effective working relationship Reliability and security of supply Investment for growth Load forecast
		Media	News Background information
2.5	Plan maturity (and implications on its use)	<p>Currently the class B municipality does not formally implement a lot of asset management systems. This initial asset management plan (AMP) is a high-level document to start steering the municipality towards implementing quality asset management and asset management planning. Due to this being the first AMP, and it based on limited and aged data, this is seen as a rudimentary AMP. The AMP will identify projects over the ten-year planning period in line with the strategic vision and to prioritise the spending of a limited budget. Due to its initial nature it is at a high level and so gives a guide towards what the Business Unit spending should be and at what proportion between types of spending.</p> <p>The main input documents include the Electricity Master Plan, Integrated Development Plan (IDP), the annual performance reports as well as the municipal 2018 asset register (AR). The asset register is predominantly accounting based without any supporting technical information.</p>	
3	CURRENT STATUS		
3.1	Infrastructure status	<p>Table E.1 summarises the assets in the Business Unit – it highlights the higher cost to replace the portfolio (CRC) compared to the purchase price of the assets. The meters and high masts have the lowest health status of the asset groups – very poor – indicating an immediate need for renewal of the assets (highlighted as a technical backlog). The overall portfolio health is considered ‘good’ (though there is an imbalance with many relatively new assets, but also many assets at end of life) – in order to improve or maintain the state of the portfolio, capital investment in renewal or replacement of the existing assets must be maintained. Renewal of the MV network assets is needed and this will require sustained investment.</p>	

Table E.1: Asset extent summary

								from AFS	
Asset Group	Extent (No.)	Unit	Replacement value (R '000)	DRC (R '000)	Portfolio Health	Annual consumption (R '000)	Maintenance need (R '000 pa)	AFS Cost opening (R '000)	AFS Carrying value opening (R '000)
HV Conductor	110	km	126 725	67 966	54%	2 977	1 267	62 569	44 889
LV Conductor	328	km	165 287	84 973	51%	3 306	16 529	67 398	43 491
MV Conductor	577	km	378 026	181 703	48%	7 561	1 890	159 604	110 572
Service Connection	216	km	86 067	50 222	58%	1 721	4 303	39 260	31 898
HV Substation	14	No	302 819	182 478	60%	7 392	1 514	159 030	106 125
MV Substation	33	No	39 834	25 043	63%	896	199	21 694	16 356
MV Mini-Sub	621	No	113 240	69 069	61%	2 831	566	63 849	37 721
MV/LV Transformer	1417	No	55 005	36 473	66%	1 340	275	33 366	21 854
MV Switchgear	391	No	86 721	60 040	69%	1 927	434	54 260	41 997
LV Kiosk	54414	No	17 472	9 120	52%	582	1 747	10 128	6 251
Conventional Meters	13047	No	10 023	3 797	38%	401	501	5 466	1 539
Prepaid Meters	16626	No	25 334	9 411	37%	2 533	1 267	19 827	3 378
High Masts	45	No	2 447	788	32%	245	122	1 880	638
Streetlights	4800	No	2 849	1 496	53%	71	142	1 352	4
TOTAL			1 411 849	782 580	55%	33 783	30 757	699 684	466 712

3.2	Spatial structure	Main urban centres, important nodes and development routes are shown in Figure E.1 . A theme of development along the coast is clear with mixed use nodes used to promote densification and allow for equity of access to facilities as highlighted in the spatial development framework (SDF). The municipality wants to focus on tourism and has highlighted the need to regenerate existing industrial areas.
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Figure E.1: Identified development nodes, corridors and priority areas for development in KDM



3.3	Service delivery operations	<p>Operations and maintenance is done mainly by KDM teams but portions of this work is contracted to private service providers.</p> <p>A strategic approach to packaging and scheduling of capital and operational activities needs to be developed and implemented in the Business Unit. Currently there are capital projects for new assets in the Business Unit, as well as budget for operational activities and budget for renewal of assets.</p> <p>Current projects are for MV network renewals, electrification, LV mains renewals, new bulk substations and energy efficient street lights roll out. The infill electrification projects addresses the access backlog. HV network renewals are also budgeted for.</p> <p>Maintenance is currently being done on assets but there is a backlog of maintenance on critical infrastructure.</p>
3.4	Levels and standards of service	<p>Currently the municipality aims for a level of service provision of a basic electricity connection, as an accepted minimum, in line with national policies. It is noted in the IDP and the SDBIP that the aim is to have universal access to electricity. There is currently no formalised Standard of Service (SOS) criteria for KDM, however, SOS metrics are being tracked by KDM Electrical Engineering Business Unit.</p>

	<p>The focus of providing for the backlog should be made in those areas where the municipality wants to promote growth. Specific nodes identified in the SDF should be the focus of the backlog eradication.</p> <p>The major constraint with providing services is the capital and associated operational budget. The target of providing for the total backlog is unsustainable and the suggestion is to moderate such.</p> <p>Table E.2 illustrates the cost associated with the identified backlogs of approximately 3600 households, as well as the number of households in urban areas which are not serviced and are a priority ahead of the rural areas.</p>
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Table E.2: Current backlog and associated cost to eradicate

Cost of upgrading to target level (R '000)		
	Resolving no service backlog capital	Resolving no service backlog ops (R '000 pa)
Urban Residential	64 521	36 228
Rural Residential	10 998	9 057
Business/Commercial	-	-
Industrial	-	-
Total:	75 519	45 285

3.5	Financial status	<p>The municipality has a strong liquidity position:</p> <ul style="list-style-type: none"> • Cash and cash equivalents of KDM at 2017/18 amounted to R 404 million, representing an increase of 50% compared to the prior year. • Current ratio is at 2.29 compared to prior year ratio of 1.92. <p>The municipality funds its activities using its own internal revenue (the majority of its income) and is not dependent on grants. Surplus income is generated in the electricity department each year, however not all the revenue is collected and the losses are high at 16% of bulk purchases. The electricity debtors make up 70% of the total municipality debtors indicating that the consumers have difficulty mainly in paying for the electricity.</p>
3.6	Reported risk exposure	<p>Key risks for the Business Unit include shortage of human resources, inadequate bulk network infrastructure, loss of revenue and ageing MV network infrastructure.</p> <p>Mitigation of the risks include the provision of new bulk substations, appointment of additional resources, proper reporting, and development and implement a maintenance plan and renewal spending.</p> <p>The municipality needs to develop a set framework to measure against in order to inform if the resulting risk is acceptable in terms of its risk appetite.</p>

3.7	Reported performance	<p>The Electrical Engineering Services Business Unit has increased the number of households with access to service in previous years, however the Business Unit has struggled to meet its targets due to various reasons.</p> <p>The strategy for addressing the backlog should be re-assessed with a priority to promoting denser settlement as this will maximise the benefit to customers.</p>
3.8	Infrastructure management maturity	<p>The current assessment of the municipal infrastructure management maturity is at or beyond the level of “awareness”, with capital evaluation and contract management approaching the level of systematic approach. The municipality is moving towards a level of recognised competency and part of the process is improving the asset register and reviewing this initial round of AMPs in the next 3 years.</p>
4	FUTURE DEMAND	
4.1	Demand forecast	<p>The growth for the municipality has been forecast at a rate of 0.78% per annum based on previous census data. No large impacting factors were identified to adjust these, and KDM is still assumed to hold the highest growth rate in the district.</p> <p>The Electrical Engineering Services Business Unit is currently running an EEDSM program which includes the replacement of older street lights with new energy efficient street lights. The Business Unit should encourage energy efficiency with customers to dampen demand going forward.</p>

Table E.3: Population and household forecast per year over the planning period

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Population	283 245	285 454	287 681	289 925	292 186	294 465	296 762	299 077	301 409	303 760
Household	93 437	94 166	94 900	95 640	96 386	97 138	97 896	98 659	99 429	100 204

4.2	Infrastructure implications	<p>An increased customer base is going to require increased service and a reliable standard of service from the electricity department. The current electrical network is constrained in certain areas (the urban southern network around Ballito in particular) and does not have sufficient firm capacity. The increase in population will require upgrades on both the HV and the MV network to ensure sufficient and reliable supply.</p>
5	LIFE-CYCLE PLAN	
5.1	Short and medium-term plan	
5.2	Long term lifecycle plan	<p>The long-term focus of the Electrical Engineering Services Business Unit lifecycle plan is to continue to address the access backlog while providing a sustainable and improved service to existing customers. There is also a shift towards maintaining the existing assets through some capital renewal/replacement. This allows proper management and maintaining of the portfolio to provide service to the customers as per the municipal objective.</p> <p>The overall lifecycle needs over the period are capital intensive and so the lifecycle plan has been adjusted in line with the budget. It is assumed in the adjusted lifecycle plan that additional budget can be procured for the Business Unit due to the renewal and new asset capital need over the period. The additional budget requirements for Capex is</p>

		<p>around an additional R50m pa from 2021 onwards, reducing to an additional need of R15m pa by 2028.</p> <p>The long-term plan should be to identify additional funding to increase spending on renewals in line with the growing portfolio and to steadily address the backlog each year. The operational spending then increases proportional to the new customers being provided with service.</p> <p>The total adjusted spending each year is shown in Figure E.2. The comparative budget is also depicted – highlighting the need to secure additional funding for the Business Unit.</p>
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Figure E.2: Combined lifecycle adjusted spending for the portfolio



6	FINANCIAL PLAN	
6.1	Financial health, budget availability, trends, forecast	<p>KDM’s financial health is currently stable with very low dependency on grants. The Electrical Engineering Services Business Unit is the main contributor on revenue generation, generating a surplus of R50 million in 2017/18. A capital budget of R240 million has been made available for the 3-year MTREF with a focus on the alleviation of backlog through procuring of new electrical assets.</p>

6.2	Revenue management status	<p>The revenue from electricity is influenced largely by the tariffs set by Eskom and the increases in tariffs are made in consideration of published rates issued in line with the guideline issued by NERSA.</p> <p>Electricity debtors make up 70% of the total municipality debtors and 84% of these re owing for 30 days indicating an effective collection debt strategy from the municipality. The municipality should keep making use of service providers for its revenue enhancement and revenue protection strategies to attain a favourable collection rate.</p>
6.3	Cost management	<p>The current surplus from the Electrical Engineering Services Business Unit is low due to the increase in bulk purchases. A cost minimisation strategy should be introduced in order to reduce the cost pressure.</p>
6.4	Financial management strategy and plan	<p>The overall financial health of the municipality is good. The municipality needs to allocate more budgets to capital and maintenance projects to improve service delivery.</p> <p>The municipality needs to maintain its revenue collection strategy in order which has improved collection rates on electricity debtors and increased revenue from tariffs.</p> <p>KDM needs to consider other sources of funding in order to fulfil its objective of sustainably providing services. Currently the historic budget is not sufficient to facilitate spending on service for the access backlog while still maintaining the state of the portfolio.</p>
7	ASSET MANAGEMENT PRACTICES	
7.1	Asset management practice context	<p>KDM is a category B municipality and is coming off a low base of asset management practices, however it has committed to improving practices by implementing improvements, potentially with support from the Vuthela-Ilembe LED project. As part of this project, a practices assessment was carried out and an improvement plan prepared. It pointed to a relatively low level of asset management practice maturity, especially in the “physical asset management” category, in line with many municipalities in SA.</p>
7.2	Current and target performance	<p>Current practice is assessed to be predominantly at a level of “awareness” of recognised good practices, and the municipality aims to move towards a level of “competence” as shown in Figure E.3. The proposed 3-year phased approach will be dependent on funding availability.</p>

Figure E.3: Overview of practice assessment results and proposed improvement phases



7.3	Priority improvement needs	The proposed plan prioritises an improvement of the maintenance management process followed by an enhancement of the asset register (and associated data to inform financial and physical management of assets), and finally improving the management processes associated with projects. All of these are proposed to be implemented over a 3-year phased period. The cost of such is proposed to be split over all departments in the municipality, and potentially be implemented as a coordinated programme with Mandeni LM and Ilembe DM. Figure E.3 shows the projected improvement after the implementation of each phase.
8	CONCLUSIONS AND RECOMMENDATIONS	
8.1	Objectives, challenges, and proposed response strategies	<p>The Electrical Engineering Services Business Unit aims to provide for the backlog as well as the rapid urban growth within KDM. Further the Business Unit aims to provide a reliable service that provides a quality of supply that meets national standards. The Business Unit faces a human resource challenge which impacts on the standard of service it is providing. The bulk network upgrades in the MTREF are needed to ensure the ever-increasing demand is met.</p> <p>The approach for the Business Unit is to prioritise addressing service backlog in identified development nodes of the municipality to reduce the impact of such a dispersed rural community and to further encourage development in those areas. The amount of backlog addressed per year is moderated to allow more sustainable service and a balance to include renewals in the Business Unit to ensure acceptable continuity of service delivery.</p>

8.2	Proposed programmes and budgets	<p>The main expenditure in the Business Unit is capital in nature, aimed at new infrastructure and upgrading existing infrastructure. The Business Unit has been improving spending on renewals and maintenance.</p> <p>The emphasis on adequate renewal is proposed to continue throughout the planning period with a limited budget to meet growth and a moderate budget for access eradication. Currently the service performance in the Business Unit needs to improve – through upgrades of the bulk infrastructure and addition of human resources as needed.</p>
8.3	Recommendations	<p>It is recommended that Council:</p> <ul style="list-style-type: none"> a) Note the content of this first rudimentary AM Plan, which has been prepared through the Vuthela-Ilembe LED Programme; b) Confirm that the report findings be used to inform; <ul style="list-style-type: none"> ▪ the preparation of budgets, strategies and plans relating to the lifecycle management of the electricity department; and ▪ Proposed improvements to the management of the electricity infrastructure, subject to securing the required funds.

1 PROJECT BACKGROUND

This report is the Close-Out Report for the contract to deliver the following documentation - Portion A: asset management plans & Portion B: scoping study for an asset management system for iLembe District and KwaDukuza, Mandeni Local Municipalities as set out in the Scope of Work (SoW).

The project forms part of the Vuthela LED Programme which was officially launched on 29 November 2017 by the iLembe District Municipality, together with the Switzerland State Secretariat for Economic Affairs (SECO) and the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN DETEA).

The Vuthela iLembe LED Programme footprint comprises the iLembe District Municipality (IDM) and its local municipalities of KwaDukuza (KDM), Mandeni (MLM), Ndwedwe and Maphumulo. The primary purpose of the programme is improvement of the economic future of the iLembe District residents through sustainable economic growth of the local economy and the creation of higher, better and more inclusive employment and income generating opportunities. The programme comprises five components, namely:

- Public Financial Management Component.
- Municipal Infrastructure Component.
- Private Sector Development Component.
- Building Inclusive Growth Component.
- Partnership and Coordination Component.

This contract falls under the Municipal Infrastructure Component (MIC). The MIC focuses on the improvement and development of municipal infrastructure and services and has three sub-components:

- Reduced infrastructure constraints (improved scope and quality of basic infrastructure services);
- Increased planning capacity and financing strategies for an integrated and systematic expansion of (urban) infrastructure, as a basis for sustainable development of regional centres; and
- Enhanced planning and management of key infrastructure sectors.

The initial project was conducted as part of the Inception Phase of the Vuthela LED Programme, which focussed on the scoping, preparation and assessment of implementation-readiness for support projects during the Implementation Phase.

1.1 Project Consultant and Sub-Consultants / Contractors

The project consultant was IMQS Software (Pty) Ltd and the Sub-Contractor was Amaqhawe Asset Management Solution. The workshare percentage split was 90/10 respectively.

1.2 Objectives of the Assignment as per the ToR

The appointment is for two particular assignments, consisting of Portion A for the development of asset management plans and Portion B for the scoping of an asset management system. Both assignments relate to the particular infrastructure functions of the IDM, KDM and MLM.

