

DELIVERABLE 3:

STRATEGY DOCUMENT – KWADUKUZA LOCAL
MUNICIPALITY (KDM)

**Project Title: Development of Non-Revenue Electricity
Management Strategies and Programmes for KwaDukuza &
Mandeni Municipalities**

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Acronyms and Abbreviations

ABBREVIATION	DESCRIPTION
AMIS	Asset Management Information System
AMR	Automatic Meter Reading
BI	Business Intelligence
CRM	Customer Relationship Management
CT	Current Transformer
DBSA	Development Bank of Southern Africa
DMRE	Department of Minerals & Energy
DWH	Data Warehousing
EMP	Electricity Master Plan
FY	Financial Year
FAR	Fixed Asset Register
GIS	Geographic Information System
GPS	Global Positioning System
HEU	High End User
HUC	High Use Customers
HV	High Voltage
ICT	Information and Communication Technology
IDM	iLembe District Municipality
IDP	Integrated Development Plan
IT	Information Technology
KDM	KwaDukuza Local Municipality
kVA	Kilo Volt-Ampere
kWh	kilowatt-hour
LPU	Large Power User
LV	Low Voltage
MMS	Meter Management System
MLM	Mandeni Local Municipality
MIS	Management Information System
MRC	Meter Reading Contractor
mSCOA	Municipal Standard Chart of Accounts
MTSF	Medium Term Strategic Framework
MV	Medium Voltage
MW	Mega Watts

NT	National Treasury
NTL	Non-Technical Losses
NRE	Non-revenue electricity
NRS	National Regulatory Services
PCU	Vuthela Programme Coordinating Unit
PFM	Public Finance Management
PILC	Paper insulated lead covered
POD	Point of Delivery
POS	Point of Supply
PSP	Professional Service Provider
RMSP	Remote Meter Service Provider
SCADA	Supervisory Control and Data Acquisition
SDF	Spatial Development Framework
SLD	Single Line Diagram
SPU	Small Power User
STS	Standard Transfer Specification
TAR	Technical Asset Register
TID	Token Identifier
TL	Technical Losses
ToR	Terms of Reference
TOU	Time of Use
VT	Voltage Transformer
WBG	World Bank Group

1 EXECUTIVE OVERVIEW

This document is the third deliverable of the Vuthela iLembe LED Programme's Development of Non-Revenue Electricity Management Strategies and Programmes for the KwaDukuza and Mandeni Local Municipalities. The deliverables are listed below:

- Deliverable one: Inception report
- Deliverable two: Status Quo report
- Deliverable three: Strategy report.

This deliverable requires two Strategy documents to be provided, one each for KwaDukuza and Mandeni Local Municipalities.

This Strategy Document is for the KwaDukuza Local Municipality (KDM).

The report entails the formulation of Specific Technical, Financial, Institutional, and Social Interventions and Initiatives (Projects / Systems) into Strategies to:

- Curtail energy losses
- Reduce non-revenue electricity
- And improve performance of the electricity service in the municipality.

The document is structured as follows:

- Terms of Reference (ToR) for this deliverable
- Summary of findings of Status Quo Report
- Existing Strategy document(s) / Other Strategy Reference Documents
- Technical Strategies (for reduction of real losses)
- Financial Strategies (for addressing and reducing commercial losses)
- Institutional Interventions
- Social Interventions & Initiatives

2 TERMS OF REFERENCE

The ToR for this deliverable – Strategies Development reads as follows:

“...the consultant will be expected to provide a clear indication of the:

- I. Prioritization of the interventions and initiatives within the context of a sustainable programme to reduce the electricity losses and curb non-revenue electricity - after due consideration of potential impact, identification of “quick wins”, availability of funding, and the technical capacity of each municipality. The consultant will be expected to recommend the most viable intervention, based on highest likely impact towards reduction of NRE in the respective municipalities. This intervention will be developed into a pilot project that will be implemented as part of the Vuthela programme.
- II. Provide a basic, high-level scope of work for each specific intervention and initiative, roles, and responsibilities within each municipality regarding technical, financial, social, institutional, and social work components.
- III. Estimate of required resources (human, skills, financial, etc.) for the implementation of each strategy or initiative to reduce the electricity losses and curb non-revenue electricity.
- IV. Funding options available to each municipality for the implementation of the specific interventions or initiatives in the strategies for reduction of the non-revenue electricity.
- V. Provisional SMART (Specific, Measurable, Achievable, Realistic, Timely) implementation schedules (short-, medium- and long-term timelines) for the specific interventions or initiatives, taking into consideration municipal resources (technical, financial, human); this will form the basis of the programme component of the assignment.
- VI. Risks and risk mitigation measures regarding the implementation of the identified interventions or initiatives included in the strategies.
- VII. Innovative procurement and implementation options for the effective and efficient delivery of the specific interventions or initiatives.
- VIII. Recommendations for the sustainability, institutionalization, and mainstreaming of the specific interventions and initiatives as an on-going programme within the municipality vis-à-vis the required technical, financial, and institutional resources.

The overall project aims to propose interventions presented in the strategies to reduce revenue losses. The KDM and MLM can then introduce mechanisms for implementation through their procurement system. Consultation and communication with all stakeholders involved in the provision of electricity in the two municipalities is anticipated.

The PSC will ensure that these channels of communication are kept open, and the service provider will be expected to present the proposed strategies to the project steering committee.

Thereafter, the report, detailing at the proposed strategies documents with the proposed interventions will be submitted in draft form for comment and finalisation.

3 STATUS QUO REPORT – FINDINGS SUMMARY

The Status Quo report was the second deliverable on the project. It consisted of the compilation of a comprehensive report of the current situation of several aspects, grouped under four main categories:

- Key Network Installations
- Technical Losses
- Non-Technical Losses
- Community / End-user campaigns & Communication.

The final Status Quo report was submitted on 29 June 2022.

Below follows a summary of the aspects assessed and related findings.

3.1 Existing Infrastructure Assessment

3.1.1 Key Network Installations

- No regular revision of single line diagrams and GIS data sets
- Need for development of additional data sets for:
 - Spatial layer for LV kiosks
 - Spatial layer for electricity meters (prepaid & conventional)
 - Spatial layer for customer network link

3.1.2 General Infrastructure Assessment

- Aged infrastructure with need for ongoing preventative maintenance
- Refurbishment needs at some substations
- Need for replacement of some aged switchgear as well as oil switchgear
- Need for refurbishment of certain aged switching substations
- Oil type switchgear requiring replacement
- Ongoing KDM MV upgrade projects in place

3.1.3 General Assessment of Metering & Meter Reading for Bulk purchases

- All electricity is purchased from Eskom as the sole service provider for electricity in the country.
- Shakaskraal intake point only one with an additional monthly service charge.
- No check meters to verify accuracy of Eskom billing
- Total losses have grown from 16.4% in 2016 to 21.4% in FY 2021 and showing a constant climbing trend.

3.1.4 General Assessment of Metering & Meter Reading for Large Power Users

- 493 LPU customers using an average of 15 372 kWh per month per customer.
- 55 Customers are billed estimates.
- Not all LPU customers on functioning AMR. Only about 137 functioning on AMR. The rest have issues such as communication challenges or meter stolen / tamper issues
- No data verification process / system in place to verify AMR data accuracy before importing into financial system.
- Data inaccuracies in the AMR data and / or financial system, indicating a data deep dive analysis and clean-up to ensure data in the AMR system and the financial system mirrors each other.

3.1.5 Roles & Responsibilities

- KDM is the licensed provider, for its service areas. The electricity department falls within the Electricity Business Unit that is responsible for,
 - Planning, design and installation of electrical infrastructure
 - Approval of all service connections to KDM network assets
 - Comments/Recommendations for approval of SPLUMA and other applications.
 - Purchasing of electricity from Eskom and metering at their consumers.
 - Maintenance of municipality fleet of vehicles, plant and machinery.
- Electricity provision
 - Need for filling vacant positions. Artisans for example
 - Current shortage of staff to conduct preventative maintenance
 - Key branches in the structure identified for development:

- Network Control & Support
- Protection Telecontrol & Metering
- Projects & Assets
- Billing & Revenue
 - Several vacancies in meter reading section as well as credit control, position of credit control manager also indicated as vacant but has been filled.

3.1.6 **Policies, Tariff Setting, Asset Management Planning, and Budgets for Maintenance**

- Bylaws & policies
 - Greater extent of required bylaws & policies is in place, this needs to be reviewed periodically to ensure the bylaws meet current needs.
- Tariff setting
 - Methodology for tariff setting not documented in detail. The current approach is to incrementally increase tariffs on a yearly basis based on a fixed percentage based on NERSA approved increases.
 - Possible disparity between bulk cost of electricity and set tariffs.
 - Need for tariff study and review.
- Asset Management & Planning
 - Relatively low asset management practice maturity
 - IMQS Asset Management Plan (AMP) is high level AMP with aim to steer KDM towards quality asset management planning
 - Need to move from 80% corrective & 20% preventative maintenance to 20% corrective and 80% preventative maintenance.
- Budgets for Operations & Maintenance
 - Budgets of approximately R 30 million per financial year in 2022/23, 2023/24 and 2024/25. Value approximately 3% of total budgeted costs.

3.1.7 **Technical Management Information Systems**

- Systems identified:
 - ESRI ArcGIS for spatial planning & development
 - Munsoft for financial management & billing

- Contour Technology prepaid vending system.
- Pinnaculum AMR system for AMR metering of 137 LPU customers.
- Sage VIP Premier for payroll
- Microsoft: Excel, Projects, Teams etc
- On Key as maintenance management system for electrical assets
 - Not utilized fully
- SCADA:
 - No current functionality in KDM. Process under way to implement at substation level
- Asset Management Information System (AMIS)
 - Solution roadmap presented in separate study, but recommendations not yet implemented.

3.2 Technical losses

- Two studies in recent years:
 - 2019 Master Plan revision
 - Estimated technical losses for Northern & Southern region were at 6% and 8% respectively
 - World Bank study 2021
 - Focused on MV network. LV excluded.
 - 4.92% worst case scenario loss.
 - 4.5% more realistic.

Conclusion that technical losses can be viewed at around 8.5% and used as benchmark for the purpose of current analysis. It is however recommended that detailed analysis is carried out to identify the actual percentage and will form part of the proposed strategies.

3.3 Non-technical losses

3.3.1 Assess completeness & adequacy of metering of electricity - various categories of users

Tariff descriptions used that seemingly does not link back to a tariff structure

- Errors between type of account and tariff type. Commercial and domestic account types for example linked to streetlight tariffs.
- A large number of stands (29681) have no tariff, nor account type description.
- Large need identified for data cleansing

3.3.2 Assess adequacy, efficiency of institutional arrangements for meter installations & readings

- Some SOPs exist, but not for all processes.
- Room for improvement noted for process flow type SOP with “swim lanes” and linked to possible SLA between departments.

3.3.3 Assess adequacy, effectiveness & efficiency of financial systems

- Main financial system (Munsoft) is mSCOA compliant
- Supplementary prepaid system (Contour Technology) STS (Standard Transfer Specification) compliant.
- Supplementary AMR (Automated Meter Reading) system in place.
- No automatic interfacing between systems
- No supporting Data Management system for data verification and mining purposes.

3.3.4 Assess integrity, completeness & accuracy of energy customer data base

- A Vuthela Data cleansing project was undertaken by RUMAS (Revenue & Utility Management Services) and concluded in 2021. Although current ongoing data cleansing efforts were mentioned, no detail was provided.
- Cadastral data indicates 34 438 registered stands.
- Some duplication of 6 stands in cadastral data to be investigated.
- Valuation roll and customer data base have considerably more stands in its records.
- Some stands have incorrect length SG code – should be 21 digits
- Some stands have the same SG code.
- 4409 stands have multiple prepaid meters linked to it.

Anomalies in valuation roll and comparative data from valuation roll and customer data base suggest a further data cleansing exercise.

KDM to also consider a different strategy on multiple meters linked to a specific stand.

3.3.5 Review report on Customer Relations Management System and / or Information Systems

- Reports done in 2020 reviewed in this regard:

- Vuthela CRM technical feasibility report dated 30 June 2020.
- Strategic plan for the iLembe Regional Customer Care centre dated 19 June 2020
- Reports recommend a single platform Customer Care system for whole of iLembe. Our views support this recommendation.

3.3.6 Assess billing & revenue collection re electrical services provision

- Conventional meters
 - Approximately 37% of customers are billed estimates
- Prepaid customers
 - 42% of customers have not purchased electricity in 12 months

3.3.7 Investigate necessity of tariff study and review

A service provider was recently appointed to undertake a tariff study and review. New tariffs are currently being developed along with the cost of supply.

The next step will be process of obtaining approval from NERSA.

3.3.8 Review completed Indigent register study

- A report done in April 2020 titled “Alignment of Indigent policies, Uniform systems and processes for maintaining the indigent register across municipalities” indicated the following:
 - Existing systems & processes has “gaps”
 - Establishment of a centralised repository with following features was recommended:
 - Web and cloud based.
 - Secure
 - Audit trail functionality

3.3.9 Review of Debt management

- Large debtor’s book of approximately R 310m
- 38% older than 365 days
- 55% older than 90 days

- Domestic consumers biggest contributing category
- Data gaps with 68% not linked to any customer type.
- Indicates serious challenges in debtor book management

3.4 Community / End-user Awareness Communication & Campaigns

Community awareness currently on a small scale as part of the IDP roadshows in the form of a one slide presentation within the overall IDP roadshow presentation.

Need identified for much bigger scale ongoing community engagement and awareness intervention on matters such as responsibility to pay for services and the dangers / consequences of electricity tampering / theft.

4 EXISTING STRATEGY DOCUMENT(S) / OTHER REFERENCE DOCUMENTS

In the preparation of this strategy document, the information contained on the PDF document titled “KDM_Strategies to Tackle Energy Losses” dated 2022/06/02 has been used as a guide to ensure alignment with strategies already planned or implemented.

Certain strategies will therefore be an affirmation of strategies contained in this document, and others will be supplementary to the document, with the aim of further strengthening the existing strategy.

In addition, the PDF document titled “Report 2_LRP Project_Final”, being a strategy document on clamping down on energy losses on Mozambique and compiled by Mr Andres Detomasi in May 2020, was also used as possible guidance in recommending appropriate strategies for KDM.

5 STRATEGIES

5.1 Introduction

The strategies presented in this section of the document, are not aimed at addressing all the gaps identified during the status quo process. We aim to provide strategies that will have the highest impact, especially strategies that can target “low hanging” fruit.

We believe the strategies presented here, will have the optimum impact to set the municipality on a path of optimum income from service charges (in this case electricity), which will then allow for funding to be made available for further initiatives to address remaining gaps and / or next level processes / systems to optimize revenue even further from electricity service charges and reduce losses to a world class level (11% as per NERSA).

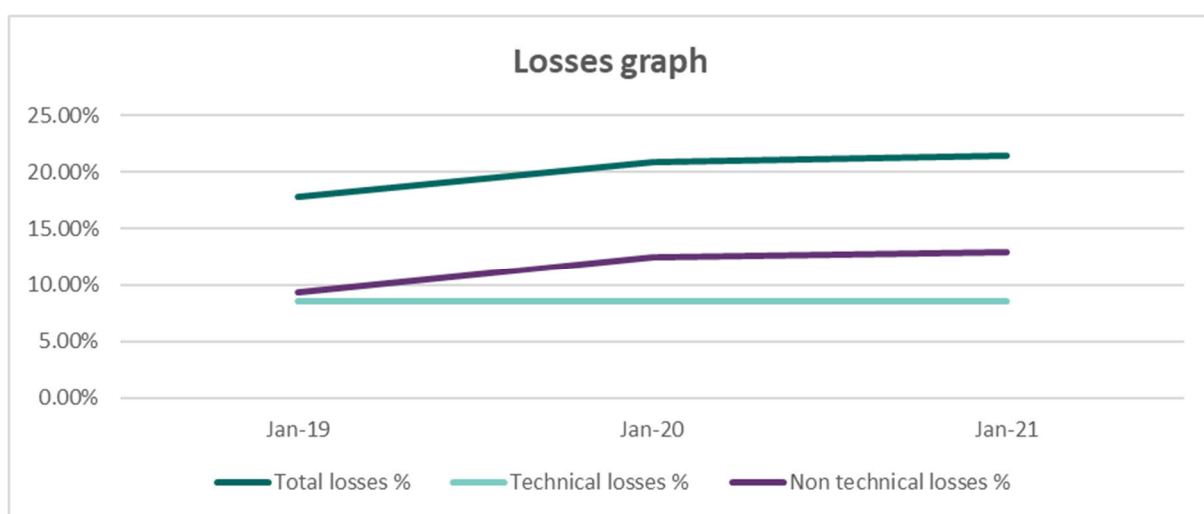
The strategies are also built on the point of view that not much can be done in the short term to reduce technical losses until additional analysis is conducted on the current networks, and that the biggest impact will be on focusing on strategies that will improve non-technical losses. With technical losses currently benchmarked at 8.5% for this analysis, it implies that non-technical losses need to reduce to around 3%, where the latest figure places it at 12.94%. See below table and graph from the Status Quo report based on NERSA D forms information.

NERSA D FORMS SUMMARY	FINANCIAL YEAR ENDING		
	Jul-19	Jul-20	Jul-21

Energy Purchased in kWh	674,809,144	655,647,276	661,912,957
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Energy Sold in kWh	Units	% of Energy bought	Units	% of Energy bought	Units	% of Energy bought
Free basic electricity	8,296,542	1.25%	7,203,742	1.09%	7,623,352	1.15%
Domestic (prepaid)	78,301,215	11.83%	77,923,591	11.77%	80,198,280	12.12%
Domestic (conventional)	124,323,584	18.78%	119,444,205	18.05%	127,231,550	19.22%
Commercial (prepaid)	17,729,029	2.68%	7,912,835	1.20%	8,199,487	1.24%
Commercial (conventional)	333,417,335	50.37%	311,321,719	47.03%	300,944,379	45.47%
Sales to other municipalities	982,001	0.15%	1,747,758	0.26%	3,393,340	0.51%
Total Sales	554,753,164	83.81%	518,350,108	78.31%	519,967,036	78.56%

Total losses in kWh	120,055,980	137,297,168	141,945,921
Total losses %	17.79%	20.94%	21.44%
Technical losses %	8.50%	8.50%	8.50%
Non technical losses %	9.29%	12.44%	12.94%



Successfully implemented strategies will off course have significant impact on potential additional revenue, based on the average annual selling price per unit of electricity. Below table provides and overview of the potential revenue this could have had in the past three financial year if losses were within the benchmark 11%. As previously mentioned, it implies non-technical losses need to reduce to around 3% to achieve this.

NERSA benchmark 11 % total losses	74,229,006	72,121,200	72,810,425
Additional sales	45,826,974	65,175,968	69,135,496
Annual average selling price per unit	R 1.4225	R 1.6279	R 1.6826
Potential additional revenue at benchmark losses	R 65,188,870.74	R 106,099,957.72	R 116,327,385.12

We are also mindful of what we perceive as a general vision to unify systems and processes within iLembe and its member local municipalities and aim to use as a basis for recommended strategies.

5.2 Strategies Overview

This strategy document contains a total of 16 strategies, broken down into:

- 5 x Technical Strategies
- 4 x Financial Strategies
- 6 x Institutional Strategies
- 1 x Social Intervention Strategy

The table below provides a high-level overview of the strategies.

Strategy nr	Description
T1	Eskom POS Metering assurance
T2	Ensure all LPU Customers on AMR
T3	Technical & Non-technical losses separation
T4	Implementation of SCADA System & Control Centre Phases 1-3
T5	Electrification & prepaid metering of informal settlements
F1	LPU customer audits & consumption verification
F2	Bulk metering of stands with multiple prepaid meters
F3	SPU customer metering / vending assurance
F4	Review of credit control processes & activities
I1	Intra- & Interdepartmental Standard Operating Procedures enhancement
I2	Tariff study & review
I3	Implementation of KDM CRM system
I4	Implementation of single platform iLembe Indigent Management System
I5	Implementation of Data Warehousing & Business Intelligence (BI) platforms
I6	Establishment of Revenue Protection Unit
S1	Community Engagement

5.3 Technical Strategies

5.3.1 Strategy T1 – Eskom POS Metering Assurance

5.3.1.1 Strategy Description

Installation of 6 check meters on the 3 Eskom intake points, with the aim of validating Eskom readings, as opposed to sole reliance on Eskom information.

This is an **existing strategy** of KDM with a partially completed status.

- Shakaskraal - completed.
- Stanger – Work in Progress
- Driefontein – Due to potential vandalism at the Driefontein intake point, the check meter will be installed at Ballito & Zimbali substations.

KDM aims to have all check meters installed by the first quarter of the 2022/23 financial year.

5.3.1.2 Strategy Matrix

In line with the ToR, a strategy Matrix is used to indicate the strategy's level of priority from the following requirements: (We indicate our understanding of each priority)

- Impact – Measurement of % reduction in losses - **Low** (0-1%), **Medium** (1-2%), **High** (> 2%)
- Quick win – Ability of the strategy to provide significant impact on loss reduction over a short-term period (12 months) – **High** impact or **Low** impact
- Funding Availability – Has funding been **Budgeted** for, or should funding be **Sourced**?
- Technical Capacity – Does the municipality have the capacity available **In-house**, or should **Outsourcing** be considered

The Priority matrix for this strategy is indicated below

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
T1	Eskom POS Metering assurance	Technical	L	L	B	O

5.3.1.3 High level scope

The high-level scope for the remainder of this strategy is highlighted below.

T1 Eskom POS Metering assurance		
Nr	Scope	Roles & Responsibilities
1	Stanger POS Verify functionality of metering cable from Eskom CT's & VT's Install 2x check meters Install 3x VT, 6x CT's and associated support structures & conductors Download metering data on monthly basis & compare with Eskom billing data	Outsourced to service provider
	Ballito Substation Install 3x VTS's & 3x CT's & supporting overhead equipment Install check meter Download metering data on monthly basis & compare with Eskom billing data	Outsourced to service provider
2	Zimbali Substation Install 3x VTS's & 3x CT's & supporting overhead equipment Install check meter Download metering data on monthly basis & compare with Eskom billing data	Outsourced to service provider

5.3.1.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Typical CT/VT requirements based on number of incoming feeders at the supply point.
- Equipment cost are typical based on current pricing for key equipment, CT, VT and meter.
- The installation costs are based on similar installations done at substations within KDM
- Typical design cost included at 13% of CAPEX.

The table below provides an overview of the associated costs estimate for this strategy.

T1 Eskom POS Metering assurance								R	1,311,000
Contractor / Consultant Costs			Commitment					Total cost	
	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
CT Installation & Commissioning	12	R 6,000	1	0	0	0	0	R 72,000	
VT Installation & Commissioning	9	R 6,000	1	0	0	0	0	R 54,000	
Check Meter Installation & Commissioning	4	R 4,500	1	0	0	0	0	R 18,000	
Supporting Structures & Conductors Installation	1	R 30,000	1	0	0	0	0	R 30,000	
Design Costs	1	R 150,000	1					R 150,000	
TOTAL Contractor Costs								R 324,000	
Equipment & Materials			Commitment					Total cost	
	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
CT	12	R 35,000	12					R 420,000	
VT	9	R 27,000	9					R 243,000	
Check meter & panels	4	R 55,000	4					R 220,000	
Supporting structures & conductors	1	R 104,000	1					R 104,000	
TOTAL Equipment & Materials								R 987,000	

5.3.1.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
T1 Eskom POS Metering assurance																				
Stanger POS																				
Verify functionality of metering cable from Eskom CT's & VT's																				
Install 2x check meters																				
Install 3x VT, 6x CT's and associated support structures & conductors																				
Download metering data on monthly basis & compare with Eskom billing data																				
Ballito Substation																				
Install 3x VTS's & 3x CT's & supporting overhead equipment																				
Install check meter																				
Download metering data on monthly basis & compare with Eskom billing data																				
Zimbali Substation																				
Install 3x VTS's & 3x CT's & supporting overhead equipment																				
Install check meter																				
Download metering data on monthly basis & compare with Eskom billing data																				

5.3.1.6 Risks & Mitigation measures

Nr	T1 Eskom POS Metering assurance		
	Risk	Impact	Mitigation
1	Commercially non-compliant service provider / under performing service provider	Scheduling delays / poor quality workmanship	Ensure strict management of contract against deliverables and address through remedial measures in contract, including if need be, termination of contract.
2	Lack of internal resources to compare check meter info against Eskom data on monthly basis, querying anomalies with Eskom and ensuring corrective measures take place	Fruitless & wasteful expenditure of check metering installations	Ensure appointment of skilled person within planned revenue protection unit. Manage performance against agreed KPI's

5.3.1.7 Procurement & Implementation options

Procurement & implementation is outsourced for this strategy.

5.3.2 Strategy T2 – Ensure all LPU Customers on Automated Meter Reading

5.3.2.1 Strategy Description

The **existing** KDM Energy losses strategy document list errors on metering of the 493 LPU customers as having the biggest impact on losses.

The KDM strategy is to:

- List the 493 customers (our analysis showed 489 customers as some accounts had more than one meter active against it)
- Download Munsoft billing data for 5 years
- Analyse the billing data & compare tariff profiles to Eskom meter downloads.
- Perform physical meter audits.

Our recommendation is a slight deviation from this approach, but with the same end goal in mind.

It is recommended that all LPU customers be moved to functioning Automated Meter reading. Out of all the LPU customers, approximately 137 are on functioning AMR, while another 303 have AMR meters, but are not functioning as AMR due to challenges such communication issues and meters stolen / tampered.

This implies that 303 customers need to get functioning AMR and another 53 require an AMR installation.

Moving all LPU customers to functioning AMR is a necessary step towards metering assurance and data analysis of LPU customers for the purpose of identifying gaps in consumption, compiling back billing reports and back billing customers for the correct consumption.

Financial strategy F1 - LPU customer audits & billing verification will be dependent on this strategy for successful implementation.