Objectives of the Asset Management Plan (AMP)

The Asset Management Plan (AMP) should enable the municipality to have an overview of its infrastructure assets' worth, condition and suitability to meet current and future service requirements based on the assets' life cycle. The AMP should enable the development of a strategy to support the optimal, functional management of existing assets whilst considering the financial and technical decision-making aspects for future service requirements.

The AMP should assist in project identification and selection, thereby integrating planning and development needs to ensure efficient and effective budgeting and implementation of projects. It should aid project prioritisation when considering available budget, service levels and required service levels.

The AMP should further be aligned to the available budget and revenue of the municipality and the development objectives of the municipality.

Objectives of the Asset Management System

References in this document to an Asset Management System (AMS), are considered as reference to each participating municipality's AMS. It was assumed at the time of writing the scope of work for this assignment, that there will be separate, but similar systems planned, designed and implemented in each municipality. Cognisance should however be given to the potential of information sharing, across platforms and between municipalities.

The AMS should enable the municipality to have access to detailed information on infrastructure assets' worth, condition and suitability to meet current and future service requirements based on the assets' life cycle. This means the incorporation or maintenance of the asset register, for financial and technical compliance and planning.

The AMS should enable the development of an Asset Management Plan (AMP) and strategy to support the optimal, functional management of existing assets whilst considering the financial and technical decision-making items for future services.

The AMS, through the AMP, should assist with project identification and prioritisation when considering available budget, existing service levels and required service levels. The AMS should further allow for integration with the financial management and planning of the municipality.

1.3 Main Project Components or Deliverables

The main deliverables as extracted on the tender document page 30 are as follows:

C.1.8 Deliverables and Outputs

The following is a summary of the list of the deliverables; refer to the prior sections for more detail.

1. Inception Report.
2. iLembe District Municipality AMP, three hard copies, one electronic copy.
3. KwaDukuza Local Municipality AMP, three hard copies, one electronic copy.
4. Mandeni Local Municipality AMP, three hard copies, one electronic copy.
5. Workshop per municipality, to discuss the financial plan and prioritisation, for inclusion in the municipal budget.
6. Workshop per municipality (IDM, KDM, MLM) to present and discuss the final AMP & results of the Scoping for an asset management system.
7. Scoping report, for the design and implementation of an Asset Management System (applies to three municipalities).
8. Attendance of tri-weekly progress meetings and provision of meeting notes.
9. Submission of weekly progress reports.
10. Close-out report.
11. Presentation to the Municipal Infrastructure Forum.
12. Presentation to the Vuthela Programme PSC.

1.4 Contractual Dates

IMQS Software (Pty) Ltd was officially appointed on the 08th August 2018 and project duration was for 5 months but due to unforeseen circumstances the project was officially closed out on the 2nd August 2019.

2 INTRODUCTION

The purpose and scope of the plan, its stakeholders, an overview of relevant internal and external context, the asset and asset management system status, and approach to reporting the level of confidence in the plan's outputs.

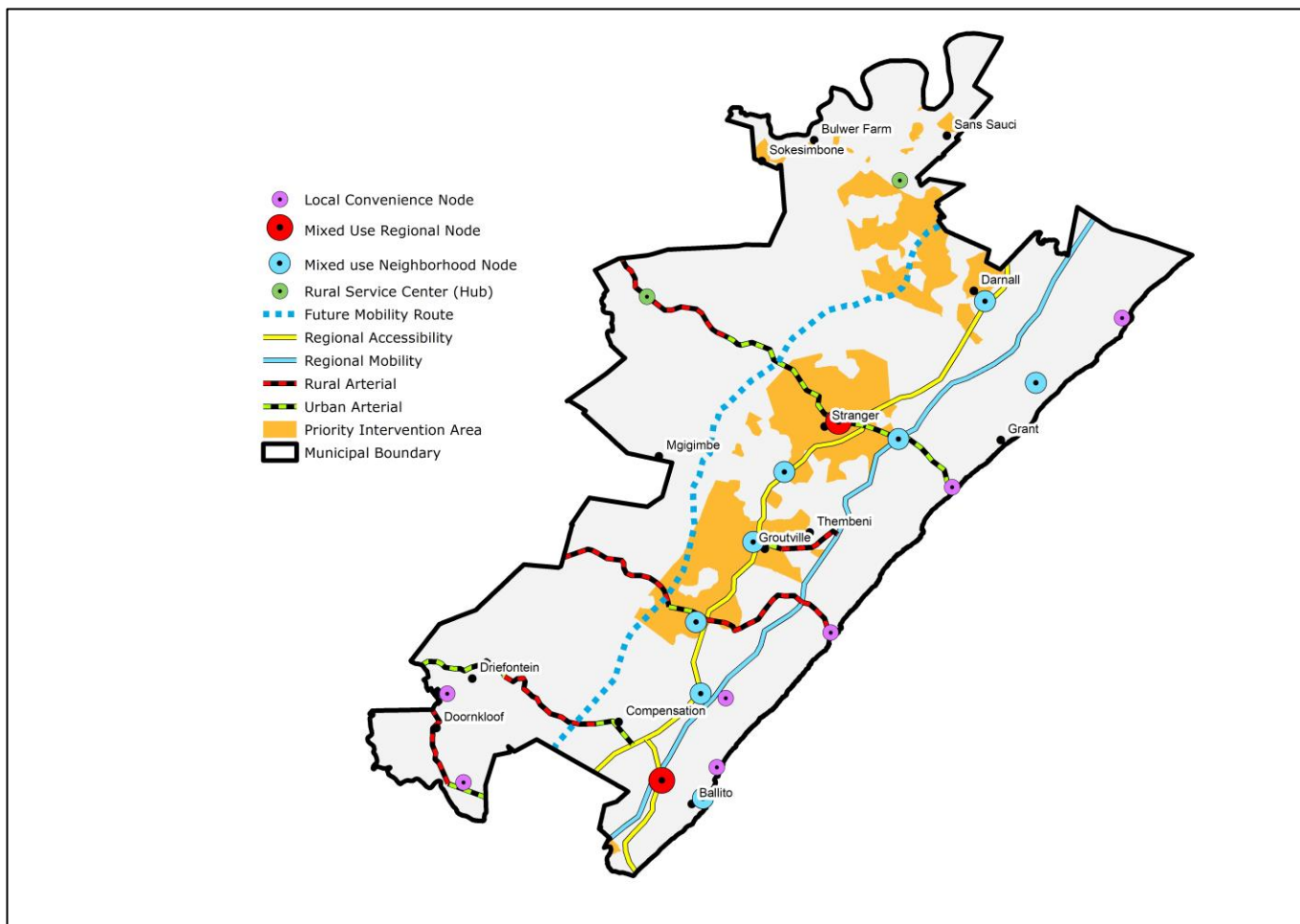
1	Plan objectives	To plan effective and efficient infrastructure-based service delivery for the electricity department in KwaDukuza Local Municipality (KDM), utilising available resources. It considers tactics for the application of the municipality's infrastructure assets, as well as the establishment of the required management practices, over a period of 10 years.											
2	Mandate	<p>The Electrical Engineering Business Unit incorporates electrical engineering, mechanical and electrical workshop, planning and customer care. Fleet management also falls within the mandate of the Business Unit.</p> <p>The Electrical Engineering Services Business Unit is mandated with the responsibility of ensuring that KDM provides access for all citizens to an electricity service connection as well as provide an acceptable level of lighting to all major roads, public open spaces and sports fields. Further to this, KDM is mandated to provide an acceptable level of reliable and quality of electricity supply. KDM must ensure that energy losses are reduced to be within legislated guidelines.</p>											
3	Stakeholders	The following are key stakeholders and their focus of interests in relation to the Business Unit:	<table border="1"> <tr> <td data-bbox="475 1115 976 1391">Electricity consumers (<i>Residential, Commercial, Industrial, Agricultural, indigents</i>)</td> <td data-bbox="976 1115 1482 1391"> Reasonable prices Information on faults Timely response to outages /complaints Safe and reliable supply of electricity Quality of power supply Resilience of the electrical network Availability of reliable public lighting </td> </tr> <tr> <td data-bbox="475 1391 976 1552">Regulator and government</td> <td data-bbox="976 1391 1482 1552"> Long term best interests of consumers Economic efficiency Compliance with statutory requirements Accurate and timely information </td> </tr> <tr> <td data-bbox="475 1552 976 1713">Landowners and communities hosting our assets</td> <td data-bbox="976 1552 1482 1713"> Safety Easement conditions Appropriate access arrangements Employment opportunities </td> </tr> <tr> <td data-bbox="475 1713 976 1912">Electricity retailers (bulk service connections) and distributed generators</td> <td data-bbox="976 1713 1482 1912"> Line charges Reliability of supply Contractual arrangements How we manage customer complaints Ease of doing business with us </td> </tr> <tr> <td data-bbox="475 1912 976 1998">Properties developers</td> <td data-bbox="976 1912 1482 1998"> New-connection policies and costs Timely network expansion </td> </tr> </table>	Electricity consumers (<i>Residential, Commercial, Industrial, Agricultural, indigents</i>)	Reasonable prices Information on faults Timely response to outages /complaints Safe and reliable supply of electricity Quality of power supply Resilience of the electrical network Availability of reliable public lighting	Regulator and government	Long term best interests of consumers Economic efficiency Compliance with statutory requirements Accurate and timely information	Landowners and communities hosting our assets	Safety Easement conditions Appropriate access arrangements Employment opportunities	Electricity retailers (bulk service connections) and distributed generators	Line charges Reliability of supply Contractual arrangements How we manage customer complaints Ease of doing business with us	Properties developers	New-connection policies and costs Timely network expansion
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		Service providers	Safe working environment Maintenance and design standards Maintaining good contractual relationships Clear forward view of work
		Department of transport	Public safety Minimising environmental impacts Support for economic growth Control of assets in road reserve
		Eskom	Effective working relationship Reliability and security of supply Investment for growth Load forecast
		Media	News Background information
4	Social context	<p>Situated along the east coast of South Africa KDM covers approximately 633km², including a 50km coastline, of land area. Some specific challenges faced in a social context include:</p> <ul style="list-style-type: none"> • The KDM population has a large youth segment with 69.53% of the population under the age of 35 according to the Stats SA Community Survey of 2016. • A high rate of unemployment (tied to a lack of employment opportunities and marketable skills). 	
5	Political context	<ul style="list-style-type: none"> • Traditional authority land is found along the boundary with Maphumulo Local Municipality in a small area of the North West of KDM. This land is governed by tradition and tenure which is administered by Traditional leaders and is characterized by a strong subsistence base. This area is supplied by Eskom directly. • After the 2016 Local Government Elections, KwaDukuza Municipality's Wards were increased from 27 To 29 Wards and councillors from 53 To 57. • Political vision: In terms of legislation the IDP is the principal strategic planning instrument which must guide and inform all planning, budgeting, management and decision-making in a city. 	
6	Economic context	<p>KwaDukuza local municipality is the economic hub of the iLembe District Municipality. Some of the key points in relation to economic context include:</p> <ul style="list-style-type: none"> • The towns of KwaDukuza (Stanger town) and Ballito are the primary economic areas, other urban areas include Shakaskraal and Blythedale; • The key industrial activity is commercial agriculture (sugar cane farming) which contributes 23% of its GDP, followed by the manufacturing Business Unit and tourism with primary factors attracting tourists to the area including beaches, culture and wildlife; • With industrial development concentrated in the KwaDukuza node including the Gledhow and Darnall Sugar Milling operations, the municipality also accommodates areas of afforestation and related paper mills at Mandeni and KwaDukuza; 	

		<ul style="list-style-type: none"> • Located between two port cities (Durban and Richards Bay) provides KDM with an opportunity to benefit from trade and economic growth initiatives. • More job opportunities and economic development programmes are needed, although KDM currently has an economic growth rate higher than the national average.
7	Technical context	The KDM has two licensed electricity distributors, namely Eskom and KwaDukuza LM. The Electrical Engineering Services Business Unit does not have any current software or smart systems in place. A rudimentary maintenance management system exists. KDM does not have a SCADA or distribution management system.
8	Financial context	KDM's financial position is stable with the revenue ratio remaining within the 85% range. The municipality is not dependent on grant funding. The electricity department is funded from internal capital and operations budgets with electrification supplemented with grant funding from the Department of Energy.
9	Legal context	<p>KDM holds the license for electricity distribution within the KDM area as issued by NERSA. There are a number of statutory documents that govern the electricity distribution Business Unit in South Africa. These include:</p> <ul style="list-style-type: none"> • The South African Constitution – requires that all citizens have access to basic services; • the Government Municipal Systems Act -details the municipal responsibilities in relation to provision of basic services; and • The Electricity Regulation Act of 2006 • National Energy Act, Act 34 of 2008 • National Energy Regulator Act, 2004 (Act No.40 of 2004) • Electricity Pricing Policy of the South African Electricity Supply Industry, 2008 • Free Basic Electricity Policy • Electricity regulations for compulsory norms and standards for reticulation services, 2008 • Occupational Health and Safety Act 1993 • General Machine Regulations (GMR) • South African Grid Code • Installation regulations • NRS 080 • NRS 047 • NRS 048
10	Institutional context	The KDM has various institutional challenges. These include skilled staff as well as procurement delays. The electricity master plan is currently being updated. Although, currently no documented procedures exist, a municipal wide asset management procedures document is being developed.
11	Procurement strategy	<ul style="list-style-type: none"> • Poor procurement planning by some user departments (including the electricity department in recent years) in KDM has had an effect on the MFMA compliance. As such additional procurement checklists and reporting procedures have been implemented. • There are preferential procurement strategies in place to promote economic development.

12	Business Unit strategic objectives	The main objective of the Business Unit is to provide basic electricity service to all, as per the SDBIP target of providing service to households. KDM will also aim to provide acceptable levels of electricity to customers within the electrical supply area of jurisdiction.
13	AM objectives - AMS	Ensure that a complete, accurate and up-to-date asset management system is maintained, currently the Business Unit has implemented a basic maintenance management system.
14	AM objectives - Infrastructure	Ensure assets controlled and owned by the municipality are properly accounted for, maintained and managed to continue to provide service to the customers as per the municipal objective.
15	Key developmental themes	<p>Several developmental themes are highlighted in the SDF and IDP, the specific developmental nodes, development routes and priority areas for development are shown in Figure 2.1.</p> <ul style="list-style-type: none"> • Industrial regeneration to support industry and manufacturing. • Focus on tourism opportunities along the coastline, note the concentration of identified nodes on the coast and transport routes parallel to the coast. • Planning basic services to support such development – reliable electricity supply will be needed to encourage this development and attract tourism. • Promoting conservation and sustainable/responsible development, implementing conservation management. • Encouraging densification along transport routes and in urban areas. • Priority intervention areas near Groutville and Stranger to ensure formal and organised development in line with municipal vision. • Investor Incentive for commercial and industrial development as well as key development plans to promote tourism.