5.3.2.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
T2	Ensure all LPU Customers on AMR	Technical	L	L	S	O

Notes: This strategy on its own will not have a significant impact on losses, but is regarded as a necessary step towards enabling the financial strategy where impact is considered to be high as well as a quick win

5.3.2.3 High level scope

Nr	T2 Ensure all LPU Customers on AMR	
	Scope	Roles & Responsibilities
1	Ensure 303 AMR customers have functioning AMR. Replace 53 additional LPU customer's meters with AMR meters	Outsourced to service provider
2	Ensure quality of information uploaded to Munsoft system, including correct meter number, correct install date, correct CT and VT ratios and correct tariff structure.	1- Service provider to provide correct installation data to Electrical department 2- Electrical department to ensure quality insurance on installation and provide Finance department with quality assured data 3- Finance department to ensure uploading of meter info to correct account and correct closing off of old meter.
3	Ensure information in Munsoft system and information in AMR system are mirrored	Finance department

5.3.2.4 Cost Estimation

For the purpose of cost estimations, the following assumptions has been made:

- 53 new AMR installations over the next six months.
- 303 AMR installations to be audited and repaired over the next six months.
- Contractor cost per AMR installation / repair = R 2000
- Cost of AMR meter = R 2500.
- Cost of communication modem = R 1500

Table below provides an overview of the associated costs against assumed rates over the strategy period.

T2 Ensure all LPU Customers on AMR								R	3,540,750	
Contractor Costs			Number	Cost/Item	Annual Quantity					Total cost
					Y1	Y2	Y3	Y4	Y5	
AMR Installation, commissioning & removal of old meter			53	R 2,000	53					R 106,000
AMR audits & repairs of 303 meters			303	R 2,000	303					R 606,000
Web hosting of reading data			493	R 150	493	493	493	493	493	R 369,750
TOTAL Contractor Costs										R 1,081,750

Equipment & Materials			Number	Cost/Item	Annual Quantity					Total cost
					Y1	Y2	Y3	Y4	Y5	
AMR meter			53	R 2,500	53	144	80			R 692,500
Modem			356	R 1,500	356					R 534,000
Data Communication per month			493	R 500	493	493	493	493	493	R 1,232,500
TOTAL Equipment & Materials										R 2,459,000

5.3.2.5 SMART implementation schedules

T2 Ensure all LPU Customers on AMR	Y1	Y2		Y3		Y4		Y5	
	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4			
Ensure 303 AMR customers have functioning AMR.	←								
Replace 53 additional LPU customer's meters with AMR meters	←								
Ensure quality of information uploaded to Munsoft system, including correct meter number, correct install date, correct CT and VT ratios and correct tariff structure.	←								
Ensure information in Munsoft system and information in AMR system are mirrored	←								

5.3.2.6 Risks & Mitigation measures

Nr	T2 Ensure all LPU Customers on AMR		
	Risk	Impact	Mitigation
1	Commercially non-compliant service provider / under performing service provider	Scheduling delays / poor quality workmanship	Ensure strict management of contract against deliverables and address through remedial measures in contract, including if need be, termination of contract.
2	Poor quality data entering Munsoft system	Billing errors to customer due to incorrect tariff etc	Ensure mirroring of information in Munsoft system and AMR system
3	Non-implementation of financial follow up strategy	Reduced high impact on losses and low quick gains	Ensure implementation of financial follow up strategy

5.3.2.7 Procurement & Implementation options

Replacement of non-AMR meters with AMR meters are recommended to be outsourced to a qualifying service provider.

Funding to be sourced from CAPEX or OPEX budgets under maintenance and repairs.

5.3.3 Strategy T3 – Technical & Non-technical losses separation

5.3.3.1 Strategy Description

In order to be able to report on losses, there must be an understanding of the components of losses, and each should be clearly defined. Losses should be classified between technical and non-technical losses with technical losses being electrical losses on the network and non-technical losses being energy consumed but not billed.

There is currently no business process within KDM to determine technical losses, no network models and insufficient metering available to do load flow studies to calculate demand losses. Only overall losses are calculated based on energy balance and 10% of this loss is attributed to technical losses with the remaining losses attributed to non-technical losses.

The proposed strategy for technical losses is to establish a calculation methodology and review of technical losses on an annual basis. An initial cost for consulting services for the definition of the methodology and the modelling of the KDM networks will be incurred. The annual study can be carried out by external consultants which implies an annual expense for the consulting service without further technical or administrative skills needed within KDM. The yearly study will provide an updated figure of the TL level that directly affects the value of NTL. KDM have identified a need to procure simulation software as part of their technical loss strategies and this will be included within the scope. The modelling does not explicitly include all LV networks however sample networks representative of the KDM system must be included in the study and the results extrapolated to obtain a TL figure in the LV system that is not the result of generic rules but is supported by the modelling of the network.

The proposed strategy for non-technical losses is to use statistics from KDM to enable the breakdown of non-technical losses and classification into the main components being,

- Illegal connections
- Meter tamper (fraud)
- Faulty meters and metering errors
- Errors in estimations (unmetered demands, interims, etc.)
- Errors in commercial systems

The statistics required from the main components identified above will be derived from other similar strategies that are covered independently in other strategies and will not be included within the scope of this strategy. The losses separation methodology and annual losses separation will however be included.

5.3.3.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
T3	Technical & Non-technical losses separation	Technical	L	L	B	I/O

This strategy on its own will not have a significant impact on losses but is an enabler project that will provide more detail on the different loss contributors and quantify loss contribution from the different categories.

5.3.3.3 High level scope

Nr	T3 Technical & Non-technical losses separation	
	Scope	Roles & Responsibilities
1	Update SLD of KDM network at HV/MV and MV/LV distribution level	Outsourced to service provider with support from KDM electricity department
2	Procure electrical simulation software	KDM electricity department
3	Build KDM simulation model and establish technical loss methodology and calculation for both demand and energy losses based on the maximum demand, load profiles and load factors – Base. Utilise metering data via control after SCADA phase 1/2/3 projects are implemented and use this to calibrate model. In the interim metering data can be captured directly into spreadsheets custom designed for this purpose at substation and switching substation level.	Outsourced to service provider/KDM electricity department
4	Run network optimisation study to improve network performance, the output of this study will guide the network reconfiguration and strengthening that will support the reduction of technical losses.	Outsourced to service provider
5	Annual Technical Loss & Optimisation Study Update	Outsourced to service provider
6	Develop losses separation methodology	Outsourced to service provider
7	Annual Losses Separation	Outsourced to service provider with support from KDM electricity/finance department

5.3.3.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Consultant hours to update the existing SLD's, R750 per hour at 320 hours
- Consultant hours to build MV model, LV sample networks, calibrate model using metering data and run base TL study, R750 per hour at 600 hours
- Consultant hours to run network optimisation study, R750 per hour at 80 hours
- Consultant hours to run Annual TL & optimisation study, R750 per hour at 300 hours
- Consultant hours to develop losses separation methodology, R750 per hour at 400 hours
- Software cost is based on typical simulation software used by similar utilities with base package, time overcurrent protection and distribution network tools for two users. This pricing also includes yearly maintenance cost of R18000 a year.

T3 Technical & Non-technical losses separation										R	3,374,000
			Annual Quantity								
Contractor/Consultants	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5	Total cost			
Update Single Line Diagrams	1	R 240,000	1					R 240,000			
Build Electrical Model & run TL study	1	R 450,000	1					R 450,000			
Run Optimisation Study	1	R 60,000	1					R 60,000			
Annual TL & Optimisation Study	4	R 225,000		1	1	1	1	R 900,000			
Develop losses separation methodology	1	R 300,000	1					R 300,000			
Annual losses separation	4	R 100,000	1	1	1	1	1	R 500,000			
TOTAL Contractor/Consultants									R	2,450,000	
			Annual Quantity								
Simulation Software	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5	Total cost			
Procure Software incl. training	1	R 534,000	1					R 534,000			
Yearly Maintenance	5	R 78,000	1	1	1	1	1	R 390,000			
TOTAL Equipment									R	924,000	

5.3.3.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
T3 Technical & Non-technical losses separation																				
Update SLD of KDM network at MV distribution level 33/11kV	←→																			
Procure electrical simulation software	←→																			
Build KDM simulation model and establish technical loss methodology and calculation for both demand and energy losses based on the maximum demand, load profiles and load factors – Base. Utilise metering data via control after SCADA phase 1/2/3 projects are implemented and use this to calibrate model. In the interim metering data can be captured directly into spreadsheets custom designed for this purpose at substation and switching substation level.					←→															
Run network optimisation study to improve network performance, the output of this study will guide the network reconfiguration and strengthening that will support the reduction of technical losses.					←→															
Annual Technical Loss & Optimisation Study Update									←→				←→				←→			
Develop losses separation methodology					←→															
Annual Losses Separation									←→				←→				←→			

5.3.3.6 Risks & Mitigation measures

Nr	T3 Technical & Non-technical losses separation		
	Risk	Impact	Mitigation
1	Lack of internal capacity and training to utilise electrical simulation software	Software will not be fully utilised and service provider assessments cannot be reviewed adequately	Proposed Electrical department organogram for 2023-2024 needs to be implemented. Applicable staff trained and maintenance package for software available that offers support.
2	Lack of metering data to conduct TL study	This can result in inaccurate TL estimates	Ensure SCADA project provides the required substation and switching substations statistical metering data back to control that is usable. In the interim capture data periodically at these points and log in spreadsheet environment.
3	Lack of internal capacity and training to capture required statistics to categorise NTL components based on losses separation methodology	Challenge in identifying source of losses resulting in limited success of revenue recovery	Training of staff / Possible outsourcing of service to experienced consultants in the beginning with aim of eventually transferring skills to KDM staff

5.3.3.7 Procurement & Implementation options

The procurement of the electrical simulation software will be budgeted for by KDM which should include training which will be outsourced to a service provider.

The methodologies and studies can be initially developed and carried out by consultants which implies an initial and annual expense without further technical or administrative skills needed within the KDM. Budgeting for these services will be required by KDM.

5.3.4 Strategy T4 – Implementation of SCADA system & Control Centre

5.3.4.1 Strategy Description

This strategy is the implementation of a Supervisory Control and Data Acquisition (SCADA) system to remotely operate, supervise and control the high and medium voltage infrastructure of KDM. This is an existing strategy identified by KDM with phase 1 of this project currently under construction. In terms of NRE this is an enabler project that will provide the required metering data at substation and MV feeder level across KDM required to carry out technical losses studies. In addition to this the metering made available as part of the SCADA project can be used to carry out energy balancing on the network providing visibility on areas of high losses.

Implementation of SCADA system at the following levels,

- SCADA Phase 1 - HV Substation
- SCADA Phase 2 - MV Switching Substations 11kV
- Smart Metering Phase 3 - MV/LV reticulation transformers 11kV/400V. There are around 1400 reticulation transformers installed on the KDM network and will therefore necessitate that this project be further divided into sub phases based on a prioritisation schedule that looks at aspects such as high loss areas and highly loaded areas. A pilot project has been considered in year 5 on completion of the SCADA phase 1 and 2 for 50 transformers.

5.3.4.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
T4	Implementation of SCADA System & Control Centre Phases 1-3	Technical	L	L	B/S	O

The funding availability for this strategy is considered budgeted for phase one of the SCADA project, with a need for additional sourced funding for future phases, two, three etc.

5.3.4.3 High level scope

Nr	T4 Implementation of SCADA System & Control Centre Phases 1-3	
	Scope	Roles & Responsibilities
1	Implementation of SCADA System Phase 1 (HV substations) and control room - Initiated project	Outsourced to service provider
2	Implementation of SCADA System Phase 2 - MV switching substations	Outsourced to service provider
3	Smart Metering Phase 3 - MV/LV Distribution transformers (Pilot Project for 50 reticulation transformers)	Outsourced to service provider

5.3.4.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

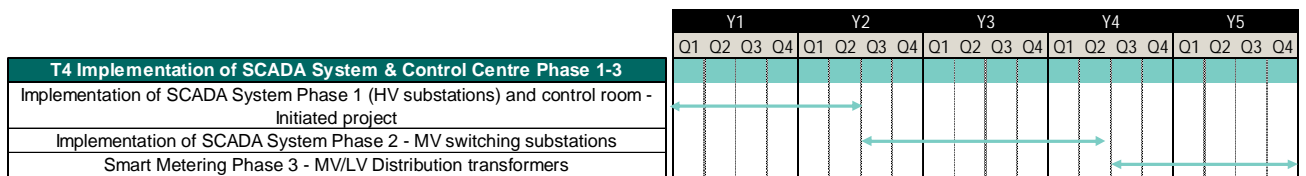
- The current phase 1 project budgets are based on the actual budgeted cost of R21, 897, 591.00
- The switching substation costs were based on similar principles used for the substation phase an estimated to be around R700,000.00 per switching substation. The functional design cost is based on 10% of CAPEX at R70,00.00 per switching substation.
- The smart metering implementation costs were based on similar installations elsewhere at R28,000.000. The total cost for this only includes the pilot project and not the complete metering cost across the network.

T4 Implementation of SCADA System & Control Centre Phases 1-3								R	50,247,591
		Annual Quantity							
Equipment & Materials (Includes Installation)	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5	Total cost	
SCADA Phase 1 - Major substations & Control Centre	1	R 21,897,591		1				R 21,897,591	
SCADA Phase 2 - Switching Substations	35	R 700,000			12	12	11	R 24,500,000	
Phase 3 Smart Metering at Distribution Transformers (Pilot 50 key distribution points)	1405	R 28,000					50	R 1,400,000	
TOTAL Equipment & Materials								R 47,797,591	

		Annual Quantity							
Other Costs	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5	Total cost	
SCADA Phase 2 Functional Design	35	R 70,000		35				R 2,450,000	
TOTAL Other Costs								R 2,450,000	

It can be noted that this strategy has a high CAPEX cost as the key function is SCADA which is a necessity for a utility of this nature. However, outputs that the SCADA project provides enables and supports other key activities required for TL and NTL reduction.

5.3.4.5 SMART implementation schedules



5.3.4.6 Risks & Mitigation measures

Nr	T4 Implementation of SCADA System & Control Centre Phase 1-3		
	Risk	Impact	Mitigation
1	Poor Delivery or implementation of functional requirements by service provider	Reduced functionality in the SCADA system	Ensure that there is strict management of the contract and required functionality and address through remedial measures in the contract
2	Lack of internal capacity and training to operate and manage SCADA system	Failure to implement	Conduct needs analysis for internal operations and ensure required staffing and training has been addressed
3	Large number of electromechanical relays at switching substation level (SCADA phase 2) therefore limitations in relaying required statistical metering data	Existing breakers would need to be hardwired for control and the required MV metering data will not be available	Aged electromechanical relays to be replaced before or during SCADA implementation to ensure MV metering data for all feeders are available
4	Budget constraints as this project has high capital costs	Failure to implement future phases 2 and 3	Explore funding options available such as National Treasury

5.3.4.7 Procurement & Implementation options

SCADA phase 1 is in the implementation phase and has been funded by the EU and disbursed and managed via National Treasury. With respect to the following phases, an experienced service provider will need to be appointed to develop the functional design. These phases of strategy are recommended to be procured through a tender process. Funding needs to be sourced if not available internally through external grants.

5.3.5 Strategy T5 – Electrification & prepaid metering of informal settlements

5.3.5.1 Strategy Description

The electrification and prepaid metering of informal settlements is an already identified strategy by KDM.

One informal settlement has already been electrified as a pilot project, where 255 connections were installed in 2019. This was followed by the installation of a Data Concentrator Unit (DCU) that

monitors 106 of the meters for purchasing patterns. The pilot project ended in July 2021 with the following data findings:

- 1 DCU installed
- 106 meters monitored
- 7 recorded an under-voltage status
- 2 recorded a tamper status
- 17 had a negative credit balance
- 63 recorded zero consumption

Future plans as from the 2023/24 financial year for three years include the electrification and metering of the following two areas.

	Number of connections		
Ward 16 - Nyonyiyanzi extensions	450	500	350
Ward 13 - Lot 14 extensions	350	100	50

Only areas legitimately earmarked for informal settlements are planned to be electrified.

Electrifying and installing meters are one thing. Close monitoring of purchase patterns post commissioning and timeous reaction to possible problems are equally important to prevent the original project from collapsing and contributing to an even bigger losses situation and increased non-revenue energy. There is also the risk of resistance from the community to pay for electricity as this is deemed in certain social economic circles as a basic right and not a service to be paid for.

This strategy will thus benefit from the support of strategy I5 – Implementation of Data Warehousing and Business Intelligence platforms as well as S1 – Community Awareness.

5.3.5.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
T5	Electrification & prepaid metering of informal settlements	Technical	M	M	B	O

5.3.5.3 High level scope

T5 Electrification & prepaid metering of informal settlements		
Nr	Scope	Roles & Responsibilities
1	Electricification and installation of prepaid meters Ward 16 - Nyonyiyanzi extensions	External consultant
2	Electricification and installation of prepaid meters Ward 13 - Lot 14 extensions	External consultant
3	Installation of Data Concentrator Units (DCU) for monitoring of meter purchasing patterns, incorporating into Data Warehouse and using Business Intelligence (BI) for data analysis	External consultant / Internal
4	Monthly ongoing data analysis of purchasing history, auditing of meters with no purchases for 90 days.	Internal / External consultant
5	Continuous community engagement & education re payment for services and dangers of electricity theft	Internal / External consultant

5.3.5.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Contractor to install 1300 meters in Ward 16 Nyonyiyanzi extension, complete with secure pole top meter boxes. Contractor cost assumed at R 300 per installation.
- Contractor to install 500 meters in Ward 13 Lot 14 extension, complete with secure pole top meter boxes. Contractor cost assumed at R 300 per installation.
- Contractor to install one DCU per 100 meters = 22 DCU's. Contractor cost assumed at R 200 per DCU installation.
- Prepaid meters cost at R 1000 per meter.
- Pole top boxes assumed to take 6 prepaid meters = 367 boxes at R 500 per box.
- Supporting infrastructure including poles, cabling etc assumed at 3 times pole top box cost.

Table below provides an overview of the associated costs against assumed rates over the strategy period.

T5 Electrification & prepaid metering of informal settlements								R	9,682,133
Contractor / Consultant Costs			Annual Quantity					Total cost	
	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
Electrification Ward 16 Nyonyiyanzi extensions	1,300	R 300		450	500	350		R 390,000	
Electrification Ward 13 Lot 14 extensions	500	R 300		350	100	50		R 150,000	
Install DCU's	22	R 200		8	10	4		R 4,400	
								R -	
TOTAL Contractor / Consultant Costs								R 544,400	

Equipment & Materials			Annual Quantity					Total cost
	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5	
PP Electricity meters	1,800	R 1,000		800	600	400		R 1,800,000
DCU's	22	R 200		8	10	4		R 4,400
Pole top boxes	367	R 5,000		133	167	67		R 1,833,333
Supporting infrastructure	367	R 15,000		133	167	67		R 5,500,000
TOTAL Equipment & Materials								R 9,137,733

5.3.5.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
T5 Electrification & prepaid metering of informal settlements																				
Electricification and installation of prepaid meters Ward 16 - Nyonyiyanzi extensions																				
Electricification and installation of prepaid meters Ward 13 - Lot 14 extensions																				
Installation of Data Concentrator Units (DCU) for monitoring of meter purchasing patterns, incorporating into Data Warehouse and using Business Intelligence (BI) for data analysis																				
Monthly ongoing data analysis of purchasing history, auditing of meters with no purchases for 90 days.																				
Continuous community engagement & education re payment for services and dangers of electricity theft																				

5.3.5.6 Risks & Mitigation measures

Nr	T5 Electrification & prepaid metering of informal settlements		
	Risk	Impact	Mitigation
1	Lack of funding	Failure to implement project	Source funding from other sources such as DMRE / LGBA
2	Shortage of internal resources / skills to implement project	Failure / delays to implement project	Outsourcing to external consultant
3	Lack / shortage of skills / experience internally for monthly analysis and investigation of no purchases / low purchases	Limited success on recovery of revenue	Outsourcing to external consultant
4	Failure / delays to implement Data Warehousing & BI platform	Limited to zero data analysis for post commissioning actions	Outsourcing to experienced external consultant with their own Data Warehousing & BI platform
5	Community resistance, especially in areas of poverty and community views that electricity is a basic right	Communal unrest, damage to infrastructure	Implementation of consumer awareness and education campaigns

5.3.5.7 Procurement & Implementation options

KDM has indicated that application will be made to the Department of Mineral Resources and Energy for funding. The project is expected to be outsourced to a qualifying service provider.

5.4 Financial Strategies

In line with the KDM Strategy document, this section can be further broken down into addressing Unbilled energy & Unpaid energy.

Unbilled energy relates to but are not limited to the following aspects:

- Faulty / unread meters
- Tampered meters
- Unmetered connections
- Meters in the field but not in financial system
- Faulty fuses

Unpaid energy relates to but are not limited to the following aspects:

- Faulty CT / VT ratios
- Incorrect tariff applications
- Unbilled accounts
- Underestimates
- Poor collection performance

The strategies contained in this section speaks directly to non-technical losses, being the area with the potential of having the biggest impact on losses.

High priority should thus be given to these strategies but bearing in mind that some strategies may be dependent on the successful implementation of other strategies.

5.4.1 **Strategy F1 – LPU customer audits & consumption verification**

5.4.1.1 **Strategy Description**

This strategy is contained in the **existing** KDM Energy losses strategy document under Focus Area 4 and also highlighted under T2 Ensure all LPU Customers on AMR in this strategy document. The strategy recommended here differs slightly from the one in the existing strategy document. Where the existing is aimed at looking at historical billing data (last 5 years), this strategy is more aimed towards a process where consumption gaps can be identified much quicker and corrective action taken as well

This strategy will work optimally with the successful implementation of strategy T2 but is not dependent on T2 being fully completed. This strategy can already be implemented on existing AMR customers and as and when other LPU customers are switched to AMR.

This strategy will benefit further from the implementation of a Data Management / Workforce Management System as highlighted under I5.

The strategy addresses **Unbilled Energy** and recommends the following steps:

- A data analysis and verification process after AMR data has been compiled for a specific month, but prior to uploading into Munsoft system for billing purposes.
- Investigate / Analyse causes of missing / inaccurate data and rectify causes.
- Consumption adjustment analysis, back billing calculation and compiling of report for finance to implement corrective billing.

From a municipal financial perspective, this strategy addresses Revenue Recovery as well as revenue enhancement.

It also contributes towards improved percentage (%) readings onto bill.

A pre-condition of this strategy is that back billing calculations can only be done for a period of three years, in line with existing KDM bylaws. No changes to the bylaw are suggested in this regard, as the three year period is aligned with the period described in the Debt Prescription Act.

5.4.1.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
F1	LPU (MD) customer audits & consumption verification	Financial	H	H	S	O

This strategy is expected to produce high impact results over the short term and can be viewed as a “low hanging” fruit strategy.

5.4.1.3 High level scope

Nr	F1 LPU (MD) customer audits & consumption verification	
	Scope	Roles & Responsibilities
1	Monthly analysis of AMR data, prior to importing into billing system	AMR service provider and Dept Finance billing expert
2	Analyse / investigate causes of inaccurate / missing data	AMR Service provider
3	Address causes of inaccurate / missing data either through meter maintenance or desktop data corrections	AMR Service provider (data) / Electricity department (meter maintenance)
4	Consumption adjustment analysis, back billing calculation and compiling of report for finance to implement corrective billing.	External consultant

5.4.1.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Senior financial clerk at R 300 k per annum spending 16 hours per month analysing AMR data and importing into system.
- Electrical technician and assistant with vehicle at R 300 per hour at two hours per inspection doing 8 inspection per month = 493 over 5 years.
- AMR service provider cost for AMR data desktop analysis of missing / inaccurate data at R 200 per record. Records with missing / inaccurate data assumed at 40% of total AMR meters and to reduce to 5% over 5 years (implying 95% accuracy of readings onto bill)
- External consultant at R 1200 per back-billing calculations & report compilation. Records assumed at same as above.

Table below provides an overview of the associate costs against assumed rates over the strategy period.

Human Resources			Annual Quantity					Total cost
Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
1	R 300,000	R 25,000.00	25000	25000	25000	25000	R 125,000	
1	R 300	197	197	197	197	197	R 295,500	
							R -	
							R -	
TOTAL Human Resources							R 420,500	
Contractor / Consultant Costs			Annual Quantity					Total cost
Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
287	R 200	50	81	83	49	25	R 57,450	
287	R 1,200	50	81	83	49	25	R 344,700	
TOTAL Contractor / Consultant Costs							R 402,150	

5.4.1.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
F1 LPU (MD) customer audits & consumption verification																				
Monthly analysis of AMR data, prior to importing into billing system	←-----→																			
Analyse / investigate causes of inaccurate / missing data	←-----→																			
Address causes of inaccurate / missing data either through meter maintenance or desktop data corrections	←-----→																			
Consumption adjustment analysis, back billing calculation and compiling of report for finance to implement corrective billing.	←-----→																			

5.4.1.6 Risks & Mitigation measures

Nr	F1 LPU (MD) customer audits & consumption verification		
	Risk	Impact	Mitigation
1	Lack of skills in finance to accurately interrogate and analyse AMR data	Billing errors to customer due to incorrect tariff etc	Skills improvement training of staff / Possible outsourcing of service to experienced consultants in the beginning with aim of eventual skills transfer to KDM billing staff
2	Sub-standard service by AMR service provider	Sub-standard data quality	Ensure strict management of contract against deliverables and address through remedial measures in contract, including if need be, termination of contract.
3	Possible by-law constraints on how far back customers can be back-billed (at least three years).	Limited success on recovery of revenue	Review bylaw and amend if needed to support strategy
4	Budget constraints for payment of external consultant to do consumption adjustment analysis, back-billing calculation and compilation of corrective billing report.	Limited success on recovery of revenue	Consider appointment of consultants willing to work at risk and earn revenue based on successful recovery of revenue for municipality

5.4.1.7 Procurement & Implementation options

This strategy can be implemented without placing strain on the municipality’s budgets by employing a risk – reward approach through the appointment of external consultants willing to perform the work at risk and earn rewards as a percentage of value of successful recovery of lost / missing revenue.

5.4.2 Strategy F2 – Bulk metering of stands with multiple prepaid meters

5.4.2.1 Strategy Description

In the status quo report it was highlighted that several stands have multiple prepaid meters linked to the stand. RA Moody retirement Village in Stanger for example has 153 prepaid meters linked to the stand of which 130 are active and 23 are inactive. This places an additional burden on KDM resources to manage and maintain.

It is our understanding that the current KDM policy is to bulk meter stands with multiple dwellings on it. From the status quo report it is evident though that there are some “legacy” stands where meters have been installed in each dwelling on the stand.

This strategy recommends that these “legacy” stands also be bulk metered at a reseller’s tariff with internal metering provided by a third party serving as reseller on behalf of the stand governing body.

The exception to this will be the metering of informal stands where it is still recommended that each dwelling be separately metered and is addressed under F4 – Electrification and prepaid metering of informal settlements.