Figure 2.1: Identified development nodes, corridors and priority areas for development in KDM



16	Spatial structure, ongoing development initiatives	<p>There is a large amount of scattered rural development in the municipality, and as the population increases it continues to add pressure to existing services. Rapid urbanisation is seen in the area as people move towards the urban centres. This is due to accessibility (including to public transport) and the availability of social facilities and basic services. The following developmental initiatives are highlighted:</p> <ul style="list-style-type: none"> • Provide positive environment for Industrial Development. • Renewal and Regeneration of KwaDukuza Main town and Shakaskraal. • Development of Priority clusters: <ul style="list-style-type: none"> ○ KwaDukuza node, ○ Groutville, ○ Woodmead/Shayamoya and Southern node/ Driefontein <p>The SDF highlights a move towards nodal development that increases density of settlement and promotes compactness.</p> <p>The main urban centres, village centres and tourism centres are shown in Figure 2.2. The figure also shows municipal planning for development as set out in the SDF. From the figure the large areas of urban development can be seen which threaten the naturally high agriculture potential land in KDM. Part of the spatial plan is to define urban development edges and protect the natural resources. KDM has the highest proportion of urban area out of all the local municipalities in the district which is shown in Figure 2.3.</p>
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Figure 2.2: Predominant land use areas in the municipality

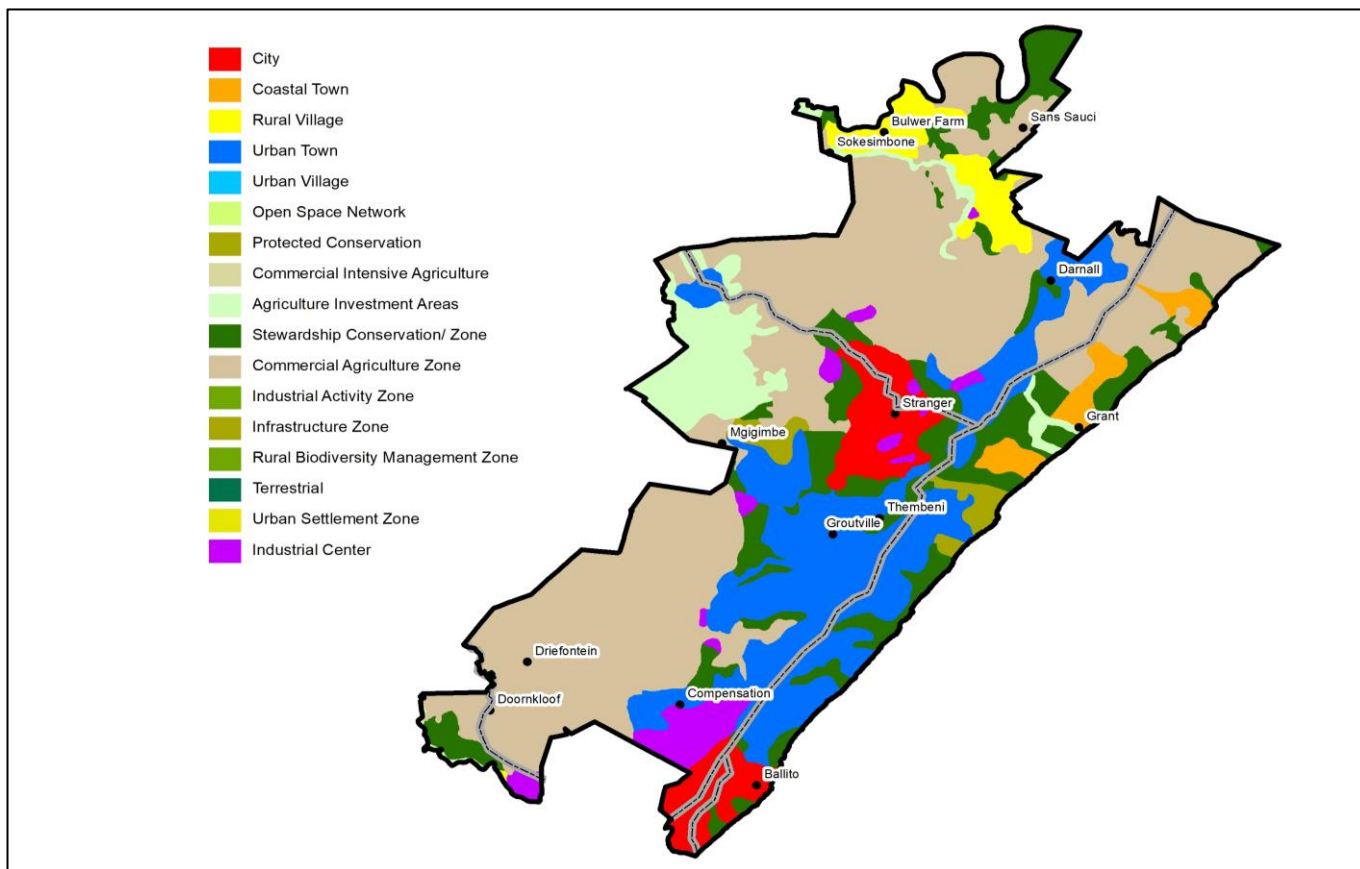
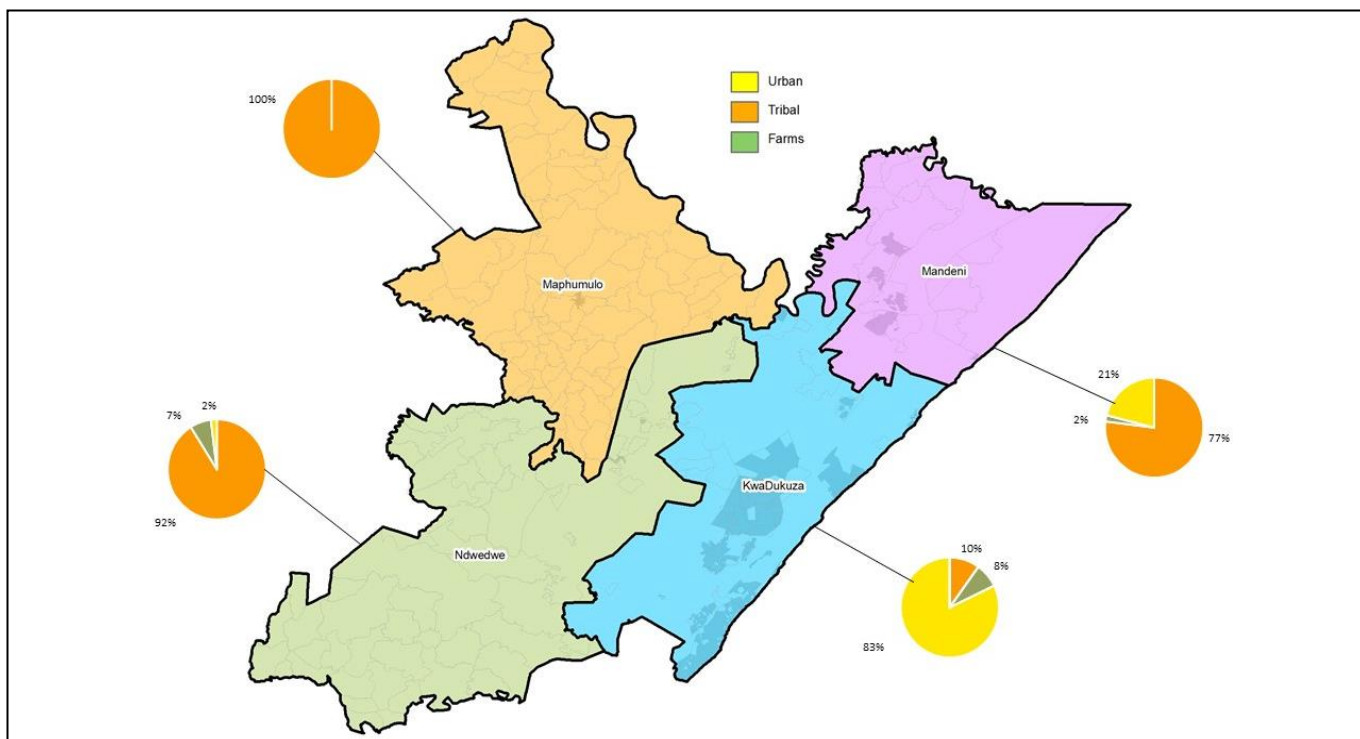
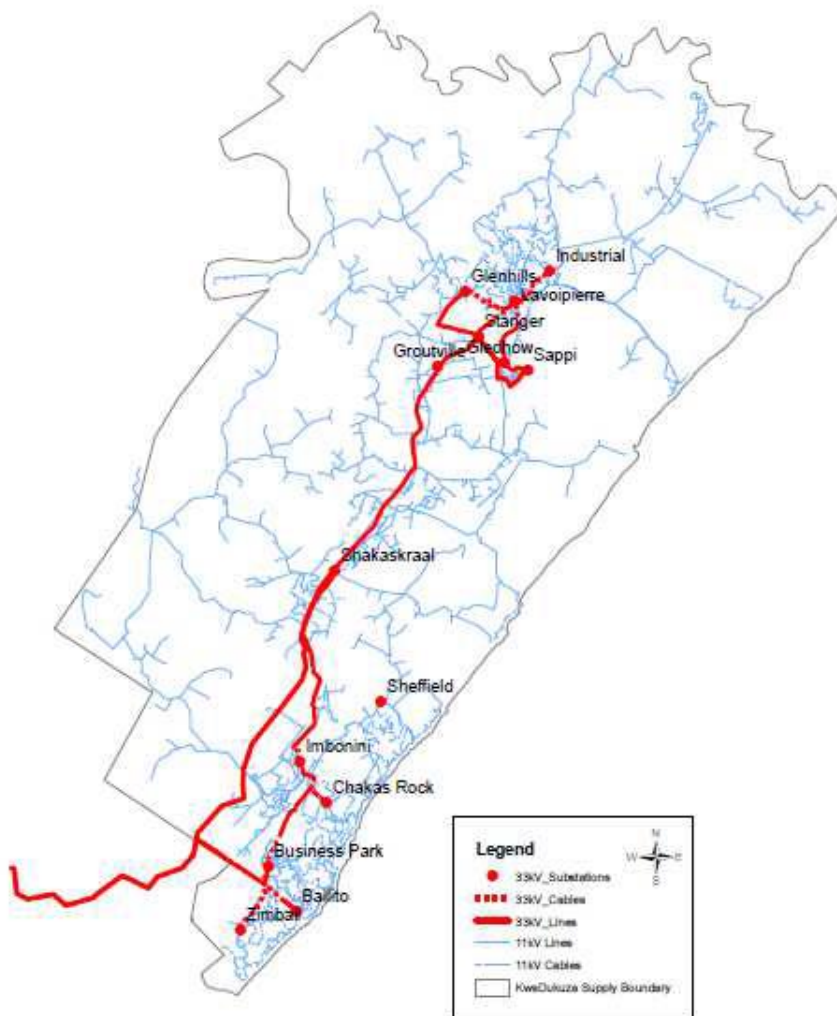


Figure 2.3: Urban to rural proportions across the iLembe District Municipality



17	Key Business Unit AM roles (and suppliers)	<p>The Executive Director of Electrical Engineering Services manages the planning of electrical engineering activities and the provision of electricity services. The following key roles are currently vacant in the Business Unit:</p> <ul style="list-style-type: none"> • Senior Manager: Planning, Customer & Fleet Services • Senior Manager: Electrical Services (South) • Senior Manager: Electrical Services (North) <p>The following key points are highlighted for the Business Unit:</p> <ul style="list-style-type: none"> • KDM provides electricity to the vast majority of citizens within the KDM municipal boundary with Eskom and eThekweni Metro providing electricity for very small outlying areas. • The southern network is under significant strain due to rapid urbanization and growth around the Ballito area. • The New Sheffield 10MVA 33/11kV main substation has relieved the network constraints. • KDM wants to transmit electricity from the new Dukuza electricity substation which will require a new substation. • The planning and design for the KDM Dukuza substation (132/33/11kV) is at an advanced stage however delays in acquiring land rights for the substation servitude have had an adverse effect on progress. • The department has a call centre, manned by officials on a 24/7 basis. There are two officials manning the centre at all times. • KDM has an electricity basic service backlog of 3666 households as per 2016 statistics.
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Figure 2.4: Location of HV and MV electrical assets



18	Overview of infrastructure	<p>The electricity network asset extent summary is shown in Table 2.1. The total current replacement cost of the KDM electricity network assets is estimated to be about R1.4 billion. Short life assets such as high masts and meters have very poor portfolio health ratings and will need a replacement program.</p> <p>The MV Conductors and the HV Substations have the largest replacement values. The HV Substations are in good health whilst the MV Conductors require renewal as most of the assets are nearing end of life.</p> <p>The total purchase value of electricity assets is reflected as R 700 million in the financial asset register, however the calculated replacement value in 2018 is almost double this at R 1.4 billion (which accounts for the time value of money). The depreciated replacement cost is estimated at R 782 million (carrying value at R 466 million), showing a fair amount (about 45%) of the portfolio has depreciated.</p> <p>Maintenance costs for the LV network carries the vast majority of the budget needs constituting around 73% of the total maintenance cost need.</p>
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Table 2.1: Asset extent summary (Residual Value is zero for all asset groups)

								from AFS	
Asset Group	Extent (No.)	Unit	Replacement value (R '000)	DRC (R '000)	Portfolio Health	Annual consumption (R '000)	Maintenance need (R '000 pa)	AFS Cost opening (R '000)	AFS Carrying value opening (R '000)
HV Conductor	110	km	126 725	67 966	54%	2 977	1 267	62 569	44 889
LV Conductor	328	km	165 287	84 973	51%	3 306	16 529	67 398	43 491
MV Conductor	577	km	378 026	181 703	48%	7 561	1 890	159 604	110 572
Service Connection	216	km	86 067	50 222	58%	1 721	4 303	39 260	31 898
HV Substation	14	No	302 819	182 478	60%	7 392	1 514	159 030	106 125
MV Substation	33	No	39 834	25 043	63%	896	199	21 694	16 356
MV Mini-Sub	621	No	113 240	69 069	61%	2 831	566	63 849	37 721
MV/LV Transformer	1417	No	55 005	36 473	66%	1 340	275	33 366	21 854
MV Switchgear	391	No	86 721	60 040	69%	1 927	434	54 260	41 997
LV Kiosk	54414	No	17 472	9 120	52%	582	1 747	10 128	6 251
Conventional Meters	13047	No	10 023	3 797	38%	401	501	5 466	1 539
Prepaid Meters	16626	No	25 334	9 411	37%	2 533	1 267	19 827	3 378
High Masts	45	No	2 447	788	32%	245	122	1 880	638
Streetlights	4800	No	2 849	1 496	53%	71	142	1 352	4
TOTAL			1 411 849	782 580	55%	33 783	30 757	699 684	466 712

19	Overview of the level of performance	<p>The electricity department has managed to alleviate some of the technical backlog in recent years with the addition of Shakas Rock and New Sheffield substations. The current projects focus on electrification, network strengthening and alleviating the technical backlog of ensuring firm electricity supply throughout the network.</p> <p>KDM has relatively high electricity losses of around 16% which is above industry norms. This is in the main due to illegal connections. KDM's debtors for electricity has increased due to high tariffs which is a national problem due to Eskom's crisis.</p> <p>Some key Business Unit risks include:</p> <ul style="list-style-type: none"> • Business Unit resourcing, vacant positions. • Dukuza bulk electricity point of supply substation building • Inability to perform preventative and routine maintenance of infrastructure and street lights. • Ageing DC supply equipment at the HV substations which poses risks of protection equipment malfunctioning or not functioning when needed.
20	AM maturity	<p>KDM is a category B municipality and is coming off a low asset management practices base, however it has demonstrated its commitment to improving its practices by participating in the implementation of the Vuthela-Ilembe LED project. There is a relatively low level of asset management practice maturity, especially in the field of physical asset management within KDM. This AMP is a high-level initial document to start steering the municipality towards implementing quality asset management and asset management planning.</p>
21	Availability and quality of key data and information, lifecycle models	<p>The financial asset register was used as a base, though it comprises predominantly accounting fields and not a depth of physical AM data. The condition from the register was used. Some contextual information was obtained from the IDP and annual report.</p>

22	Key data / modelling assumptions	<ul style="list-style-type: none"> • The purchase price for items was used to determine the current replacement cost (CRC) by adding an assumed average inflation of 4% pa. • A straight-line depreciation was applied to obtain the DRC from the CRC • DRC included impairment where this information was available • RUL was taken from the register and the same RUL used to determine the DRC.
23	Chapter summary	<p>KDM has an obligation to provide basic electricity services within its jurisdiction as well as provide an acceptable level of lighting to all major roads, public open spaces and sports fields.</p> <p>Key stakeholders in the Business Unit include the municipality, community members and the environment. Currently there are key positions of the Electrical Engineering Services Business Unit still vacant highlighting the Business Unit risk of human resources.</p> <p>The portfolio value is approximately R 1.4 billion with a health grade of 'Good' (55%) overall and is comprised of substations, conductors, masts, street lights, meters and switchgear at HV, MV and LV voltage levels. The portfolio also does not carry any residual values but does have impairment of some assets. All the short-term assets such as street lights and meters are in a very poor state and need replacing soon.</p> <p>Key constraints, risks and opportunities include:</p> <ul style="list-style-type: none"> • Fast growth has created network constraints in the Southern Network • Need for Dukuza 132/33/11kV 80MVA substation to relieve network loading • Communities struggling with employment, • Opportunity due to current trend of urbanization, • Opportunity on focusing on reduction and awareness initiatives, • Municipality promoting tourism – will need associated electricity services in key areas, • Current liquidity status, and • Shortage of human and skill resources within the Business Unit and municipality as a whole.