Pre-condition to strategy – This strategy is dependent upon the municipality successfully implementing relevant bylaws and policies to allow the municipality to disconnect customers

beyond the bulk meter who are indebted to the municipality in terms of rates and other service charges. The responsibility for this will be the legal department. The utility reserves the right for disconnection.

5.4.2.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
F2	Bulk metering of stands with multiple prepaid meters	Financial	M	M	S	O

5.4.2.3 High level scope

Nr	F2 Bulk metering of stands with multiple prepaid meters	
	Scope	Roles & Responsibilities
1	Identify & list stands with multiple prepaid meters	KDM electricity dept
2	Develop program and schedule for replacement over 3 years	KDM electricity dept
3	Put work out on tender with defined scope & deliverables & appoint SP	KDM SCM dept
4	Effect replacements against schedule, ensure meter active against correct account and tariff on stand and all prepaid meters terminated	Service provider
5	Liaise with stand governing body to implement 3rd party metering supply per dwelling	KDM electricity dept / Service provider

5.4.2.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Stands with 7 or more linked prepaid meters to be replaced with bulk metering. (59 stands with 971 prepaid meters in total)
- Contractor cost per meter installation at R 600 per meter.
- Contractor cost per removal of individual meter at R 150 per meter.
- Bulk meter material cost at R 5000 per meter.

Table below provides an overview of the associated costs against assumed rates over the strategy period.

F2 Bulk metering of stands with multiple prepaid meters											R	476,050
			Annual Quantity									
Contractor / Consultant Costs	Number	Cost/activity	Y1	Y2	Y3	Y4	Y5				Total cost	
Installation of bulk meters at stands 7 meters +	59	R 600	0	15	20	24					R 35,400	
Removal of individual meters	971	R 150	0	557	236	178					R 145,650	
											R -	
											R -	
											R -	
											R -	
TOTAL Contractor / Consultant Costs											R 181,050	

			Annual Quantity								
Equipment & Materials	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5				Total cost
Bulk Electricity meters	59	R 5,000	0	15	20	24					R 295,000
											R -
											R -
TOTAL Equipment & Materials											R 295,000

5.4.2.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
F2 Bulk metering of stands with multiple prepaid meters																				
Identify & list stands with multiple prepaid meters	←																			
Develop program and schedule for replacement over 3 years	→																			
Put work out on tender with defined scope & deliverables & appoint SP	→																			
Effect replacements against schedule, ensure meter active against correct account and tariff on stand and all prepaid meters terminated	←																			
Liaise with stand governing body to implement 3rd party metering supply per dwelling	→																			

5.4.2.6 Risks & Mitigation measures

Nr	F2 Bulk metering of stands with multiple prepaid meters		
	Risk	Impact	Mitigation
1	Lack of resources (excluding financial)	Failure to implement, no change to identified need in status quo	Outsource to external service provider through tender process
2	Lack of financial resources	Failure to implement, no change to identified need in status quo	Explore alternative available funding options for local government (SALGA, national Treasury etc)
3	Sub-standard / poor quality service by service provider	Poor workmanship, schedule delays	Ensure strict management of contract against deliverables and address through remedial measures in contract, including if need be, termination of contract.
4	Resistance from property governing bodies to implement 3rd party metering internally	Limited success in implementation	Ensure by-laws supports policy to bulk meter stands with multiple dwellings.

5.4.2.7 Procurement & Implementation options

This strategy is recommended to be procured through a tender process. Funding needs to be sourced if not available internally through the options available to local government for obtaining funding.

5.4.3 Strategy F3 – SPU customer metering / vending assurance

5.4.3.1 Strategy Description

During the status quo stage it was determined that approximately 35% of conventional customers are billed estimates (interims). It implies that percentage readings onto bill is in the region of 65%, against a benchmark of 90%. This can be attributed to any or a combination of the following:

- Tampered meters
- Faulty meters
- Access to meter problems
- Meters on the system but not in the field
- Meters in the field but not on the system

The impact for the municipality is a risk that revenue can be overstated as estimates have the risk of being overstated as compared to actual consumption. Energy balancing cannot be done properly due to low levels of information on actual consumption.

The **existing** KDM Energy losses strategy document speaks to this strategy to a certain extent. The strategy proposed here can be viewed as an enhancement of this strategy.

In the status quo report, it was also highlighted that a large percentage of prepaid customers are not purchasing electricity and that 42% have not purchased in a period of 12 months. This can be attributed to any or a combination of the following:

- Electricity theft through tampered meters
- Faulty meters
- Ghost vending
- Meters in the system, but not in the field
- Meters in the field but not on the system

This strategy is aimed at reduction in **Unbilled energy** as well as **Unpaid energy**. From a conventional meter point of view, it also supports improvement in percentage readings onto bill.

The strategy is proposed to involve the following steps:

- Auditing of stands with no record of a meter and ensuring meter uploaded to system(s).
- Data clean-up and mirroring of Munsoft and Prepaid system information
- Auditing of conventional meters being interim billed
- Expansion of meter fault code list to be more indicative of problem at meter.
- Outsourcing of meter reading service to a Meter Reading Contractor (MRC). The motivation behind this is to reduce the cost of meter reading by paying per meter read, effectively rewarding the MRC for efforts to get as many meters read as possible.
- Monthly inspections of conventional meters appearing on the faulty meters list and appropriate remedial action (meter repair / replacement).
- Auditing of prepaid meters showing no purchasing for more than 90 days.
- Monthly ongoing data analysis of prepaid purchasing history, auditing of meters with no purchases for 90 days.
- Targeted audits of areas where prepaid meters show purchases lower than the expected benchmark for the specific area
- Fining of consumers tampering with meters, back billing calculations and compiling of report for finance department to levy against consumer account.
- This strategy can also benefit from a community awareness programme linked a CRM system where customers can provide readings to the municipality as well, especially in cases where it is difficult to gain access to the meter during working hours.

5.4.3.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
F3	SPU customer metering / vending assurance	Financial	M	M	B	O

5.4.3.3 High level scope

Nr	F3 SPU customer metering / vending assurance	
	Scope	Roles & Responsibilities
1	Auditing of stands with no record of a meter	External consultant
2	Data clean-up and mirroring of Munsoft and Prepaid system information	External consultant
3	Auditing of conventional meters being estimated	External consultant
4	Review of meter fault code list	External consultant
5	Appoinment of external Meter Reading Contracting company to read conventional meters	External consultant
6	Inspections of meters appearing on the faulty meters list & appropriate remedial action	External consultant
7	Auditing of prepaid meters showing no purchasing for more than 90 days	External consultant
8	Monthly ongoing data analysis of prepaid purchasing history, auditing of meters with no purchases for 90 days.	External consultant
9	Targeted audits of areas where prepaid meters show purchases lower than the expected benchmark for the specific area	External consultant
10	Fining of consumers tampering with meters, back billing calculations and compiling of report for finance department to levy against consumer account	External consultant

5.4.3.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- 4704 Stands to be audited having no meter in the system at R 300 per stand.
- For conventional:
 - Contractor to audit approximate 3 974 meters (35% of 11 354 SPU conventional meters) at a cost of R 300 per meter.
 - Assume 50% of audited requires replacement.
 - Assume contractor cost for meter replacement at R 300 per meter.
 - Assume meter cost at R 1000 per meter.
- For prepaid
 - Discard 791 meters to be replaced with bulk metering as per F2, inspect 26 934 meters at R 300 per meter. Evenly spread over 5 years.
 - 20% of inspected meters will require back-billing calculation & report submission at R 1000 per meter.

Table below provides an overview of the associate costs against assumed rates over the strategy period.

F3 SPU customer metering / vending assurance								R	18,653,500	
Contractor / Consultant Costs			Number	Cost/Item	Annual Value					Total cost
					Y1	Y2	Y3	Y4	Y5	
Audit stands with no meter			4,704	R 300	4,704					R 1,411,200
Audit conventional meters not being billed			3,974	R 300	3,974					R 1,192,200
Replace faulty meters			1,987	R 300	1,987					R 596,100
Audit PP stands with no purchase 90days			26,934	R 300	5,387	5,387	5,387	5,387	5,387	R 8,080,200
Audit stands low purchase targeted areas										R -
Back-billing calculation & report compilation			5,387	R 1,000.00	1,077	1,077	1,077	1,077	1,077	R 5,386,800
TOTAL Contractor / Consultant Costs								R	16,666,500	
Equipment & Materials			Number	Cost/Item	Y1	Y2	Y3	Y4	Y5	Total cost
Meter			1,987	R 1,000	1,987					R 1,987,000
										R -
TOTAL Other Costs								R	1,987,000	

5.4.3.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
F3 SPU customer metering / vending assurance																				
Auditing of stands with no record of a meter	←→																			
Data clean-up and mirroring of Munsoft and Prepaid system information	←→																			
Auditing of conventional meters being estimated	←→																			
Review of meter fault code list	←→																			
Appointment of external Meter Reading Contracting company to read conventional meters	←→																			
Inspections of meters appearing on the faulty meters list & appropriate remedial action	←→																			
Auditing of prepaid meters showing no purchasing for more than 90 days	←→																			
Monthly ongoing data analysis of prepaid purchasing history, auditing of meters with no purchases for 90 days.	←→																			
Targeted audits of areas where prepaid meters show purchases lower than the expected benchmark for the specific area	←→																			
Fining of consumers tampering with meters, back billing calculations and compiling of report for finance department to levy against consumer account	←→																			

5.4.3.6 Risks & Mitigation measures

Nr	F3 SPU customer metering / vending assurance		
	Risk	Impact	Mitigation
1	Lack of skills / experience internally to analyse and clean data up	Sub-standard mirroring of data in finance system and pepaid system	Outsourcing to external consultant
2	Insufficient internal staff to perform onpging meter audits	Continious challenges with meters not purchasing	Outsourcing to external consultant
3	Lack / shortage of skills / experience internally for monthly analysis and investigation of no purchases / low purchases	Limited success on recovery of revenue	Outsourcing to external consultant
4	Community resistance, especially in areas of poverty and community views that electricity is a basic right	Communal unrest, damage to infrastructure	Implementation of consumer awareness and education campaigns

5.4.3.7 Procurement & Implementation options

This strategy can be implemented through a combination of budgeting for these services by an external consultant, and risk-reward from recovery of unbilled energy through discovery of tampered meters and back-billing of customers.

5.4.3.8 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Cost for auditing of stands with no record of meter already factored into F2: Prepaid vending assurance.

Table below provides and overview of the associate costs against assumed rates over the strategy p

F5 Conventional SPU customer billing assurance										R	5,608,876
Contractor / Consultant Costs			Annual Quantity							Total cost	
Number	Cost/Item		Y1	Y2	Y3	Y4	Y5				
Audit meters not being billed	5904 R	300	5904					R	1,771,224		
Replace faulty meters	2952 R	300	2952					R	885,612		
TOTAL Contractor / Consultant Costs									R	2,656,836	

Equipment & Materials			Annual Quantity					Total cost		
Number	Cost/Item		Y1	Y2	Y3	Y4	Y5			
Prepaid meters	2,952 R	1,000	2,952					R	2,952,040	
TOTAL Other Costs									R	2,952,040

F5 Conventional SPU customer billing assurance							R	5,608,876
Contractor / Consultant Costs			Annual Quantity					Total cost
Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
Audit meters not being billed	5904 R 300	5904					R 1,771,224	
Replace faulty meters	2952 R 300	2952					R 885,612	
							R -	
TOTAL Contractor / Consultant Costs							R	2,656,836

Equipment & Materials			Annual Quantity					Total cost
Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
Prepaid meters	2,952 R 1,000	2,952					R 2,952,040	
							R -	
TOTAL Other Costs							R	2,952,040

5.4.3.9 Procurement & Implementation options

Conventional meter maintenance is a normal budgetary requirement. From the KDM Energy losses strategy document it is evident that it is budgeted for and that a contract is in place for an external service provider to execute repairs / installations.

5.4.4 Strategy F4 – Review of credit control processes & activities

5.4.4.1 Strategy Description

It has already been mentioned that the **existing** KDM Energy losses strategy document recognises improving **Unpaid Energy**. Strategy F4 is aimed at ensuring acceptable collection rates from conventional customers. This strategy will not necessarily impact energy losses, but in a necessary strategy to ensure revenue is collected from expected improvement in **Unbilled Energy** contained in the other strategies.

The high percentage of aged debtors suggest that collection of revenue in general (not just energy) is a challenge.

Improvement of credit control processes and collections is proposed to involve the following steps:

- Consider outsourcing of management of the following credit control activities
 - Management of final notices
 - Management of disconnections
 - Management of revisits
 - Management of reconnections
- Implement use of digital technology for credit control quality assurance and performance management. Replace paper process with recording of completed activities on mobile devices with photo proof. This is a necessary requirement especially where contractors are used to execute credit control actions as the information recorded on the mobile device provide proof to KDM that the contractor executed the work correctly. It allows for better decisions when it comes to processing of contractor invoices as there are proof of work executed, and work not executed cannot be claimed by the contractor. Sub-standard work can also be penalised in line with contract requirements, for instance disconnection of customer outside of contracted turnaround times.
- Manage processes through the proposed Data and Workforce management system for complete record purposes and performance reporting

5.4.4.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
F4	Review of credit control processes & activities	Financial	L	L	B	I/O

5.4.4.3 High level scope

Nr	F4 Review of credit control processes & activities	
	Scope	Roles & Responsibilities
1	Outsource Management of Credit control activities	External consultant
2	Introduce digital mobile technology for activities execution and quality control	External consultant
3	Manage processes through proposed Data & Workforce Management system	Internal / External consultant

5.4.4.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Payment defaulters at 50% of total debtors book.
- Customers to be disconnected at 50% of those having received final notices.
- Reconnecting customers at 60% of those disconnected.
- Reduction in debtor book at 20% per annum
- Contractor cost for final notice at R 50 per notice, Disconnections, and reconnections at R 200 per activity.

Table below provides an overview of the associate costs against assumed rates over the strategy period.

F6 Review of credit control processes & activities							R	2,908,895
Contractor / Consultant Costs	Number	Cost/Item	Annual Quantity					Total cost
			Y1	Y2	Y3	Y4	Y5	
Delivering of final notices	13852	R 50	5677	4542	3633			R 692,594
Disconnection of defaulters	6926	R 200	2839	2271	1817			R 1,385,188
Reconnection of customers that paid	4156	R 200	1703	1362	1090			R 831,113
TOTAL Contractor / Consultant Costs							R	2,908,895

5.4.4.5 SMART implementation schedules

F4 Review of credit control processes & activities	Y1		Y2		Y3		Y4		Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Outsource Management of Credit control activities	█	█	█	█	█	█	█	█	█	█	█	█
Introduce digital mobile technology for activities execution and quality control	█	█	█	█	█	█	█	█	█	█	█	█
Manage processes through proposed Data & Workforce Management system	█	█	█	█	█	█	█	█	█	█	█	█

5.4.4.6 Risks & Mitigation measures

F4 Review of credit control processes & activities			
Nr	Risk	Impact	Mitigation
1	Lack / shortage of skills to implement proper credit control management strategies	Debtors book remains high and aged	Outsourcing to external consultant
2	Insufficient budget to pay external service provider, or poor return on results from external service provider	Interrupted service due to lack of payment to SP or fruitless expenditure	Consider implementing risk-reward funding model

5.4.4.7 Procurement & Implementation options

Consideration should be given to outsource service on a risk - reward model where an external consultant gets rewarded based on successful collection of revenue from the credit control activities.

5.5 Institutional Strategies

The strategies contained herein are not considered to have a high impact on reduction in losses and subsequent revenue increase but are deemed necessary to enable the optimal implementation of the strategies that are expected to have a high impact.

5.5.1 Strategy I1 – Intra- & Interdepartmental Standard Operating Procedures enhancement

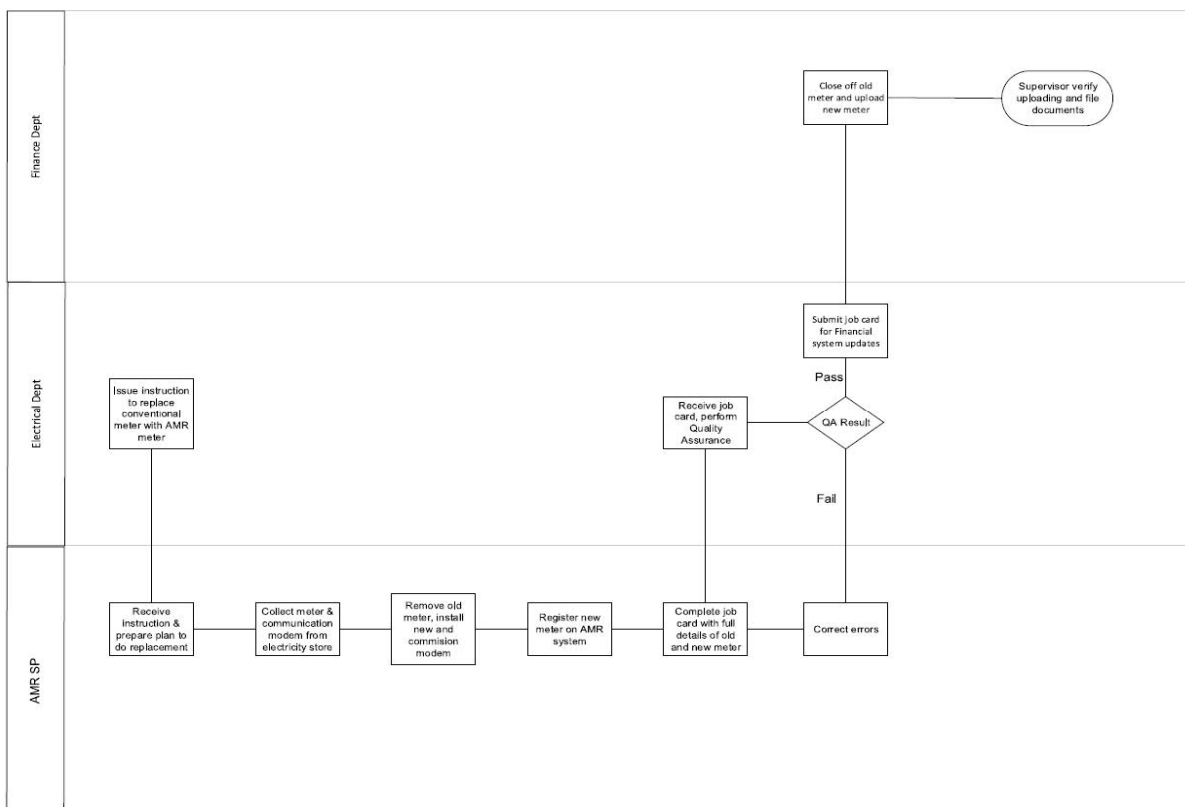
5.5.1.1 Strategy Description

This strategy is aimed at improving cooperation intra- and inter department, as well as external service providers if any.

The strategy is additional to the **existing** KDM energy losses strategy.

The strategy is proposed to contain the following elements:

- Process flow procedures with “Swim lanes” highlighting the flow of work as well as the responsible department / service provider. Below diagram is an example of how a process flow will typically look.



- Drawing up of SLA between departments / service providers to ensure clear understanding of roles and responsibilities as well as deliverable time frames.
- Drawing up of Key Performance Indicators (KPI's) linked to SLA for purposes of performance management

- It is recommended that the process be outsourced to an organizational development consultant.

5.5.1.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
I1	Intra- & Interdepartmental Standard Operating Procedures enhancement	Institutional	L	L	B	O / I

5.5.1.3 High level scope

Nr	I1 Intra- & Interdepartmental Standard Operating Procedures enhancement	
	Scope	Roles & Responsibilities
1	Draw process flow type SOP for each work process	External consultant
2	Develop SLA & incorporate process flows into document	External consultant
3	Develop KPI's based on SLA	Internal / External Consultant
4	Manage performance accordingly	Internal

5.5.1.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Consultant hours to develop Workflow SOPs = 300 hours.
- Consultant hours to develop SLA & Incorporate SOPs = 150 hours.
- Consultant hours to develop KPI's in line with SLA = 150 hours.
- Consultant rate per hour = R 700.

Table below provides an overview of the associate costs against assumed rates over the strategy period.

I1 Intra- & Interdepartmental Standard Operating Procedures enhancement				R	420,000				
Contractor / Consultant Costs		Number	Cost/Item	Annual Quantity					Total cost
Draw process flow type SOP for each work process		300	R 700	Y1	Y2	Y3	Y4	Y5	R 210,000
Develop SLA & incorporate process flows into		150	R 700	150					R 105,000
Develop KPI's based on SLA		150	R 700	150					R 105,000
TOTAL Contractor / Consultant Costs									R 420,000

5.5.1.5 SMART implementation schedules

I1 Intra- & Interdepartmental Standard Operating Procedures enhancement	Y1		Y2		Y3		Y4		Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Draw process flow type SOP for each work process												
Develop SLA & incorporate process flows into document												
Develop KPI's based on SLA												
Manage performance accordingly												

5.5.1.6 Risks & Mitigation measures

Nr	I1 Intra- & Interdepartmental Standard Operating Procedures enhancement		
	Risk	Impact	Mitigation
1	Lack / shortage of skills to implement	Processes, SLA's and KPI's remain sub-standard to a high performing entity	Outsourcing to organisational improvement external consultant
2	Staff resistance	Sub-standard implementation	Staff involvement throughout process to ensure maximum buy-in

5.5.1.7 Procurement & Implementation options

It is assumed that costs for this strategy have not been budgeted for at time of presenting this strategy document and is suggested to be reviewed at half year budget review and implemented from the third quarter of the financial year.

5.5.2 Strategy I2 – Tariff study & review

5.5.2.1 Strategy Description

The **existing** KDM Energy losses strategy document mentions Resolution 46: Tariff review and development but does not go into detail re this strategy. The fact that it does get mentioned indicate therefore and in line with our recommendations of a tariff study and review as well.

It was established that a tariff study and review was in an advanced stage. This strategy therefore includes the steps to be completed and next stapes.

5.5.2.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
I2	Tariff study & review	Institutional	L	L	B	O

5.5.2.3 High level scope

Nr	I2 Tariff study & review	
	Scope	Roles & Responsibilities
1	Finalize current process of developing tariffs and cost of supply study.	Service provider
2	Obtain NERSA approval	Internal / Service Provider
3	Impelement approved new tariff structure	Internal

5.5.2.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Consultant hours to assess current tariff methodologies & identify shortcomings = 350 hours.
- Consultant hours to identify losses & impact thereof and propose controls & remedial action = 150 hours
- Consultant hours to develop appropriate tariff methodologies = 150 hours.
- Consultant hours to develop simulated budget and indicative impact of recommended methodologies = 150 hours.
- Consultant rate per hour = R 1000.

Table below provides an overview of the associate costs against assumed rates over the strategy period.

I2 Tariff study & review								R	780,000
Contractor / Consultant Costs	Number	Cost/Item	Annual Quantity					Total cost	
			Y1	Y2	Y3	Y4	Y5		
Hours - Assessment of tariff methodologies & ID of shortcomings	350	R 1,000	350					R 350,000	
Hours Loss Identification	150	R 1,000	150					R 150,000	
Hours Tariff setting methodologies recommendations	150	R 1,000	150					R 150,000	
Hours Budget preparation	130	R 1,000	130					R 130,000	
TOTAL Contractor / Consultant Costs								R	780,000

5.5.2.5 SMART implementation schedules

I2 Tariff study & review	Y1		Y2		Y3		Y4		Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Finalize current process of developing tariffs and cost of supply study.	←											
Obtain NERSA approval		←										
Implement approved new tariff structure				←								

5.5.2.6 Risks & Mitigation measures

Nr	I2 Tariff study & review		
	Risk	Impact	Mitigation
1	Under performing consultant	Sub-standard recommendations for implementation	Ensure clearly defined scope, deliverables, and performance management clauses
2	Failure to implement recommended practices	Strategy failure, impacting optimal implementation of other strategies	Ensure implementation by linking responsibilities to roles and link KPI's

5.5.2.7 Procurement & Implementation options

It is recommended that National treasury and specifically the National Treasury Local Government Budget Analysis (LGBA) Chief directorate be approached for assistance in funding the implementation of this strategy.

5.5.3 Strategy I3 – Implementation of KDM CRM system

5.5.3.1 Strategy Description

This strategy is an **existing** strategy under the Vuthela iLembe LED support programme.

The feasibility study was completed in June 2020. The next phase would have been the establishment of a Regional Customer Care Centre with supporting CRM software system. This project has however been withdrawn due to limited participation by member municipalities.

KDM however aims to implement its own CRM system, currently partially in place with a telephone call centre and complaints being logged on the electrical maintenance software. The aim is to have an independent CRM system within a customer contact centre.

This strategy will also serve to enable the Social Intervention Strategy, and specifically the establishment of communication channels (e-mail and WhatsApp).

5.5.3.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
I3	Implementation of KDM CRM system	Institutional	L	L	B	O

5.5.3.3 High level scope

Nr	I3 Implementation of KDM CRM system	
	Scope	Roles & Responsibilities
1	Establish Customer Care Center	Internal/ External
2	Procure & Implement CRM software	Internal / Service provider
3	Monitor performance against Customer Service Charter	Internal

5.5.3.4 Cost Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- Consultant hours to establish call centre & make operational = 350 hours.
- Consultant hours to supply and implement software & train staff = 150 hours
- Software procurement costs = R 25 000.
- Software management & support cost = R 2 500 per month

I3 Implementation of KDM CRM system								R	675,000
Contractor / Consultant Costs		Number	Cost/Item	Annual Quantity					Total cost
Establishment of Customer Care Call Centre		350	R 1,000	350					R 350,000
CRM system implementation & staff training		150	R 1,000	150					R 150,000
TOTAL Contractor / Consultant Costs								R	500,000
Software Cost		Number	Cost/Item	Y1	Y2	Y3	Y4	Y5	Total cost
System procurement		1	R 25,000	1					R 25,000
System management & support per month		1	R 2,500	R 30,000	R 30,000	R 30,000	R 30,000	R 30,000	R 150,000
TOTAL Software Cost								R	175,000

5.5.3.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
I3 Implementation of KDM CRM system																				
Establish Customer Care Center	←→																			
Procure & Implement CRM software	←→																			
Monitor performance against Customer Service Charter	←→																			

5.5.3.6 Risks & Mitigation measures

Nr	I3 Implementation of KDM CRM system		
	Risk	Impact	Mitigation
1	Call centre not supported by other service improvement strategies	Diminished result in implementation	Continuous stakeholder engagement to obtain buy-in and ensure implementation of other strategies

5.5.3.7 Procurement & Implementation options

The implementation of a Customer Care Centre with supporting CRM system is understood to be planned and as such assumed to be budgeted for. It is recommended that the implementation thereof be outsourced to specialists in this discipline.