3 LEVELS OF SERVICE

An overview and assessment of the prevailing levels and standards of service; current backlogs, historic and existing initiatives; summary of needs, challenges, associated strategic risks, opportunities and priorities; and proposed strategic and tactical responses.

1	Existing levels and standards	<p>Currently around 95% (70 782 households – 2017/18 year) of the residential KDM households have access to at least basic electricity services with about 5% still needing access. Those in formal urban areas have a higher level of service than those in informal or rural areas, who in the main are serviced by Eskom.</p> <p>The surrounding Eskom bulk network and the internal bulk electricity supply network is limited and constrained. KDM has encountered challenges with reliable supply of electricity. The situation has led to dissatisfaction in terms of the quality of service and quality of supply. The average customer had 29 hours of electricity service interruption with the average customer having a 9% chance of experiencing an interruption during the 2017-18 financial year.</p>
2	Historic trends and ongoing initiatives	<p>KDM has a target of 100% access to a basic level of electricity service and additionally a target of 100% free basic access (50kWh per month) for indigent households.</p> <p>KDM is implementing an extensive Infills Programme which aims to ensure universal access to electricity within the KDM boundaries. KDM supplies electricity to 22 of the 29 wards with Eskom supplying the balance. The Infills Programme relates to the 22 wards supplied by KDM’s Electrical Engineering Business Unit. A total of R7.1 million was budgeted for the Infills Programme in the 2017-18 year.</p> <p>Further to this, the bulk supply network upgrades backlog is being addressed through an intensive capital investment programme. The Gizenga 10 MVA Substation is at the design stage and the Dukuza 80 MVA bulk substation requires servitude acquisition which is currently ongoing.</p>
3	Strategic directives	<p>The key focus of KDM is to eradicate the access backlog to electricity in the KDM supply area and provide a reliable electrical power supply to current customers within their supply network.</p>
4	LOS / SOS criteria	<p>The provision of high levels of service (LOS) in urban areas follows prevailing practice. Services in the more rural and informal areas was targeted at a lower LOS to provide service to more people within affordability constraints, also due to the long distances between residences in some areas and to accessibility challenges in some informal areas.</p> <p>There are currently no formal standards of service (SOS) criteria for KDM, however, SOS metrics are being tracked by the KDM Electrical Engineering Business Unit.</p>
5	Targets	<p>The current target for Electricity Supply within KDM is the provision of electricity (LOS 2 – 20A single phase connection at 230V) at all customers and households and the provision of street lights on primary and secondary roads (LOS2). LOS 2 is the national acceptable LOS as per the Department of Energy’s Free Basic Electricity program.</p> <p>There are currently no targets set for Standards of Service (SoS).</p>

6	Lifecycle cost implications	There is currently a backlog to provide LOS 2 level service of around 3600 households within the KDM supply area. The cost implications of this is difficult to determine as KDM is subject to rapid population growth through urbanization of the rural areas surrounding KDM. The Standard of Service however can be improved by having redundancy of the bulk network with a new point of supply connection from Eskom (Dukuza Substation). The cost implication of this is well over R100 million in capital costs over the short to medium term. This is covered in chapter 4 of this AMP.
7	Service delivery backlogs	KDM provides electricity to 70 782 households which is 95% of all households within the KDM supply area. The current backlog for minimum LOS 2 is about 3600 households. However, this is a fluctuating number due to the intense growth experienced with KDM over the last 10 years with rapid urbanization from more rural areas surrounding KDM. Table 3.2 shows the level of service distribution for the various grid connection types or levels of service.
8	LOS / SOS backlog reduction tactics	The Business Unit has identified a number of gaps in relation to the service provision and has identified a need for specific approaches: <ul style="list-style-type: none"> • Additional human and other resources, • Upgrading of bulk network and of new intake substation Dukuza substation • Energy efficiency and demand side management education and awareness programmes, and • Electricity information management systems.

Table 3.1: Level of service target for KDM

ELECTRICITY SERVICE				
Level of service	Power supply		Public Lighting	
	Power supply	Customer consumption measure	Street Lighting	Customer consumption measure
LOS 0	No electricity service - basic energy sources such as open fires, paraffin/coal stoves	kWh pm	None	NA
LOS 1	No grid electricity service - natural and alternative energy sources such as solar (photovoltaic energy for lighting), gas or coal	kWh pm	High mast area lighting	kWh pm
LOS 2	Grid connected and metered - Single phase 230V up to 20A or 4.6 kVA	kWh pm	Street lights on primary and secondary roads	kWh pm
LOS 3	Grid connected and metered - Single phase 230V up to 60A or 13.8 kVA	kWh pm	Street lights on all roads including access roads	kWh pm
LOS 4	Grid connected and metered - Single phase 230V up to 150A or 35 kVA	kWh pm		
LOS 5	Grid connected and metered - Three phase / Multi phase 230/400 V up to 150A or 100kVA	kWh and kVA pm		
LOS 6	Grid connected and metered - Bulk supply 230/400 V at least 25kVA	kWh and kVA pm		
LOS 7	Grid connected and metered - Bulk supply 230/400 V, supplied directly from a substation at least 25kVA	kWh and kVA pm		

Table 3.2: LOS distribution to customers

Electricity Access			
Energy Source	LOS	Number of Consumers	Percentage
No electricity - use of open fires, paraffin etc.	LOS 0	1890	3.000%
No electricity - use of alternative energy such as solar	LOS 1	1890	3.000%
Grid connected - single phase at 20A*	LOS 2	9067	14.392%
Grid connected - single phase at 60A*	LOS 3	47836	75.931%
Grid connected - single phase at 150A	LOS 4	1648	2.616%
Grid connected - three phase at 150A	LOS 5	723	1.148%
Grid connected - metered bulk supply up to 150A	LOS 6	21	0.033%
Grid connected - metered bulk supply directly from substation (min 25kVA)	LOS 7	3	0.005%
Total		63078	100%

*Assumed

Table 3.3: Cost implication of addressing the backlog

Cost of upgrading to target level (R '000)		
	Resolving no service backlog capital	Resolving no service backlog ops (R '000 pa)
Urban Residential	64 521	36 228
Rural Residential	10 998	9 057
Business/Commercial	-	-
Industrial	-	-
Total:	75 519	45 285

*note: the operational additional cost per year will be cumulative

9	Chapter confidence	<p>The majority of population and service provision data is based on the Stats SA community survey of 2016 combined with the IDP, D Forms (NERSA) and annual reports of 2018. This gives the data a relatively high confidence. The D Forms data for 2017-18 was used to distinguish between the different service levels. Assumptions were made here as to which service level aligns with which customer category in the D Forms. There is a need to spatially quantify the customer base not just for accurate modelling but accurate billing purposes as well.</p> <p>Key assumptions include:</p>
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		<ul style="list-style-type: none"> • Assumed the 3600 backlog households mentioned in the IDP and Annual Reports are all within the KDM service area, • Assumed LOS 2 applies to all indigent customers (if connected), • Assumed LOS 3 applies to all credit consumers along with low prepaid, • The cost of supplying different connections (as calculated), • Assumed the backlog will be addressed with LOS 2 connections, • Future growth assumed to be handled with a split between LOS 2 and LOS 3 connections for residential with LOS 4 for business or commercial consumers
10	Chapter summary	Currently approximately 5% of customers do not receive a minimum level of service in KDM. This is a relatively small backlog (3666 households with no access, at a cost of approximately R 75 million to address – plus additional upgrade of services needed in the urban areas). There is not only a large capital cost associated with this service provision but potentially an additional operational cost per year of providing the service.

4 FUTURE DEMAND

An overview of customer growth trends; existing and proposed demand management techniques; associated infrastructure implications; summary of needs, challenges, risks and opportunities, and proposed strategic and tactical responses.

1	Historic growth trends	<p>Growth in the municipality between the census 2011 and the community survey in 2016 was almost 20%. This was a smaller increase than that of the previous census (almost by half), 37.8% occurred between 2001 and the 2011 census (from 167 805 to 231 187people). This difference can of course be attributed to the difference in the time period. The current population estimate at 2018 is 281 053.</p> <p>KwaDukuza has the highest growth rate in the district, while two other local municipalities had negative growth (Ndwedwe and Maphumulo). Approximately 90 000 additional people are estimated to be in the area during peak seasons because of holiday makers – this is a large increase which occurs predominantly in the built-up coastal regions.</p>
2	Demand drivers	<p>The largest demand driver is tourism and holiday visitors in Ballito during the peak season of December. Currently the opportunities in the urban areas are driving the trend toward urbanization along with the increased access to services. The municipality has a high proportion of urban areas. Manufacturing in the southern areas is increasing with more notable growth in the tourism Business Unit both of which will need specific catering towards demand management. Along the urban periphery there is a less formal pattern of settlement with high densities and growth rates.</p>
3	Growth strategy	<p>The growth strategy spatially, as outlined in the SDF, is focused on a spatial lattice along the public transport routes with specific development nodes (see Figure 2.1). In addition, there is a costal cluster concept to promote development along the coast but contained by the freeway as an urban growth boundary. This strategy further supports a move away from trying to provide everyone without access to services and instead promotes a densification approach to allow for sustainable service provision. This view also looks to integrate service provision to maximise the use of limited resources.</p> <p>A focus on development in specific nodes benefits the provision of basic electricity service as it makes implementing the required level of service to customers more feasible. There is also a view for equity and ease of access which can be accomplished without the challenge of remote areas.</p>
4	Business Unit demand forecast	<p>Currently the customer demand is forecast to increase at a slow but steady rate per year. If not addressed this will start to increase the access backlog. Notably though the growth trend is a movement to developed areas or along transport routes.</p> <p>As areas become denser, there will be a greater demand on the service. The current Business Unit budget provides for capital projects for new assets (for future growth) as well as renewal and upgrading of existing assets. This meets some of the access and technical backlog, but should be planned in such a way as to maximise provision with the view of being able to provide for a portion of the growth in the municipality as well.</p> <p>Over the 10-year planning period the number of households in the municipality is expected to increase by 7 491, as shown in Table 4.1. Energy efficiency and demand side</p>

		management (EEDSM) awareness and education campaigns could (and should) be increased to try influence the reduction of the electricity demand and growth per person in the municipality.
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Table 4.1: KwaDukuza population growth forecast

Current Population (2018)	Growth Rate (p/a)	Population at end of Planning period (2028)	Population Increase	Household Increase
281 052	0.78 %	303 760	22 708	7 491

5	Infrastructure impact	<p>An increased customer base is going to require increased service and a reliable standard of service from the electricity department. The current electrical network is constrained in certain areas and does not have sufficient firm capacity. The increase in population will require upgrades on both the HV and the MV network to ensure sufficient and reliable supply.</p> <p>Providing electricity services for the full population growth over the planning period is in the range of R 132 million, with the majority of the growth in urban areas – this will then have an impact on the required operational costs.</p>
6	Demand management tactics	<p>The Electrical Engineering Services Business Unit has an energy efficiency and demand side management (EEDSM) program. As part of this program several old high pressure sodium street lights fittings will be replaced with more energy efficient LED lights.</p> <p>Energy saving measures are actively encouraged by the municipality. The municipality will continue to drive the education campaign and is constantly looking for new interventions to reduce electricity consumption within its area.</p> <p>The energy losses of the LM is still too high at around 16%. The Business Unit has implemented a meter auditing program for the incomer meters at the points of supply with Eskom. This is to ensure the correct energy usage statistics are being used and that the LM is being correctly invoiced by Eskom.</p> <p>Growth in the urban areas will be prioritized lifecycle planning to further promote the vision of nodal development in the municipality.</p>
7	Chapter confidence	<p>The growth forecast is based on a number of assumptions on future economic, social and behavioral trends, the chapter is given a confidence of 75% where some estimation has been applied. Despite this it still gives an overview of the direction in which growth is headed and what factors need to be considered when planning for such growth. As such the alternative demand management approaches and impacts should be considered.</p>
8	Chapter summary	<p>Growth is not always predictable but sound assumptions have been used to assume that it will remain at a low percentage increase per year going forward (a total of 7 491 additional households predicted over the 10-year period). KDM has a spatial vision of priority nodes and promoting the growth within those areas to ease the demand on service delivery. Realistically the full growth need per year will not be met. Instead services are promoted in specific areas to encourage growth in line with the municipal spatial vision. The suggested approach is, as a minimum, to meet growth demand in the identified priority development areas and nodes.</p>

		<p>Key notes:</p> <ul style="list-style-type: none">• There is an opportunity to promote EEDSM within the LM.• Energy losses are still too high and a coherent loss management program must be established.• It is assumed in this plan that all future growth will be absorbed by KDM electricity though Eskom will absorb a portion of this. This assumption was used to plan for the worst case scenario.• Large infrastructure investment is needed on both bulk supply and distribution level.
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5 LIFE-CYCLE PLAN

An overview of the infrastructure life-cycle needs, affordability, constraints, delivery tactics, risks and opportunities, and proposed short, medium and long-term responses (projects, programmes and budgets).