5.5.4 Strategy I4 – Implementation of single platform iLembe Indigent Management System

5.5.4.1 Strategy Description

This strategy is also an **existing** strategy identified under the Vuthela iLembe LED support programme. The strategy's aim is to establish a single platform IT system through which indigent registers can be maintained by the various local municipalities. The system will ensure uniformity of management of indigents as well as reporting. The system should be geared towards making it easier for LMs to manage their indigent registers.

Specific requirements should include:

- Web and cloud based.
- Stringent Security
- Audit trail functionality

Draft Terms of Reference are in the process of being finalized. This strategy's implementation is also subject to the signing of Memorandum of Agreements between the various municipalities.

5.5.4.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
I4	Implementation of single platform iLembe Indigent Management System	Institutional	L	L	B	O

5.5.4.3 High level scope

Nr	I4 Implementation of single platform iLembe Indigent Management System	
	Scope	Roles & Responsibilities
1	Drawing up of ToR for role stakeholder input.	Internal
2	Signing of MOA	Internal
3	Procure & Implement IS system	Internal / Service provider
4	Annual review of register	Internal

5.5.4.4 Cost Estimation

The cost for this strategy is a PFM cost and is shown for information purpose only.

Component	Project No	Project Name	Project value (incl VAT)	Source of funds
PFM	VILP027	IT Systems to support Indigent registers across the district	R 3,510,000.00	PFM core budget

5.5.4.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
I4 Implementation of single platform iLembe Indigent Management System																				
Drawing up of ToR for role stakeholder input.	←→																			
Signing of MOA	←→																			
Procure & Implement IS system	←→				←→				←→				←→				←→			
Annual review of register	←→				←→				←→				←→				←→			

5.5.4.6 Risks & Mitigation measures

I4 Implementation of single platform iLembe Indigent Management System			
Nr	Risk	Impact	Mitigation
1	Resistance from member municipalities	Failure / delays to implement strategy	Continuous stakeholder engagement to obtain buy-in

5.5.4.7 Procurement & Implementation options

This strategy also falls under the Vuthela EMP projects and therefore will be procured from Vuthela EMP budgets.

5.5.5 Strategy I5 – Implementation of Data Warehousing & Business Intelligence Platforms

5.5.5.1 Strategy Description

It was highlighted during the Status Quo phase, that a system through which data can be stored from various sources / systems and supported by a Business Intelligence system where data can be monitored and managed was identified as a need.

The KDM Electricity has also identified this as a need and have already started initial planning towards a Data Warehousing system and Business Intelligence system.

Data Warehousing (DWH)

A data warehouse (DWH) can be described as a non-operational (non-real time) system mainly used for decision support and to support Business Intelligence. It provides query-optimized data for the users of the DWH system. The data warehouse should provide “a single version of truth” within the enterprise

The purpose of a data warehouse (DWH) is to build a unified layer that contains data from all relevant data sources throughout the enterprise. This implies the need to integrate data from multiple systems and optimize it for analysis and business intelligence. A data warehouse does not generate any data of its own and any data quality issues are either within the source systems or arose because of how data is interpreted in different systems. If data quality is overlooked, data warehouse users will have inaccurate and/or incomplete datasets. This translates directly to data not being representative and to erroneous analytics.

The implementation of a data warehouse would provide a single version of the truth from data taken from all systems and would build-up a history of information that would be useful for data analysis.

KDM have identified data from the following systems to be gathered and stored in a Data Warehousing system.

- Conventional metered customer metering data from the Munsoft Financial System
- Prepaid meter customer data from the Contour Technologies vending system and other similar supplier back-end systems such as Conlog's Power Nova and Landis & Gyr's Suprima system should these be considered to be procured.
- Customer management system data (to be procured)
- Advanced metering infrastructure / meter data management system (planned for possible future implementation).
- Financial Asset register information from Munsoft financial system
- Computerised asset management system (Pragma Onkey)
- Geographical Information System (ESRI)
- SCADA
- Human Resources
- Outage Management System (OMS)

It is our understanding that KDM currently has a licence for Microsoft SQL, which may be configured to accommodate the planned Data Warehousing project.

Data warehousing can be deployed on premise, but recent trends see many vendors offer cloud-based solutions. Some of the major vendors includes Amazon Web Services (AWS), Google Cloud (BigQuery), Microsoft Azure etc.

It is recommended that a thorough needs analysis and system design be undertaken to ensure the correct system to be procured or current system reconfigured.

Business Intelligence (BI)

A BI solution can use information from a Data Warehouse as described above (where all the pertinent information is available from a common source). BI functionality can however also be deployed on standalone databases. In the context of this strategy proposal, it is suggested as a supplementary solution to the Data Warehouse implementation strategy.

A BI solution can be configured to perform a variety of data analysis processes such as:

- Energy balancing calculations based on network metering and customer meter consumption data.
- Prepaid meter purchasing history
- Systems data comparison – useful for ensuring data in financial system and supplementary systems such as Prepaid meter data system and AMR system are mirrored.

Various commercial-off-the-shelf BI solutions exist that can be considered for implementation. In its simplest form BI is available in desktop tools such as MS Excel, but for the purposes of this strategy document, a more formalised and dedicated BI environment is envisioned that will service the Energy Department as well as Financial Department requirements.

A BI solution can be deployed on premise, or it can be deployed on cloud (software as a service).

The recommendation is once again that KDM undertake a thorough needs analysis and system design prior to procurement

Below websites are from different known vendors that offer solutions in this regard:

- <https://powerbi.microsoft.com/en-us/>
- <https://www.cluvio.com/>
- <https://www.powermyanalytics.com/home>
- <https://www.revealbi.io/>
- <https://www.bcx.co.za/solutions/analytics/>

This strategy is considered essential for the following reasons:

- Validation of data prior to uploading into the financial management system.
- Data mirroring management of data to be mirrored in financial system and supplementary systems.
- Data reporting and analysis for purposes of addressing issues such as meters not purchasing electricity, energy balancing etc.
- Progress reporting on, for example percentage readings onto bill.

It serves therefore as an enabler strategy for some of the other strategies presented herein.

5.5.5.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
I5	Implementation of single platform iLembe Data & Workforce Management System	Institutional	M	L	B	O

5.5.5.3 High level scope

Nr	I5 Implementation of Data Warehousing & Business Intelligence (BI) platforms	
	Scope	Roles & Responsibilities
1	Data Warehousing Establish needs & Design system Procure system addressing specific needs Implementation & training	Internal / Outsourced
2	Business Intelligence Establish needs & Design system Procure system that addresses needs Implementation & training	Internal / Outsourced

5.5.5.4 Costs Estimation

For the cost estimation of this strategy, the following assumptions have been made:

- For Data Warehouse design and setup:
 - Snr SQL system engineer at R 500/h for 1000 hours
 - Jnr SQL programmer at R 250/h for 1000 hours.
 - Monthly operational support of system and configuration management at R 25 000 per month.
 - Cloud hosting service (MS Azure as an example) at R 25 000 per month.
- For Business Intelligence solution:
 - Half the costs of DWH design and setup.

Table below provides an overview of the associated costs against assumed rates over the strategy period.

I5 Implementation of Data Warehousing & Business Intelligence (BI) platforms										R	5,625,000
Software Cost - DWH		Number	Cost/Item	Annual Quantity					Total cost		
				Y1	Y2	Y3	Y4	Y5			
System Design		1	R 500,000	1					R	500,000	
System Development & Testing		1	R 250,000	1					R	250,000	
System operational support / configuration management		5	R 300,000	1	1	1	1	1	R	1,500,000	
Cloud hosting (MS Azure)		5	R 300,000	1	1	1	1	1	R	1,500,000	
TOTAL Software Cost - DWH										R	3,750,000

Software Cost - BI		Qty	Cost/Item	Annual Quantity					Total cost		
				Y1	Y2	Y3	Y4	Y5			
System Design		1	R 250,000	1					R	250,000	
System Development & Testing		1	R 125,000	1					R	125,000	
System operational support / configuration management		5	R 150,000	1	1	1	1	1	R	750,000	
Cloud hosting (MS Azure)		5	R 150,000	1	1	1	1	1	R	750,000	
TOTAL Software Cost - BI										R	1,875,000

5.5.5.5 SMART implementation schedules

I5 Implementation of Data Warehousing & Business Intelligence (BI) platforms	Y1		Y2		Y3		Y4		Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Data Warehousing Establish needs & Design system Determine cost & budget accordingly Procure system addressing specific needs Implementation & training												
Business Intelligence Establish needs & Design system Determine cost & budget accordingly Procure system that addresses needs Implementation & training												

5.5.5.6 Risks & Mitigation measures

I5 Implementation of Data Warehousing & Business Intelligence (BI) platforms		
Risk	Impact	Mitigation
Budget constraints to fund strategy	Failure to implement strategy	Thorough needs analysis, design and costing for budget prouces in folloiwng financial year procurement
Lack of skills from staff to properly use sytems	Sub-standard implementation	Training of users must form part of implementation phase. Continued support from service provider in the form a call centre support, online manuals etc
Implementation of one platform without the other	Limited functionality, negatively impacting other strategies dependant on this strategy	Drive implementation as a single solution, not one solution supplementing the other.

5.5.5.7 Procurement & Implementation options

It is recommended that this item be budgeted to be implemented in the following financial year, doing system needs analysis and design in the current financial year as well as cost determination.

5.5.6 Strategy I6 – Establishment of Revenue Protection Unit

5.5.6.1 Strategy Description

KDM have indicated a planned Revenue protection team within their planned future organograms. This proposal aims to highlight this as a strategy and not just a planned organogram.

To effectively execute many of the projects and initiatives proposed in the strategy document will require skilled project managers and supporting personnel. For this purpose, a dedicated Revenue Protection Unit (RPU) is proposed. This could also be described as a project management office (PMO). The RPU is considered a crucial function as it is proposed that it will coordinate and manage the implementation of the several of the other strategies for example:

- T1 – Eskom POS metring assurance
- T2 – Ensure all LPU customers on functional AMR
- F1 – LPU customer audits & consumption verification
- F3 – SPU customer metering / vending assurance

Without proper financing, resources management and oversight of the implementation of the individual projects, the likelihood of successful implementation is significantly reduced implying that the anticipated loss reduction targets will not be met. The RPU is therefore considered an enabling function to implement the projects. The RPU in itself will not reduce losses in a specific area but will ensure that the initiatives targeting losses are properly implemented.

KDM officials have highlighted on various occasions that they view this strategy as vital to ensure success of implementation of the other strategies.

5.5.6.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
I6	Establishment of Revenue Protection Unit	Institutional	M	M	B	I

5.5.6.3 High level scope

I6 Establishment of Revenue Protection Unit		
Nr	Scope	Roles & Responsibilities
1	Establish resource requirements & align planned organogram with resource needs	Internal
2	Establish roles & responsibilities by determining strategies to fall under control & management of this unit.	Internal
3	Recruit / transfer(second) staff requirements	Internal
4	Commence with implementation of identified strategies	Internal

5.5.6.4 Costs Estimation

I6 Establishment of Revenue Protection Unit								R	29,308,046
Human Resources Cost			Annual Costs					Total cost	
	Number	Cost/Item	Y1	Y2	Y3	Y4	Y5		
RPU manager	1	R 1,200,000	R 1,200,000	R 1,272,000.00	R 1,348,320.00	R 1,429,219.20	R 1,514,972.35	R 6,764,512	
RPU project coordinators	2	R 800,000	R 1,600,000	R 1,696,000.00	R 1,797,760.00	R 1,905,625.60	R 2,019,963.14	R 9,019,349	
Analysts	4	R 500,000	R 2,000,000	R 2,120,000.00	R 2,247,200.00	R 2,382,032.00	R 2,524,953.92	R 11,274,186	
								R -	
TOTAL Human Resources Cost								R 27,058,046	

5.5.6.5 SMART implementation schedules

I6 Establishment of Revenue Protection Unit	Y1		Y2				Y3				Y4				Y5					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Establish resource requirements & align planned organogram with resource needs	←→																			
Establish roles & responsibilities by determining strategies to fall under control & management of this unit.	←→																			
Recruit / transfer(second) staff requirements	←→																			
Commence with implementation of identified strategies	←→																			

5.5.6.6 Risks & Mitigation measures

I6 Establishment of Revenue Protection Unit			
Nr	Risk	Impact	Mitigation
1	Budget constraints to fund strategy	Failure to implement strategy	Thorough needs analysis, design and costing for budget prouces in following financial year procurement
2	Internal skills shortages to perform identified roles & responsibilities	Failure to implement / Sub-standard implementation	Ensure clear role definitions and recruit externally where needed.
3	Non-implementation	Detrimental to other identified strategies	Manage strategies through project steering committee process

5.5.6.7 Procurement & Implementation options

The Revenue Protection Unit is envisaged to be an internal team. Costs for team members will need to be budgeted for. Staffing of Unit may happen through recruitment, transferring of staff from existing resources or a combination thereof.