1	Life-cycle risk profile	<p>Currently the overall portfolio health status is good (DRC/CRC = 55%) with less than half of the <i>overall</i> portfolio value consumed. However, the portfolio is characterized with many assets in early life but also a significant portion (R440 million or about 32%) of the portfolio in a 'very poor' condition and this needs to be rectified with aggressive investment within the 10 year planning period. This is mainly due to a large portion of the MV Conductors, LV Kiosks and HV Conductors reaching end of life.</p> <p>This concept is represented in Figure 5.1 and Figure 5.2 The figure also shows how the addition of new assets will improve the health status, though these assets in turn will then start the deterioration cycle. Only through capital renewal can the portfolio health status be maintained. The different bands are representative of asset value (per year) in varying condition from 'very good' , 'good' , 'fair' through to 'poor' and 'very poor'.</p>
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Figure 5.1: Current portfolio health status

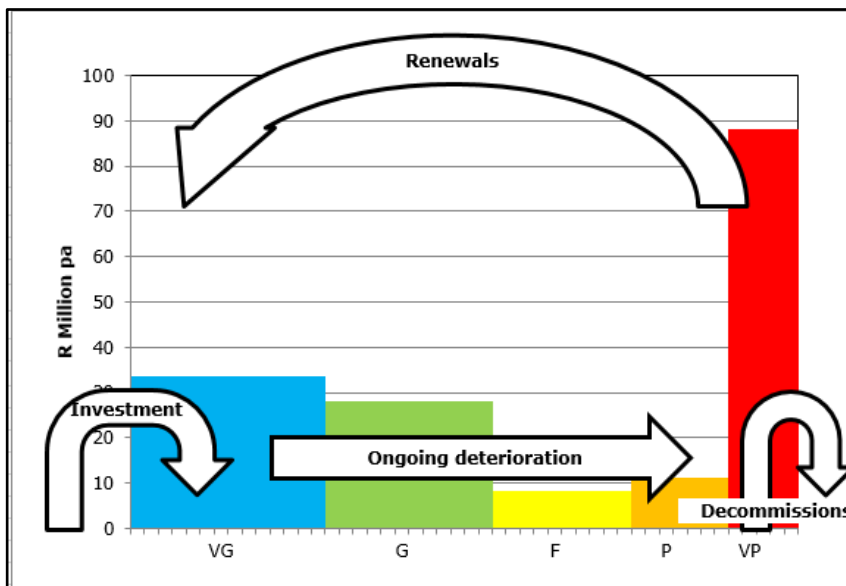
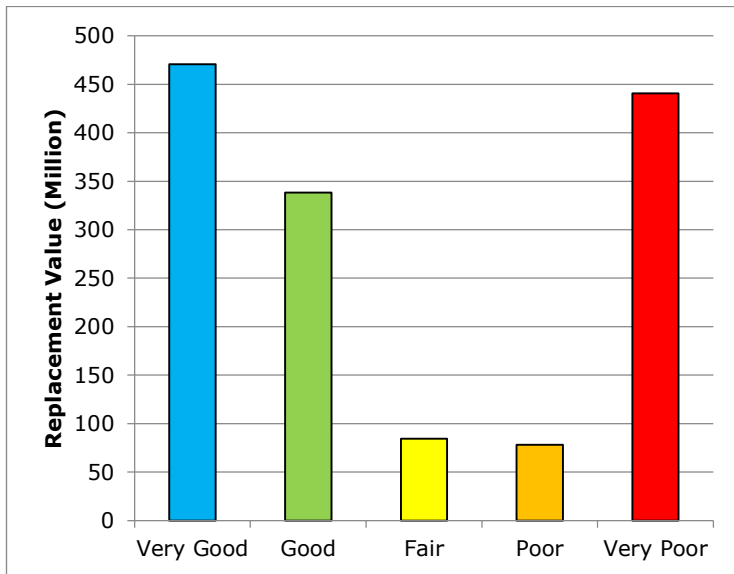


Figure 5.2: Current portfolio replacement values per condition grade



2	Capital programmes	<p>In the 2017/18 financial year there was R 51.5 million capital budget allocated to the Business Unit which had then to be adjusted to R16.1 million due to the rollover of the Dukuza and Gizenga Substation projects. The MTREF makes provision for two HV substations, Gizenga 10MVA and the bulk intake 80MVA Dukuza substation which will cost at least R150 million. The applicable projects are shown in Table 5.1.</p> <p>The MTREF budget makes provision of around R67 million for electrification projects along with LV network upgrades and new connections. This is a significant investment and should see the current access backlog eradicated. However, this backlog will never quite be eradicated due to constant migration into the KDM area.</p> <p>Investment in the upgrade and renewal of the MV network is set at around R13 million over the MTREF period. The new Master Plan that is due will provide more the current MV Network capacity and upgrades needed to supply the growing loads within KDM.</p> <p>The EEDSM street light upgrade programme is budgeted for at around R14 million. Provision of R6 million is made for the replacement of the 33kV underground cable from Lavoipierre Substation to Industrial Substation.</p>
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Table 5.1: KDM electrical engineering Business Unit budgeted capital programmes (value in R'000)

Program/Project description	Asset Class	Total Project Estimate	Baseline / Previous Year 2017/18	Budget Year 2018/19	Budget Year +1 2019/20	Budget Year +2 2020/21
Tools & Equipment	Machinery and Equipment	411	246	60	105	-
Electrical Recording Equipment	Furniture and Office Equipment	242	242	-	-	-

Electrical Department Fleet	Transport Assets	1 459	500	850	109	-
Safety Equipment - Portable	Machinery and Equipment	160	80	80	-	-
33kV Substations SCADA	Computer Software and Applications	400	-	400	-	-
Other Software	Computer Software and Applications	3 260	-	3 260	-	-
Street Lights	Road Furniture	14 115	1 899	7 329	4 887	-
Electrification & New Connections	LV Networks	67 331	3 544	31 857	16 930	15 000
MV Network Upgrades	MV Networks	13 121	2 266	6 795	4 060	-
Upgrade of Substation Yards	Yards	1 194	200	594	400	-
HV Cable Replacements	HV Transmission Conductors	6 160	738	5422	-	-
HV OHL Rebuilds	HV Transmission Conductors	590	590	-	-	-
Dukuza Substation	HV Substations	103 000	2 324	60 676	40 000	-
Gingeza Substation	HV Substations	50 770	1 403	29 367	20 000	-
Total		274 690	16 316	150 941	92 433	15 000

	2.1 Growth capital requirements	<p>The capital cost for an urban residential connection is estimated to be R22 000 which is higher than the estimation for the rural residential connection as per Table 5.2. This is due to underground electrical networks (used mostly in urban areas) being more cost intensive than overhead electrical networks (used mostly in rural networks). The costs for business and industrial customer connections is related to the facilitation costs of the LM only and does not include the capital costs of the equipment and works. This capital cost is charged to the applying customer.</p> <p>Table 5.3 shows the costs forecast per year to provide services to meet the growth in population. The majority of this growth is urban and amounts to R 102 million over the planning period. On average the spending to meet the increased demand from growth is around R 10 million per year. Meeting the growth target would be within reach but growth should still be encouraged in a structured way to enforce densification – thus an approach</p>
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	<p>of providing for identified urban growth and a reduced portion of the rural area is suggested.</p> <p>The difference in the projected needs for growth provision and the current access backlog are highlighted in Figure 5.3. This clearly shows the dominance of the existing large backlog and that eradicating this backlog needs to be prioritised.</p> <p>The bulk MV network will require renewal to cater for the growing demand in future.</p>
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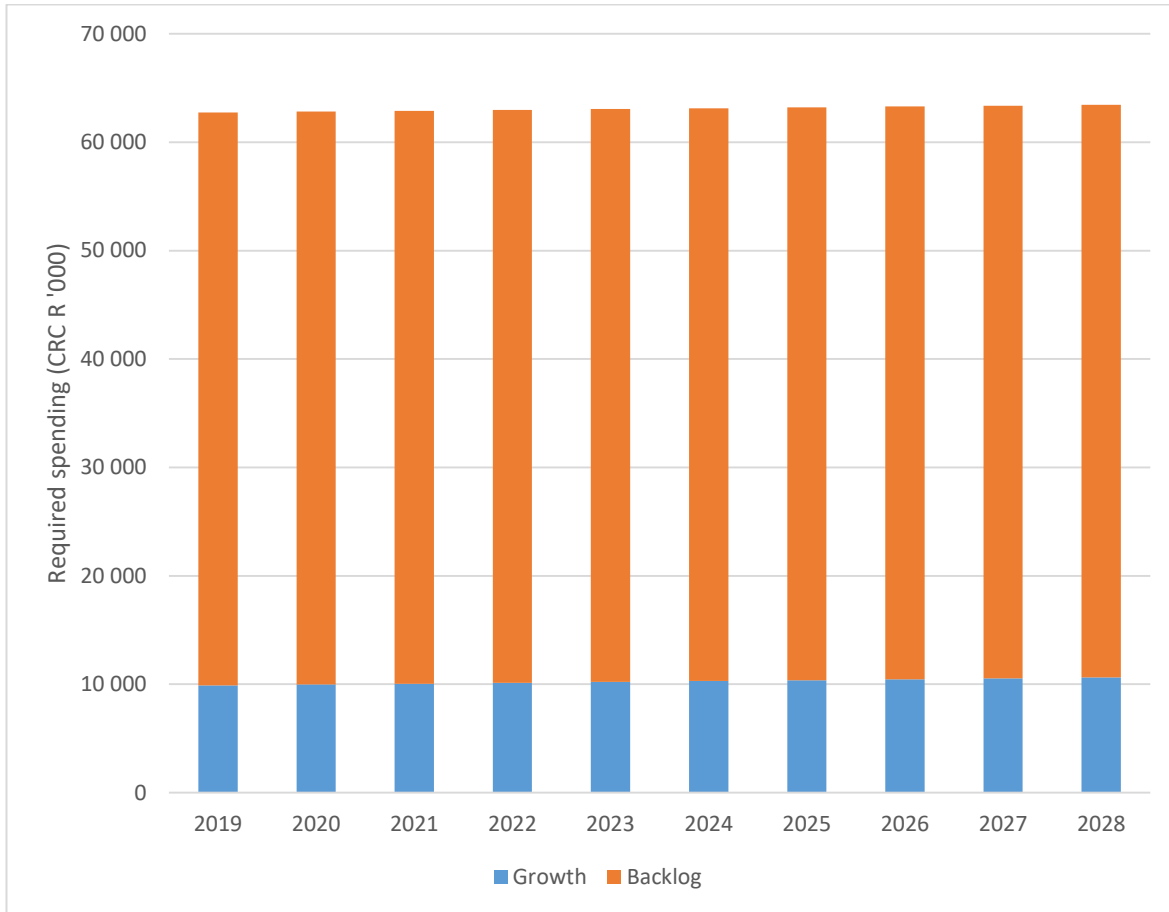
Table 5.2: Capital cost for service provision per customer

Connection Type	Cost
Urban Residential	R 22 000.00
Rural Residential	R 15 000.00
Business/Commercial	R 27 500.00
Industrial	R 35 750.00

Table 5.3: Capital needs to provide target LOS to additional customers from growth (R '000)

Capital Growth Cost	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Need per Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Urban Residential	7 127	7 183	7 239	7 295	7 352	7 409	7 467	7 525	7 584	7 643	73 825
Rural Residential	1 388	1 399	1 410	1 421	1 432	1 443	1 455	1 466	1 477	1 489	14 382
Business/Commercial	891	898	905	912	919	926	933	941	948	955	9 228
Industrial	496	500	504	508	512	516	520	524	528	532	5 141
Total	9 903	9 980	10 058	10 136	10 215	10 295	10 375	10 456	10 538	10 620	102 576

Figure 5.3: Required capital expenditure for access backlog and growth



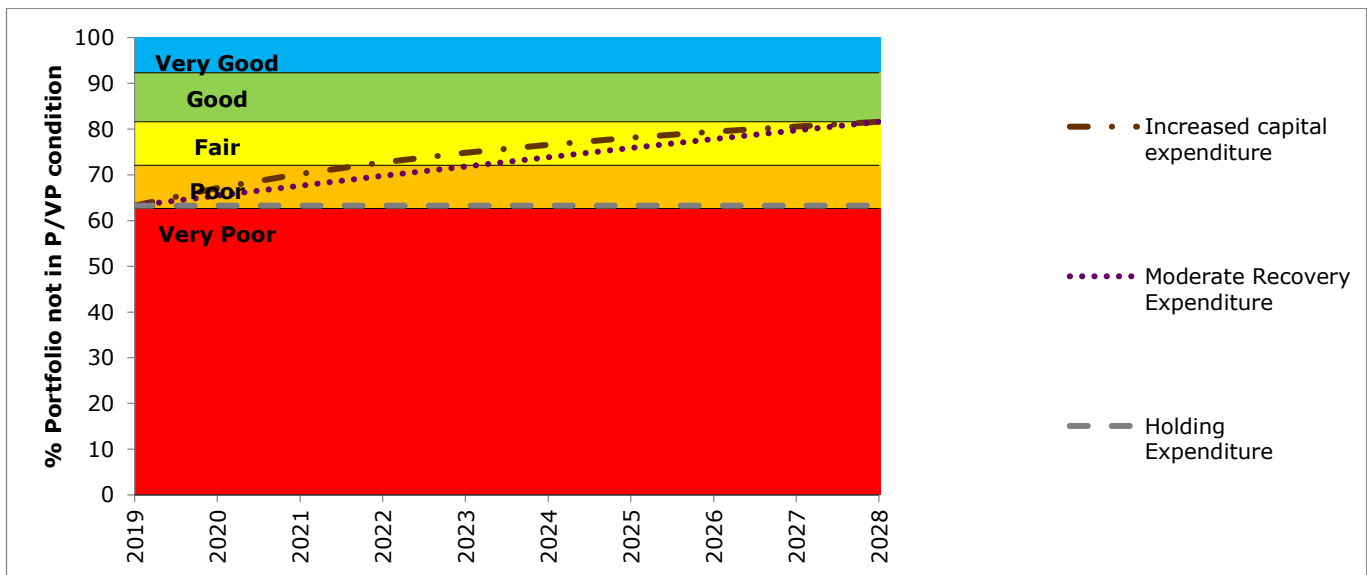
<p>2.2 Renewal capital requirements</p>	<p>While discussing the current state of the portfolio it was noted earlier that the majority of the assets were in good health with the short-term assets such as high masts and meters in very poor state. This indicates these assets have used the majority of their expected life – and the assets need capital input in the form of replacement or renewal. Further, a large portion of the MV Network (Conductors) are in an aged state and has a high replacement cost associated with it. Renewal will be required for the MV Network, LV mains (Kiosks), Street Lights and HV Network.</p> <p>The majority of the assets in the Electrical Engineering Services Business Unit are long life assets (40 years or more), however there are some short life assets in the portfolio that have EULs less than 20years. As such the renewals value total over ten years will be approximately the current replacement value for those assets (high masts, street lights and meters), as most of these assets are not new.</p> <p>The MV and LV Conductors constitute almost 40% of the CRC of the whole portfolio and these assets are in a fair condition and approaching a poor health state. A programme of asset renewal and upgrading is needed for the MV and LV Conductors.</p> <p>Different renewal scenarios were projected to illustrate the effect of different levels of renewal spending per year on the portfolio to find a renewal scenario that does not over invest but maintains the portfolio.</p>
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	<p>Table 5.4 shows what spending is considered in the different scenarios for new capital investment and capital renewal. Figure 5.4 then illustrates the state of the portfolio after 10 years with these yearly investment scenarios. The following points are noted:</p> <ul style="list-style-type: none"> • The current rate of asset renewal at R4.153m pa for the Business Unit is not sufficient and will lead to the portfolio deteriorating into a ‘very poor’ state • The current expenditure on renewal of assets is not sufficient at R4.3m pa and should be increased aggressively over the planning period • About 63% of the portfolio is in either a ‘poor’ or ‘very poor’ state • Holding the current expenditure will see the portfolio health remain stagnant over the planning period • The current modelled new asset spending is based on the current MTREF projects • A significant portion of the capital budget in the MTREF is spent on new assets. As noted, over 60% of the portfolio’s health is in a poor or very poor state and needs renewal to maintain the current service levels. Failure to address this will cause the equipment to fail and lead to revenue losses
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Table 5.4: Different capital renewal investment scenarios (R CRC value)

Scenario type	Constant Expenditure Scenarios R per annum		
	Holding Expenditure	Moderate Recovery Expenditure	Significantly Increased capital expenditure
New	11 691 000	15 000 000	178 706 334
Renewal/Upgrading	4 153 983	34 466 098	4 344 000
Decommissioned	0	0	0
Total portfolio spending	15 844 983	49 466 098	183 050 334

Figure 5.4: Portfolio health as a result of different renewal investment scenarios



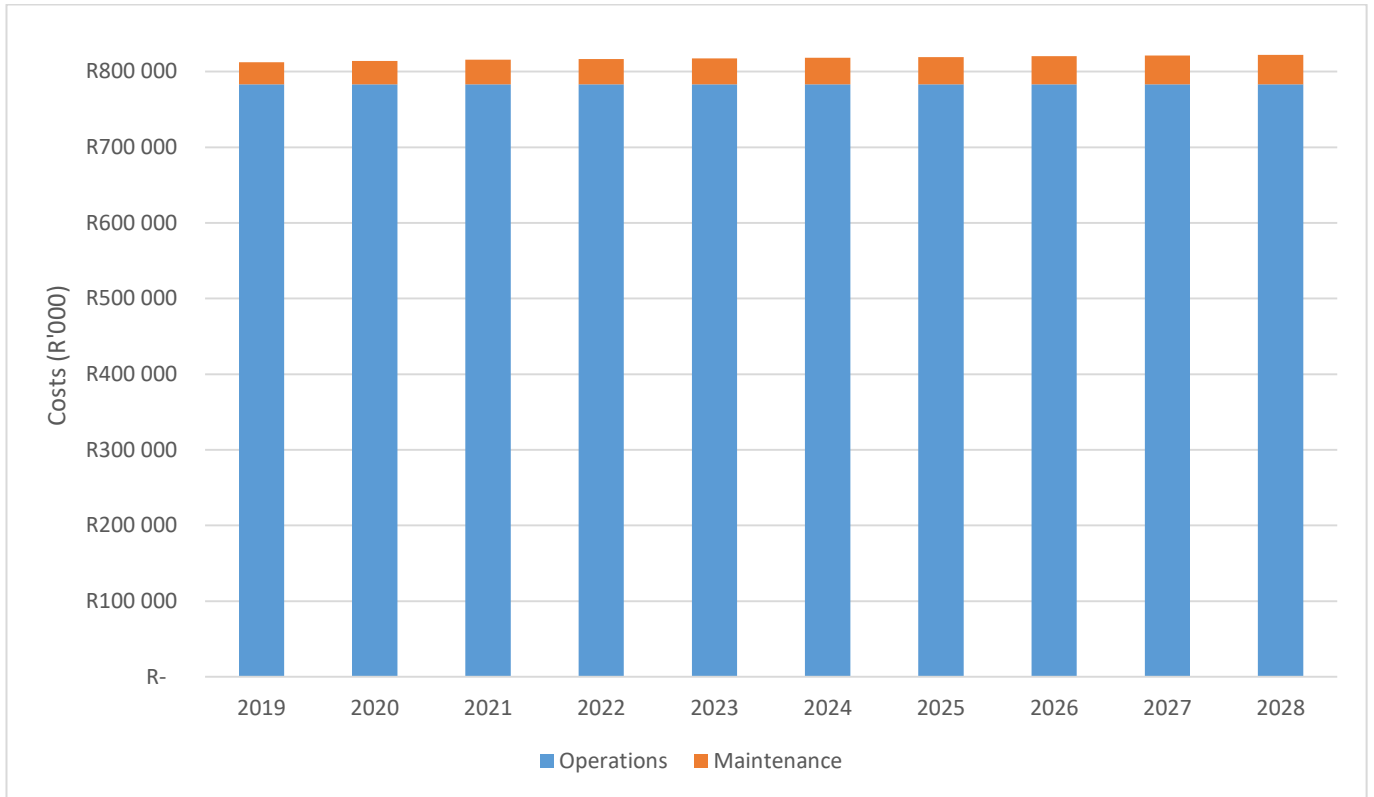
3	Maintenance management	KDM currently spends around R29m pa on maintenance – compared to a high-level assessed need of around R35m pa (R6m pa more). A more detailed assessment would inform the merits of an increased maintenance spend, and / or productivity improvement. It is estimated that an additional R4m pa (current day prices) is needed for maintenance
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		<p>for new assets over the planning period of 10 years. Therefore, a total of R10m pa is needed to meet the current maintenance needs as well as the growth in infrastructure in the planning period.</p> <p>The required annual routine maintenance (excluding capital renewal) is assumed as a proportion (2.5%) of the current replacement cost of the portfolio. As such the requirement increases in relation to the investment in new assets.</p> <p>If less investment goes into new assets then the required maintenance will also be less, and if less spending goes into renewal of the electricity assets then the required maintenance will likely increase.</p>
4	Operations management	<p>Current operational expenditure is set at around R732m pa. The majority of this relates to bulk purchases from Eskom at around R590m for the 2017/18 year. Losses are currently fairly high and set at R93m for the year which is about 16% of the total purchases from Eskom.</p> <p>Providing services to those with an access backlog or new customers from growth comes with an associated operational expense and it will be an ongoing expenditure need. Table 5.5 shows the expected operational needs per year. An additional R51m per annum is required for the next ten years to accommodate new customer growth as well as backlog eradication. This in addition to the current R732m spent on operations and will increase OPEX to circa R812m pa.</p> <p>Figure 5.5 shows the combined OPEX expenditure needs for the planning period. This shows the operational and maintenance costs remaining constant over the planning period.</p>

Table 5.5: Operational spending required per year to service new customers from access backlog and growth (R '000)

Customer type:	Per Annum	Total (10 years)
Urban Residential	R40 373	R403 732
Rural Residential	R10 064	R100 637
Business/Commercial	R435	R4 352
Industrial	R213	R2 132
Total	R51 085	R510 854

Figure 5.5: Required OPEX (operation and maintenance) spending per year



5	Delivery packaging and scheduling	A Strategic approach to packaging and scheduling of capital and operational activities, needs to be developed and implemented. A summary of the suggested spending in the mSCOA format is shown in Annexure A .
6	6.1 Life-cycle plan	<p>The total lifecycle plan for the Electrical Engineering Services Business Unit is made up of all the individual aspects discussed earlier in the chapter. Figure 5.6 and Table 5.6 show the combined Business Unit NEEDS for the planning period – a projection based on what the directives are but without constraint. In reality there are budget constraints – and the life cycle plan needs to be adjusted to such. A plan for matching the available funds to the needs of the Business Unit needs to be devised.</p> <p>Figure 5.6 illustrates the funding gap with the available budget and the needs of the Business Unit. The first 2 years of the planning period should have sufficient funding. However, the gap between available funds and the needs of the Business Unit starts growing from year 3 onwards in the planning period.</p> <p>Due to the illustrated budget being lower than what is needed, the life cycle plan has been adjusted (in the next subsection) so the Business Unit spending is reduced to account for the limited budget – but allows for the Business Unit to prioritize spending and motivate for more going forward.</p>

Table 5.6: Combined lifecycle needs for the Electrical Engineering Services Business Unit for the planning period

Budget need (R '000)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Growth	10 465	10 465	10 465	10 465	10 465	10 465	10 465	10 465	10 465	10 465
Renewals Cost	33 206	33 206	33 206	33 206	33 206	33 206	33 206	33 206	33 206	33 206
Access Backlog Cost	7 552	7 552	7 552	7 552	7 552	7 552	7 552	7 552	7 552	7 552

Technical Backlog Cost	16 632	16 632	16 632	16 632	16 632	16 632	16 632	16 632	16 632	16 632
Maintenance Cost	30 449	31 403	32 356	33 309	34 263	35 216	36 169	37 123	38 076	39 030
Operational Cost	741 899	751 873	761 848	771 823	781 798	791 772	801 747	811 722	821 697	831 671
Total:	840 203	851 131	862 059	872 987	883 915	894 843	905 771	916 699	927 628	938 556

Figure 5.6: Combined lifecycle needs for the portfolio



<p>6.2 Life-cycle plan - adjusted</p>	<p>Due to the realities of a large part of the portfolio being in a very poor state and requiring renewal, as well budget limitations, the spending needs to be prioritized towards renewal capital in the Business Unit.</p> <p>The following adjustments were made to the assessed lifecycle needs:</p> <ul style="list-style-type: none"> • An additional R50m is required for the Capex in the MTREF in year 2021 • Further, an additional R35m pa is needed from year 2022 onwards with this amount decreasing to R15m pa in 2028 • Capital expenditure in 2019-2021 as planned on MTREF – mainly new assets and capacity and bulk project spending. • Only the backlog for those with no access is prioritized and development will have to be encouraged close to main town centres to avoid extra bulk infrastructure costs. • Operational costs will be less due to reduced spending on new customers. • Only 70% growth in urban areas to be met and 30% in rural – aiding in promoting the move towards a denser municipal structure.
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	<ul style="list-style-type: none"> Renewal spending has been set at R35m pa for the first 5 years of the planning period to alleviate some of the pressure on the renewal backlog. This decreases to R15m pa by the end of the planning period in 2028. <p>It is noted that even though the lifecycle plan has been adjusted there are still critical areas in need of funding such as renewal of existing infrastructure as well as the technical backlog.</p>
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Table 5.7: Combined lifecycle adjusted spending for the Electrical Engineering Services Business Unit for the planning period

Budget adjusted (R '000)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Growth	8 000	8 000	3 000	3 000	3 000	2 000	2 000	2 000	1 000	1 000
Renewals Cost	35 000	35 000	35 000	35 000	35 000	25 000	25 000	20 000	20 000	15 000
Access Backlog Cost	12 000	12 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000
Technical Backlog Cost	50 000	50 000	15 000	-	-	-	-	-	-	-
Maintenance Cost	29 743	29 991	30 238	30 486	30 733	30 981	31 228	31 475	31 723	31 970
Operational Cost	737 032	742 139	747 247	752 354	757 462	762 570	767 677	772 785	777 892	783 000
Total:	871 775	877 130	835 485	825 840	831 195	825 550	830 905	831 260	835 615	835 970

Figure 5.7: Combined lifecycle adjusted spending for the portfolio



7	Chapter confidence	<p>An asset register does exist however it is not mSCOA aligned. Gaps within the asset register need to be rectified for more accurate analysis. These gaps include the following:</p> <ul style="list-style-type: none"> • Lack of failure mode data (criticality, utilisation, performance and cost of operation) • Costs were determined by analysing households within the municipality and their distribution across the municipality. Costs were compared to the values, master plans and escalated where applicable to get a realistic present value. • Currently using the information provided in the asset register as well as the budgets from the MTREF there is a disjoint between the capital renewals required and the amount of depreciation in the asset register (as may be expected with Cost Method). <p>The confidence for the chapter varies for different aspects of the life cycle. Overall the confidence in the chapter is at 75% with some areas of estimation. Key estimates include:</p> <ul style="list-style-type: none"> • The required (routine) maintenance budget need was assumed to be 2% of the portfolio value. • The renewals are suggested based on current value and status of assets – but a full investigation should be done to refine this figure.
8	Chapter summary	<p>The overall portfolio health status is considered good, though there is a skewed distribution of assets at each end of the condition spectrum. The MV Conductors asset group will deteriorate into a poor state from fair if a prioritised renewal program is not implemented. Meters and high masts have very poor health. Additional main substations and in take points (from Eskom) have been planned for as bulk and demand management items. Overall, the Business Unit has less budget than the projected needs; if budget wasn't an issue the required lifecycle needs are:</p> <ul style="list-style-type: none"> • Backlog: currently an estimated 3666 households have no service. The capital cost to remove the backlog entirely is about R75million over the planning period. • The majority of projected growth is urban and the capital investment need amounts to R 73million over the planning period. On average this is around R 7million per year. • Renewal of R 33million is required yearly to maintain the current portfolio based on the existing asset life, this minimum increases with new investment into the portfolio. • The projected maintenance increases from R 32million per year in 2019 to R39 million in 2028, this is directly in line with new asset growth. • The operational needs increase with a reduction in backlog due to the associated costs of providing the service to additional customers from R 761million in 2019 to R 871million in 2028. <p>Unfortunately budget is an issue and the large portion of very poor assets (32% of portfolio) needs urgent renewal intervention. The following adjusted lifecycle spending is thus suggested:</p> <ul style="list-style-type: none"> • Only planned MTREF new capital projects in short term. • Growth addressed per year, 70% in urban and 30% in traditional. • Backlog eradication reduces with a focus on strategy toward urbanisation, only 40% addressed over the period – but spending more in line with current budget.

		<ul style="list-style-type: none"> • Renewal spending has been set at R35m pa for the first 5 years of the planning period to alleviate some of the pressure on the renewal backlog. This decreases to R15m pa by the end of the planning period in 2028. • Operational spending increases from R 766million in 2019 to R 815million in 2028. • Over the period the adjusted approach reduces the proposed expenditure (compared to the needs) in the Business Unit by over R 100million. <p>Spending is prioritized on renewal input and maintaining the operational budget – while focusing expenditure on backlogs in specific areas. Thus, still increasing service but in such a way as to promote growth in line with the municipal vision.</p>
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6 FINANCIAL PLAN

An overview of the financial objectives, historic financial performance, revenue forecast (where applicable) and funding strategy, and associated challenges, risks and opportunities.

1	Financial objectives and targets	<p>KDM managed to meet 73% of its 2016/17 financial management and viability KPI targets but only 66% in 2017/2018 (as reported in the 2017/18 annual report)</p> <p>Some objectives, directives and targets include:</p> <ul style="list-style-type: none"> • The municipal investment policy aims at gaining optimal return without incurring undue risks it also notes that all reasonable steps should be taken to ensure monies owed are collected as soon as possible after the due date. • The municipality has commissioned an urban regeneration strategy to regenerate CBD areas. • Sufficient funds need to be collected and generated to ensure a sustainable and viable municipality. • To improve expenditure on Capital Budget. • Accurate rates billing by ensuring GVR is reconciled to the financial systems (Munsoft). • To reduce outstanding debtors. • To ensure financial viability of the municipality. • Minimum of 90% collection rate on electricity income.
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Table 6.1: Department revenue and expenditure

R'000	2018	2017	2016	2015
Electricity income	732,877	695,219	622,058	543,033
% Growth in Revenue	5%	12%	15%	
Bulk purchases	-567,223	-552,551	-488,651	-427,861
Electricity distribution losses	-93,913	-96,239	-78,090	-71,337
Repairs & Maintenance	-21,707	-15,508	-12,389	-10,545
Surplus	50,034	30,912	42,928	33,290
% Growth in surplus	62%	-28%	29%	

Table 6.2: Electrical Engineering Services Business Unit capital expenditure as a % of total electricity expenditure

R'000	2018	2017	2016
Capital Expenditure	23,719	57,076	68,598
Total Electricity expenditure	682,843	664,298	579,190
% Capital Expenditure/Total Electricity expenditure	3%	9%	12%
Acceptable norm	10%-20%	10%-20%	10%-20%

Table 6.3: Current ratio

R'000	2018	2017	2016
Current Assets	719 265	578 879	617 094
Current liabilities	313 826	302 005	282 473
Current ratio	2.29	1.92	2.18
Acceptable Norm	1.5-2.1	1.5-2.1	1.5-2.1

2	Financial performance	<ul style="list-style-type: none"> • Revenue from this Business Unit consist of service charges on consumption of electricity by consumers as well as prepaid electricity income. A minimum of 90% collection rate on this revenue is targeted by the municipality. • In the baseline year (2017/18), revenue increased significantly by 5% to R 734 million in comparison to the prior year of R 695 million as per Table 6.1. The Business Unit generates adequate income as the surplus significantly increase by 62% to R50 million in 2017/18 compared to the prior year surplus of R 31 million. • The expected revenue generated by the Electricity Department for 2018/19 FY is R 751 million. • The electricity expenditure is mainly bulk purchases, the capital expenditure is less than 5% as per Table 5.1. In the baseline year, the bulk purchases expenditure amounted to R 567 million increasing from R 553 million in the prior year. This indicates a major increase in cost pressure and going forward the cost saving strategies should be implemented internally as part of cost management. • The capital spending in the department is very low as indicated in Table 6.2. The percentage of actual electricity capital expenditure to total electricity expenditure has been declining by 3% in each year. This spending is below the norm of 10%-20% and indicates underspending on infrastructure and would impact on service delivery. • The total capital budget for the Electricity Dept is R240 million over the 3 years to 2020/2021 financial year. The focus of the budget is on creation of new electricity infrastructure assets with an allocation of 69% while replacement/renewal and upgrade of electricity infrastructure is budgeted as 3% and 2% respectively. Making reference to Table 5.2 the amount of actual capital spend was R24 million indicating that there is not enough capital funding available to fund the budgets. Alternative sources of funds must be considered to fund the needs for the Business Unit • KDM achieved a current ratio of 2.29 in 2017/2018 as depicted in Table 6.3, this ratio is beyond the norm of 1.5-2.1 indicating that the Municipality is able to pay its current liabilities as and when they become due.
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Figure 6.1: Electricity debtor aging

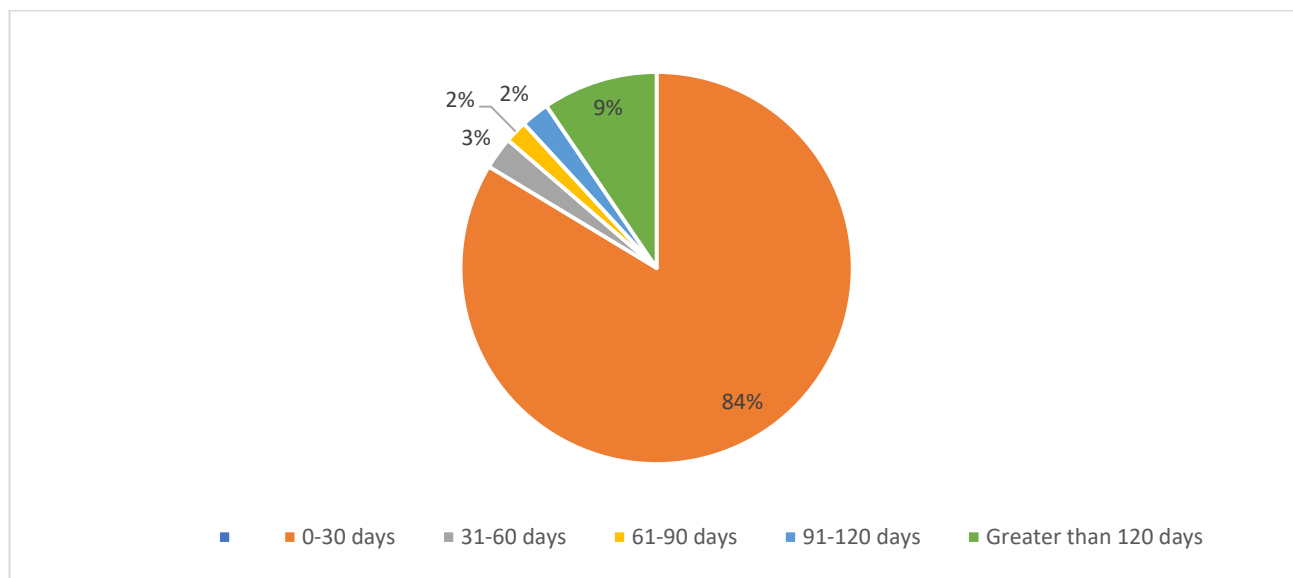


Table 6.4: Total consumer debtors and Electricity debtors trends

R'000	2018	2017	2016	2015
Electricity debtors	97,622	90,728	82,299	56,894
% increase	8%	10%	45%	
Total consumer debtors	138,709	129,980	118,174	89,269
% increase	7%	10%	32%	
% Electricity debtors to total debtors	70%	70%	70%	64%

Table 6.5: Excess Cash on hand

	2015/16	2016/17	2017/18
Cash and cash equivalents	452 173	270 209	403 908
Unspent conditional grants	(19 919)	(47 200)	(52 324)
Excess cash on hand after grants are paid back	432 254	223 010	351 584

3	Municipal affordability	<ul style="list-style-type: none"> The Electricity Department is funded internally from service charges to consumers and from the electrical grant. Table 5.2 depicts that the department generated profits, however, the collectability of the revenue should be highly considered as expenditure in this department is financed internally. The electricity debtors make up 70% of the total municipality debtors indicating that the consumers have difficulty mainly in paying for the electricity.
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		<ul style="list-style-type: none"> • The electricity debtors significantly increased by 8% in 2017/18 to R 97 million compared to prior year debtors of R 91 million. The total KwaDukuza consumer debtors amounted to R 139 million in 2017/18 resulting from an increase of 7% compared to the prior year. The electricity debtors have been increasing substantially as depicted in Table 5.4 depicting the relaxation of revenue collection policy by the municipality, on the contrary the municipality is exercising a stricter policy on total consumer debtors of which the debtors balance has been declining for the past 3 years as per Table 5.4. • The aging of the debtors as per Figure 5.1 shows that 84% of the consumers accounts are owing for 30 days and only 9% of electricity debtors are in the greater than 120 days period. This depicts an effective collection policy on electricity consumption. This trend must continue with payments being made in 30 days. • 71% of the current assets of KDM are made up of the cash and cash equivalents and short-term investments as per Table 5.5. This indicates a stronger liquidity position for KDM as these can be easily converted into cash to enable the Municipality to meet its financial obligations. • If the unspent conditional grants are paid back to the sources, the municipality will still have excess cash on hand which could be used to finance the expenditure in the department. An excess cash amount of R 351 million was on hand for 2017/18 FY (see Table 5.5). • Total capital grants allocation for the MTREF period 2017/18 FY amounted to R 658 million, this makes up approximately 43% of the total revenue generated by the municipality while 67% of the revenue was generated from exchange transactions, this revenue mix is significantly high and indicates that the municipality is not entirely dependent on grants. Therefore, there is sufficient internal funding that could be utilised for the department expenditure
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4	Funding strategy	<p>KDM has a total capital budget of R240 Million over the 3-year MTREF, equivalent to R80 million per annum. The budget allocation is more focused on the new assets with allocations on average 95%. Due to the realities of a large part of the portfolio being in very poor state and requiring renewal, as well as budget limitations as per the life cycle plan, the spending needs to be prioritised towards renewal capital in the Business Unit.</p> <p>The budget in 2018/19 allocated to renewal capital cost is R7 million (2019/20: 3 million) whilst the capital needs as per lifecycle plan of R33 million is required per annum to maintain the current portfolio, indicating a need for reallocation of budget and prioritisation</p> <p>The total capital needed for each year from lifecycle cash flow is R67.8 million per annum over 10 years needed to ensure that the growth, renewal ,access and technical electrification backlog challenges are addressed.</p> <p>The operational expenditure consists mainly of bulk purchases and are funded internally from service charges to customers. Current operational expenditure needs are set at R732 per annum on the lifecycle which is beyond the current bulk purchases from Eskom of R590 million. Spending should be prioritised in order to maintain the operational budget-while focusing on the backlogs.</p>
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		<p>The municipality needs to maintain its revenue collection strategy which has improved collection rates on electricity debtors and increased revenue from tariffs.</p> <p>KDM needs to consider other sources of funding in order to fulfil its objective of sustainably providing services. Currently the historic budget is not sufficient to facilitate spending on service for the access backlog while still maintaining the state of the portfolio as per the adjusted lifecycle plan needs.</p>
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5	Chapter confidence	<ul style="list-style-type: none"> • In general data reliability is moderate, although effort has been spent validating the accuracy of the information, much of this information has been gained from multiple sources with different grades of confidence and has not been independently verified. • The IDP, budgets and financial statements were the primary planning documents referenced in this chapter.
6	Chapter summary	<ul style="list-style-type: none"> • KwaDukuza Municipality aims at providing reliable services while being viable and sustainable. • Overall the Business Unit has less budget than the projected needs - as such spending should be prioritised on renewal and maintaining the operational budget. • KDM is funded through internally generated funds (i.e. services charges). The ratios indicated that the municipality is able to generate funds internally and is not entirely dependent on the grants, as the grants only account for 43% of the total revenue generated by the municipality. A mix of funding sources should be utilised to finance capital expenditure. <p>The majority of consumers accounts are owing for 30 days indicating the efficiency of collection in electricity accounts. The municipality needs to maintain the collection strategy.</p>

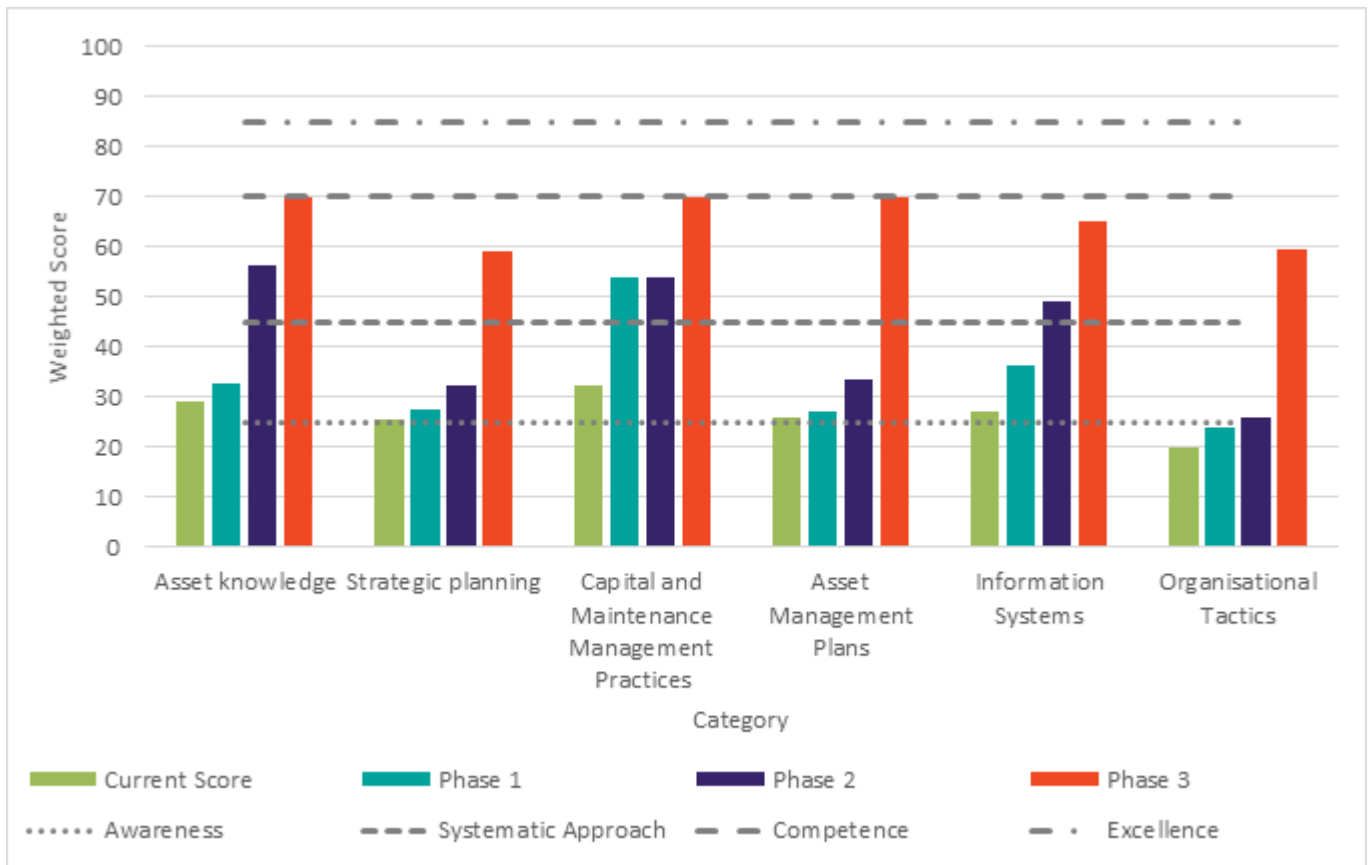
7 ASSET MANAGEMENT PRACTICES

An overview of existing asset management practice, improvement needs, priorities and proposed response plan.

1	Asset management practice context	<p>A relatively low level of asset management practice maturity, especially in the field of physical asset management, exists in many local municipalities (although it is steadily improving). The problem is added to by tight budgets and skills challenges; strong leadership (and leadership support) is vital to affect any AM practices improvements.</p> <p>KDM is a category B municipality and is coming off a low asset management practices base, however it has demonstrated its commitment to improving its practices by participating in the implementation of the Vuthela-Ilembe LED project.</p>
2	Ongoing practice improvement activities	<p>KDM as part of a local development programme has undergone a practices assessment and will look to implementing an improvement plan from the outcomes of the assessment. The aim is to target a level of competence across all the practices categories.</p>
3	Current AM performance	<p>Currently the municipality has a level of practice of ‘awareness’ in three of the six practices categories (strategic planning, AM Plans, and organisational tactics). In the remaining categories (asset knowledge; information systems; and capital and maintenance management practices) the municipality was assessed to have practices at a weighted average between “aware” and having a “systematic approach”. For full details see the practices assessment report. A summary of the current AM assessment results is shown in Figure 7.1.</p> <p>Some of the KDM data practices approach a ‘systematic approach’ rating; subcategories:</p> <ul style="list-style-type: none"> • asset categorisation, • condition data and • financial data <p>The ‘Risk management strategy’ practice was the highest score from the planning approach section – but still only scores at an ‘awareness’ level. Overall the existing asset management planning practice had a low score, but the Asset Register System scored almost at a systematic approach level in the information system category). AM performance is particularly affected by inadequate staffing.</p>
4	Priority improvement needs	<p>The following priority improvement areas were identified and proposed to be included in an improvement plan phased over three years:</p> <ul style="list-style-type: none"> • Enhancing the maintenance management process – this will directly benefit community members (year 1). • Enhancing the asset register – allows for cross-departmental integration as well as more easily mapping operational activities to strategic objectives (year 2). • Enhancement of the management processes associated with projects – including a review of this preliminary AMP to include improved data (year 3). • Figure 7.1 shows the impact of the phased improvement approach on the different practice categories.

		<p>This phased approach is set out in the practices improvement plan and is estimated at a total of R 24.5 million to implement (including VAT, disbursements, software and service provision), to be shared across all the departments in the municipality, and Mandeni LM and Ilembe DM. The work breakdown structure of the improvement plan is detailed in Annexure D along with the associated cost estimates. In order to implement such improvements KDM will need to seek funding from donors, there is potential to extend the Vuthela-Ilembe LED project to assist with these improvements.</p>
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Figure 7.1: Overview of practice assessment results and impact of phased improvement plan



5	Chapter confidence	The confidence in the practice assessment is a 75% accuracy with some areas of estimation.
6	Chapter summary	<p>KDM currently has a practices level of ‘awareness’ for most of the categories of assessment with some small areas approaching a ‘systematic approach’.</p> <p>The proposed improvement plan prioritizes an improvement of the maintenance management process followed by an enhancement of the asset register and finally improving the management processes associated with projects; all of which to be implemented over a 3-year period (at an estimated cost of R 24.5 million for all departments and at three municipalities).</p>

8 RISK MANAGEMENT PLAN

The Business Unit's risk management objectives, summary of the key risks identified through-out the plan and the proposed mitigation and control measures.

1	Risk management objectives	<p>KwaDukuza has a risk register which summarizes its top 20 risks. The different Business Unit risks are predominantly operational as opposed to physical asset risks. The risk register includes:</p> <ul style="list-style-type: none"> • A description of the risk, • The root cause, • Description of consequences, • Inherent rating, current controls and resulting residual risk rating, • The future action plan and due date, and • The action owner.
2	Historic risk management performance	<ul style="list-style-type: none"> • Currently the municipality has an overall risk register, which compiles risks from all the sectors. • The register assigns an action owner for future plans and a due date. • The register also notes current mitigation effect on the inherent risk rating. • One area for improvement is improving the monitoring and reporting of infrastructure risks. • KDM also has a risk implementation plan to ensure integration of enterprise risk management processes across the municipality. • Specifically, the municipality needs to define its risk framework and document acceptable levels of risk to ensure the risks can be properly managed.
3	Key risks	<p>Key risks relating to the Electrical Engineering Services Business Unit that are included in the register:</p> <ul style="list-style-type: none"> • The inability to perform preventative and routine maintenance of infrastructure and street lights leading to loss of revenue, high amounts of overtime and staff fatigue. • Inadequate bulk supply points due to high growth in KDM • Non-compliance with MFMA in terms of irregular expenditure – leading to non-recovery of some expenditure and impacting on additional funding. Due to poor procurement planning in some departments. • Liquidity risk, due to an aggressive capital budget leading to financial loss as operating budgets exceed revenue growth over past 5 years. • The municipality has an inability to manage illegal developments, due to rapid urbanisation, inadequate monitoring and inspection capacity leading to haphazard and uncontrolled development, community unrest and loss of revenue. • Failure to implement credible performance monitoring and evaluation is the final applicable risk which impacts service delivery, compliance and municipal performance. Caused by a lack of synchronisation between the performance monitoring evaluation office and heads of

		<p>business units as well as lack of compliance on performance reporting procedure.</p> <p>Additional risks highlighted in other Business Unit documents but not on the risk register:</p> <ul style="list-style-type: none"> • Exorbitant pressure on staff who cannot cope with increasing demand • Ageing infrastructure • Revenue loss due to off grid solutions, infrastructure theft and illegal connections. Losses are too high within the LM • Increase in debtors due to increasing electricity tariffs
4	Key risk mitigation tactics	<p>The risk of current assets in very poor condition should be mitigated with spending on renewals as scheduled in the lifecycle plan.</p> <p>The mitigation of risks are indicated in the risk register as follows:</p> <ul style="list-style-type: none"> • Develop and implement maintenance plan • Monthly Reporting to COGTA and Council, Payments Compliance Checklist and SCM Compliance Checklist. • Liquidity controls are limited to reporting. • Building regulations, approved land use policy, legal action and inspection reports are all in place to mitigate illegal development. • Performance Audit Committee, Performance Management System Policy and performance agreements. • Secure land and funding for Dukuza substation • Design and build Dukuza substation which is budgeted for in the MTREF • The risk of loss of revenue will be addressed to the establishment of revenue protection unit within KDM.
5	Chapter confidence	<p>The risk chapter is informed predominantly from the risk register (2017/18), the input is compiled from various sectors and additional Business Unit specific information was used to highlight risks that are not currently on the register. The confidence in the information in the chapter is 90% - with some minor inaccuracies.</p>
6	Chapter summary	<p>Key aspects to note:</p> <ul style="list-style-type: none"> • The municipality has a risk register in place although it doesn't have a lot of detail on infrastructure risks – it also has a risk implementation plan. • Key risks for the Business Unit include lack of preventative maintenance, liquidity controls, lack of human resources and revenue loss through illegal connections. • A number of mitigation controls are already in place and additional ones have been suggested. • A key risk is the need to address the significant condition backlog in infrastructure to prevent impact on service delivery standards.

9 PERFORMANCE PLAN

The Business Unit's asset management performance objectives and forecast.

1	Performance objectives	<p>The municipality's performance is measured through key performance indicators (KPIs) per municipal key performance area (KPA). The relevant universal access to basic service delivery KPA deals with access to basic electricity, reliability of electricity delivery and reduced electricity losses.</p> <p>Overall KDM met 4% less of their targets from 2016/17 to 2017/18, both of which were lower than the preceding year. Although the % of budget spent has increased steadily in the same period and basic service delivery is one key performance area where the municipality met a high % of its target (34% in 2017 and 55% in 2018).</p> <p>Currently the electricity KPI targets are not being met sufficiently - with approximately 5% of the households within KDM not having access to basic electricity services. A bulk network upgrade technical backlog also exists currently. A large portion (about 32%) of the Electrical Engineering Services Business Unit asset portfolio is in a very poor condition which poses a significant risk to service standards being maintained.</p>
2	Historic performance	<p>The municipality develops an Organizational Performance Systems (OPMS) framework and reviews performance policy procedure manual on an annual basis. It also develops and adopts a Service Delivery and Budget Implementation Plan (SDBIP) each financial year in line with legislative requirements.</p>
3	Chapter confidence	<p>The performance plan chapter is informed predominantly through the SDBIP – and as such is considered representative. A 90% confidence is given as the chapter is a summary of performance in the Business Unit to date.</p>
4	Chapter summary	<p>The Electrical Engineering Services Business Unit has increased the number of households with access to service in previous years, however they are measuring against an estimated number of households which most likely doesn't account for many informal households amongst others.</p> <p>The Business Unit has not met all of its objectives with many projects rolling over into the 2018-19 financial year.</p>

ANNEXURE: BUDGET BREAKDOWN OF PROJECTION

Detail to support the plan including a breakdown of forecasted expenditure and performance.

Projects and Programmes Years 1-5																	
Project/Programmes reference				Fund Segment		Projects segment					Function segment		Cash flow R'000				
Program me (IDP/MT REF)	Project name	Proj ect num ber	Ward alloca tion	mSCO A(2)	mSCOA(3)	CAPEX/ OPEX	mSCOA(2)	New/Existin g/Land (mSCOA (3))	Expenditure type (mSCOA (4))	Asset Class (mSCOA (5))	Function/Dep artment	Core function/ Non-core Function	2019	2020	2021	2022	2023
Adjust MTREF	Renewal of Infrastructure	001	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	Existing	Renewal	Electrical Infrastructure	Energy Sources	Core Function	35,000	35,000	35,000	35,000	35,000
MTREF	Operational expenditure	002	All	Revenue	General Revenue	Operational	Infrastructure	Existing	Upgrading	Electrical Infrastructure	Energy Sources	Core Function	737,032	742,139	747,247	752,354	757,462
Planned	Maintenance expenditure	003	All	Revenue	Sales of Goods and Rendering of Services	Operational	Maintenance	Infrastructure	Corrective Maintenance		Energy Sources	Core Function	29,743	29,991	30,238	30,486	30,733
Planned	Capital for growth	004	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	New	Electrical Infrastructure		Energy Sources	Core Function	8,000	8,000	3,000	3,000	3,000
Planned	Capital access backlog	005	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	New	Electrical Infrastructure		Energy Sources	Core Function	12,000	12,000	5,000	5,000	5,000
Planned	Capital technical backlog	006	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	Existing	Renewal	Electrical Infrastructure	Energy Sources	Core Function	50,000	50,000	15,000	-	-
													871,775	877,130	835,485	825,840	831,195

Project/Programmes reference				Fund Segment		Projects segment					Function segment		Cash flow R'000				
Program me (IDP/MT REF)	Project name	Project number	Ward allocation	mSCOA(2)	mSCOA(3)	CAPEX/OPEX	mSCOA(2)	New/Existing/Land (mSCOA (3))	Expenditure type (mSCOA (4))	Asset Class (mSCOA (5))	Function/Department	Core function /Non-core Function	2024	2025	2026	2027	2028
Adjust MTREF	Renewal of Infrastructure	001	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	Existing	Renewal	Electrical Infrastructure	Energy Sources	Core Function	25,000	25,000	20,000	20,000	15,000
MTREF	Operational expenditure	002	All	Revenue	General Revenue	Operational	Infrastructure	Existing	Upgrading	Electrical Infrastructure	Energy Sources	Core Function	762,570	767,677	772,785	777,892	783,000
Planned	Maintenance expenditure	003	All	Revenue	Sales of Goods and Rendering of Services	Operational	Maintenance	Infrastructure	Corrective Maintenance		Energy Sources	Core Function	30,981	31,228	31,475	31,723	31,970
Planned	Capital for growth	004	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	New	Electrical Infrastructure		Energy Sources	Core Function	2,000	2,000	2,000	1,000	1,000
Planned	Capital access backlog	005	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	New	Electrical Infrastructure		Energy Sources	Core Function	5,000	5,000	5,000	5,000	5,000
Planned	Capital technical backlog	006	All	Revenue	Sales of Goods and Rendering of Services	Capital	Infrastructure	Existing	Renewal	Electrical Infrastructure	Energy Sources	Core Function	-	-	-	-	-
													825,551	830,905	831,260	835,615	835,970

ANNEXURE: GLOSSARY OF TERMS

Detailed definitions of specific asset management terminology used in the document

GLOSSARY OF TERMS:

Asset	A physical component of a facility which has value, enables services to be provided and has an economic life of greater than 12 months.
Asset management (LGIAMG)	The process of decision-making, planning and control over the acquisition, use, safeguarding and disposal of assets to maximise their service delivery potential and benefits, and to minimise their related risks and costs over their entire life.
Asset management objectives (IIMM)	Specific outcomes required from the implementation of the asset management system.
Asset management plan	A documented plan developed for the management of a portfolio of assets that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service.
Asset management policy (PAS 55-1: 2004 BSI)	The overall intentions and direction of an organisation related to the assets and the framework for the control of asset-related processes and activities.
Asset management practices (IIMM)	The asset management processes and techniques that an entity undertakes, such as demand forecasting, developing and monitoring levels of service and risk management.
Asset management strategy (IIMM)	The high-level long-term approach to asset management including asset management action plans and objectives for managing the assets.
Asset management system (ISO 55000)	A management system whose function is to establish the asset management policy and objectives, as well as processes and organisational arrangements inclusive of structure, roles and responsibilities to achieve asset management objectives.

Asset register (LGIAMG)	A record of asset information considered worthy of separate identification for both asset accounting and strategic management purposes including inventory, historical, condition and construction, technical and financial information about each. The unit of account in an asset register is a component.
Capacity (IIMM)	Maximum output that can be produced or delivered using existing network or infrastructure.
Capital expenditure (CAPEX)	Expenditure used to create new assets, increase the capacity of existing assets beyond their original design capacity or service potential, or to return the service potential of the asset or expected useful life of the asset to that which it had originally. CAPEX increases the value of an asset.
Carrying amount	The amount at which an asset is recognised after deducting any accumulated depreciation and accumulated impairment losses.
Cash flow	The stream of costs and / or benefits over time resulting from a project investment or ownership of an asset.
Competence (ISO 55000)	The ability to apply knowledge and skills to achieve intended results.
Component (IIMM)	A component is a specific part of a complex item that has independent physical or functional identity and specific attributes such as different life expectancy, maintenance and renewal requirements and regimes, risk or criticality. Which is recognised separately on an asset register.
Condition (IIMM)	The physical state of the asset.
Critical assets (IIMM)	Those assets that are likely to result in a more significant financial, environmental and social cost in terms of impact on organizational objectives and service delivery.
Current replacement cost (IIMM)	The cost the entity would incur to acquire the asset on the reporting date.
Decommissioning (IIMM)	Actions required to take an asset out of service.
Demand management	The active intervention in the market to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management is based on the notion that as needs are satisfied expectations rise automatically and almost every action taken to satisfy demand will stimulate further demand.

Depreciable amount (GRAP)	The cost of an asset, or other amount substituted for cost, less its residual value.
Depreciated replacement cost (IIMM)	The replacement cost of an asset less accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired economic benefits of the asset.
Depreciation (GRAP)	Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.
Disposal (IIMM)	Actions necessary to decommission and dispose of assets that are no longer required.
Expected useful life	The extent of life of an asset over which it can be expected to meet the required performance given its operational environment (including parameters such as climate, soil conditions, topography, utilisation, and operations and maintenance regime), and over which it will be productively used.
Facility (IIMM)	A complex comprising many assets (e.g. a hospital, water treatment plant, recreation complex, etc.) which represents a single management unit for financial, operational, maintenance or other purposes.
Integrated Development Plan	A five-year plan which local government is required to compile to determine the development needs of the city. The projects within the IDP is also linked to the city's budget.
Impairment loss (GRAP)	An impairment loss of a cash-generating asset is the amount by which the carrying amount of an asset exceeds its recoverable amount.
Infrastructure assets (LGIAMG)	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components.
Level of service (IIMM)	Levels of service statements describe the outputs or objectives an organisation or activity intends to deliver to customers.
Lifecycle (IIMM)	The time interval that commences with the identification of the need for an asset and terminates with the decommissioning of the asset or any liabilities thereafter.
Lifecycle asset management	All asset management strategies and practices associated with an asset or group of assets that results in the lowest lifecycle cost necessary to achieve stated service requirements within acceptable risk parameters.
Lifecycle cost (IIMM)	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, renewal and disposal costs.

Maintenance	All actions, planned and unplanned, intended to ensure that an asset performs a required function to a specific performance standard(s) over its expected useful life by keeping it in as near as practicable to its original condition, including regular recurring activities to keep the asset operating, but specifically excluding renewal. Note: Maintenance also specifically excludes restoring the condition or performance of an asset following a recognised impairment event, which would be classified as either renewal or upgrading, depending on the circumstances.
Maintenance expenditure	Recurrent expenditure as required to ensure that the asset achieves its intended useful life. Maintenance is funded through the organisation's operating budget, and such expenditure is expensed in the organisation's statement of financial performance.
Maintenance plan (LGIAMG)	Describes the planned and unplanned maintenance actions for an asset, facility or portfolio of assets, with intended delivery methods and schedules, budget requirements and responsible parties.
Modern equivalent asset (IIMM)	The most cost-efficient asset currently available that will provide equivalent functionality to the asset that will be replaced (or are currently being valued using the DRC methodology).
Monitoring (ISO 55000)	Determining the status of a system, a process or an activity.
Operating expenditure (OPEX)	Expenditure necessary to provide services such as water purchases and water distribution including costs related to staff costs, administration costs, consumables, maintenance and repairs and feasibility studies.
Operation	The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials. Operation costs are part of the lifecycle costs of an asset.
Performance (ISO 55 000)	Measurable result of either quantitative or qualitative nature that can relate to the management of activities, processes, products or services, systems or organisations.
Performance measure (IIMM)	A qualitative or quantitative measure used to measure actual performance against a standard or other target. Performance measures are used to indicate how the organisation is doing in relation to delivering levels of service.
Performance monitoring (LGIAMG)	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards
Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally, involves repairing the asset using available techniques and standards to deliver its original level of service (e.g. relining bulk raw water pipelines) without resorting to significant upgrading or replacement.

Renewal	Expenditure on an existing asset which returns the service potential of the asset or expected useful life of the asset to that which it had originally. Note 1: Renewal can include works to replace existing assets or facilities with assets or facilities of equivalent capacity or performance capability. Note 2: Expenditure on renewals is funded through the organisation's capital budget, and such expenditure is recognised in the organisation's statement of financial position.
Repair	Action to restore an item to its previous condition after failure or damage.
Replacement	The complete replacement of an asset that has reached the end of its life, to provide a similar, or agreed alternative, level of service.
Remaining useful life (IIMM)	The time remaining until an asset ceases to provide the required service level or economic usefulness.
Residual value (GRAP)	It is the estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset was already of the age and in the condition expected at the end of its useful life.
Revenue	An increase in economic benefits during an accounting period through an enhancement of an asset or through a decrease in a liability.
Risk (IIMM)	The effect of uncertainty on objectives. Risk events are events which may compromise the delivery of the entity's strategic objectives.
Risk controls (IIMM)	Measures to manage or mitigate identified risks.
Risk exposure (IIMM)	The level of risk to which an entity is exposed to. Risk exposure is a function of the probability of an occurrence times the impact of that occurrence.
Risk management (IIMM)	The application of a formal process that identifies the exposure of an entity to service performance risk and determines appropriate responses.
Strategic plan	Strategic planning involves making decisions about the long-term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation and identify major targets, actions and resource allocations relating to the long-term survival, value and growth of the organisation.
Upgrading	Enhances the service potential of the asset or the economic benefits that can be obtained from use of the asset and may also increase the life of the asset beyond that initially expected.

Some definitions obtained from CIDMS online knowledge centre.