5.6 Social Intervention & Initiatives

5.6.1 Strategy S1 - Community Engagement

5.6.1.1 Strategy Description

The proposed community engagement strategy is aimed at setting direct and open contact on a programmatic continuous base with affected communities, their leaders, and the authorities to create awareness about the KDM NRE management strategy and management plan. The community engagement strategy includes 3 initiatives, namely, the creation of an awareness campaign, ward-level NRE strategy management through representative forums and a communication channel. The 3 initiatives are outlined below:

A. Establishment of an awareness campaign programme

KDM does not have an awareness campaign aimed at maximising the visibility and the main message of the overall NRE management strategy, therefore an awareness campaign should be established and implemented in KDM. The main purpose of the awareness campaign should be to:

- Inform and educate communities with KDM about electricity supply, consumption, and associated safety precautions; and
- Motivate the communities and influence their attitudes, behaviours, and beliefs towards key electricity related topics viz., payment of electricity bills and illegal electricity connection.

The central message of any awareness raising campaign can be communicated to its intended audience/s using a range of different techniques and approaches viz., newsletters, social media, events and meetings with stakeholders and representatives of the target group to create general awareness on the topic. As part of an awareness campaign to raise awareness about NRE management, non-digital channels should also be considered. (Figure 1).

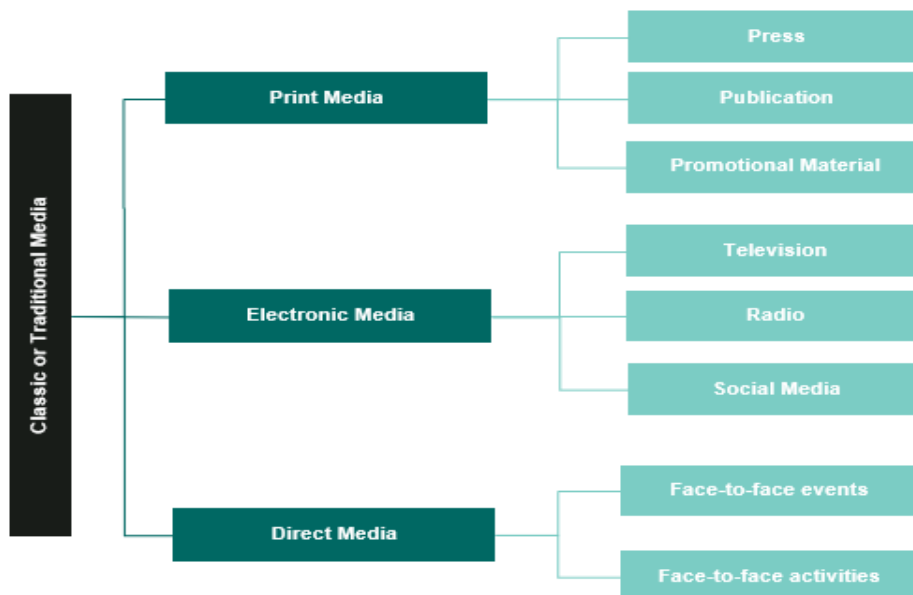


Figure 1: Channels of communication

The benefits of each communication channel are highlighted below:

- **Print media**

This channel will ensure that the NRE management strategy reaches the general public and decision makers. The channel will use newspapers, magazines, and press releases. Promotional materials such as advertising boards posters and flyers will help in keeping attention on the strategy.

- **Direct media**

Direct media such as face-to-face events, meetings, trainings, conferences, and word of mouth will constitute a very powerful resource in transferring information about the NRE management strategy. This could include interactive sessions for different subjects relevant for stakeholders.

- **Electronic media**

This includes collective of online communication channels built on community-based input such as Facebook, Twitter, LinkedIn, WhatsApp, YouTube, content-sharing, and collaboration. These communication channels are based on building a relation with the receiver, and thus can be time-consuming. But, unlike traditional broadcast channels, social media enables people to respond and react to information, making them absolutely engaging. However, a channel not to be set aside in campaigning, leveraging the power of peer-to-peer recommendation should always be word of mouth.

B. Establishment of Ward-level NRE representative Forums

KDM does not have any forums aimed at advocating for the aims and objectives of the NRE management strategy. The KDM has 29 wards, each ward should have a representative forum which is aimed at representing the NRE management strategy at a ward level. The ward representative forums should be:

- Representative of the local Municipal ward, and not politically aligned.
- Aimed at increasing the participation of residents in decision making related to electricity-based initiatives.
- Involved and aware of all electricity related matters as per the integrated development planning process, municipal performance management, annual budget, council projects and other initiatives related to electricity revenue generation; and
- Pro-active and take note of electricity related matters within the ward and assist with implementation of the awareness campaign within the ward.

It is proposed that existing ward structures be utilised as a link between the KDM and the communities within KDM, for the purposes of obtaining information pertaining to electricity supply, consumption, and associated matters. Each ward representative forum should be made up of the ward councillor, ward committee, Community Development Workers (CDWs), and existing community groupings such as business, community-based organisation (CBO), Non-Governmental Organisations (NGOs) and labour Forums. It will be essential to identify groupings and their legitimate representatives, and these will form part of the NRE Forums. The proposed ward structure will ensure that ward-based electricity concerns and issues are raised to respective ward NRE forums.

Additionally, it will ensure that the communities are granted an opportunity to have a say in decision-making, planning and electricity-based initiatives that the council or municipality initiates. This will ensure that ward level impacts are appropriately assessed. **Figure 2** presents the proposed structure of each ward NRE forum, including an overview of the responsibilities of the ward councillor, ward committee and existing community groupings.



Figure 2: Proposed Structure of the NRE Strategy representative ward forums

C. Establishment of communication channel for public

There is currently no NRE management communication channel in place for the public in KDM to voice their concerns or complaints. The establishment of communication channel will be aimed at providing a system for KDM to receive information and complaints from communities and then disseminate it to the relevant operational units. This will ensure that grievance redress action can be taken quickly. The KDM should set-up a communication channel which will grant communities a platform to:

- Report any observed illegal connections; and
- Report electricity related grievances experienced in the area, including disruption to electricity supply.

In addition,

- Communication through a cost-effective channel could be achieved by KDM email account and WhatsApp line which community members could respectively use to email or text KDM to report issues related to electricity connections and supply¹; and
- NRE strategy management concerns and suggestion box could be placed at each convenient public places.

Communication channels should link up with the proposed CRM system to ensure proper management of the various communication channels.

5.6.1.2 Strategy Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
S1	Community Engagement	Social	M	L	B	I/O

¹ It is recommended that KDM appoints a stakeholder engagement specialist who will be responsible for managing communication from the recommended platforms.

5.6.1.3 High level scope

Nr	S1 Community Engagement	
	Scope	Roles & Responsibilities
1	Awareness Campaign Appoint KDM stakeholder engagement specialist Development of comprehensive awareness campaign Implementation of activities Monitoring of activities Evaluation against key indicators	Internal (Engagement Specialist) SP (execution of deliverables)
2	Ward level NRE strategy representative forums Development of forum constitution Announcement of establishment of Ward forums Execution of Ward forum activities (meetings etc)	External service provider
3	Communication channel management Setting up e-mail & Whatsapp channels Integrate with CRM system Placement of suggestion boxes in public spaces	External service provider

5.6.1.4 Cost Estimation

The cost estimation for this strategy is based on the following assumptions:

- The appointed KDM stakeholder engagement specialist will be appointed at a rate of R 250 per hour.
- One senior social consultant will work on the conceptualisation of an awareness campaign and develop a campaign awareness strategy.
- Two senior social consultants will work on the implementation of the strategy
- Two senior consultants will work on the monitoring and evaluation of the campaign indicators
- One senior consultant will work on the development of the ward forum constitution
- Two senior consultants will work on the planning and facilitation of forum meetings
- The service provider to place comments and suggestion boxes in the 29 wards within KDM will require 240 hours, with the cost per hour of R3000.00 (which includes the sourcing and supply of the boxes)

The table below provides a summary of the costs associated with this strategy.

S1 Community Engagement						R	4,145,000	
Human Resource	Number	Cost/Item	Annual Quantity					Total cost
Stakeholder Engagement specialist	1	R 528,000	Y1	Y2	Y3	Y4	Y5	R
			1	1	1	1	1	R 2,640,000
								R -
TOTAL Stakeholder Engagement specialist								R 2,640,000

Contractor / Consultant Costs	Qty	Cost/Item	Annual Quantity					Total cost
Conceptualize awareness campaign & develop strategy	1	R 500	Y1	Y2	Y3	Y4	Y5	R
Implement strategy	2	R 500	160	200	200			R 80,000
Monitor & evaluate campaign	2	R 500	200	150	150			R 300,000
Ward forum constitution development	1	R 500	150					R 225,000
Ward forum meetings planning & facilitation	1	R 500	160					R 80,000
Ward forum meetings planning & facilitation	2	R 500	100	50	50			R 100,000
Placing of comments / suggestion boxes	1	R 3,000	240					R 720,000
TOTAL Other Costs								R 1,505,000

5.6.1.5 SMART implementation schedules

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
S1 Community Engagement																				
Awareness Campaign																				
Appoint KDM stakeholder engagement specialist																				
Development of comprehensive awareness campaign																				
Implementation of activities																				
Monitoring of activities																				
Evaluation against key indicators																				
Ward level NRE strategy representative forums																				
Development of forum constitution																				
Announcement of establishment of Ward forums																				
Execution of Ward forum activities (meetings etc)																				
Communication channel management																				
Setting up e-mail & Whatsapp channels																				
Integrate with CRM system																				
Placement of suggestion boxes in public spaces																				

5.6.1.6 Risks & Mitigation measures

Nr	S1 Community Engagement		
	Risk	Impact	Mitigation
1	Unsolved legacy issues - Legacy issues that have not been resolved could potentially lead to an impasse between the municipality and the community.	Unwillingness to participate on the strategy initiatives. Delays in strategy implementation	KDM should disclose all legacy issues that might delay the project
2	Unrealistic community expectations	Social mobilisation viz., community protests	Engage consistently, authentically, and transparently, guided by a clear and sound stakeholder engagement plan
3	Lack of awareness among target audience about the NRE Management strategy and existence of the forum, due to sub-standard planning & implementation at Ward level	Lack of awareness and buy-in about the strategy	Ensure implementation plan contains monitoring and evaluation strategy
4	Exclusion and discouragement due to communication from the public via the communication channels not being attended to.	Community members feeling excluded and discouraged. Diminished buy-in.	Ensure communication fro public as attended to via the CRM system

5.6.1.7 Procurement & Implementation options

The comprehensive conceptualisation and implementation of the community engagement strategy should be outsourced to a qualifying social consulting company, with the on-going support of KDM and respective ward councillors within KDM.

Table below presents the funding options for the proposed initiatives under the community engagement strategy, these funding options can be used to supplement the existing municipal budget.

Potential funder	Description
Municipal financial mechanisms (loans and grants)	Funders include government, development finance institutions and donors. Although most mechanisms can fund a range of infrastructure projects, they can be used for specific energy related projects.
Municipal infrastructure grant	The MIG fund is allocated according to a formula to all municipalities that fulfil three categories of conditions: <ul style="list-style-type: none"> conformity with the Division of Revenue Act. cross-cutting conditions (e.g., compliance with the IDP, infrastructure development with economic spin-off for poverty alleviation and job creation, basic service coverage, among others) and Sector specific conditions.
National Treasury	The fund supports implementation of municipal restructuring or modernisation plans necessary to avoid financial distress and possible risks to the national fiscus.

6 Strategy Summary

This section aims to provide a holistic overview of the strategies presented in the previous section, highlighting the following aspects.

- Priority Matrix
- Timeline Overview
- Estimated cost summary

6.1 Priority Matrix

Strategy nr	Description	Category	Priority Matrix			
			Impact	Quick Win	Funding Availability	Technical Capacity
T1	Eskom POS Metering assurance	Technical	L	L	B	O
T2	Ensure all LPU Customers on AMR	Technical	L	L	B	O
T3	Technical & Non-technical losses separation	Technical	L	L	B	I/O
T4	Implementation of SCADA System & Control Centre Phases 1-3	Technical	L	L	B/S	O
T5	Electrification & prepaid metering of informal settlements	Technical	L	L	S	O
F1	LPU (MD) customer audits & consumption verification	Financial	H	H	S	O
F2	Bulk metering of stands with multiple prepaid meters	Financial	M	M	S	O
F3	SPU customer metering / vending assurance	Financial	M	M	B	O
F4	Review of credit control processes & activities	Financial	L	L	B	I/O
I1	Intra- & Interdepartmental Standard Operating Procedures enhancement	Institutional	L	L	B	I/O
I2	Tariff study & review	Institutional	L	L	B	O
I3	Implementation of KDM CRM system	Institutional	L	L	B	O
I4	Implementation of single platform iLembe Indigent Management System	Institutional	L	L	B	O
I5	Implementation of Data Warehousing & Business Intelligence (BI) platforms	Institutional	M	L	S	O
I6	Establishment of Revenue Protection Unit	Institutional	M	M	B/S	I
S1	Community Engagement	Social	M	L	B	I/O

6.2 Timeline Overview

	Y1				Y2				Y3				Y4				Y5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
T1 Eskom POS Metering assurance																				
T2 Ensure all LPU Customers on AMR																				
T3 Technical & Non-technical losses separation																				
T4 Implementation of SCADA System & Control Centre Phases 1-3																				
T5 Electrification & prepaid metering of informal settlements																				
F1 LPU (MD) customer audits & consumption verification																				
F2 Bulk metering of stands with multiple prepaid meters																				
F3 SPU customer metering / vending assurance																				
F4 Review of credit control processes & activities																				
I1 Intra- & Interdepartmental Standard Operating Procedures enhancement																				
I2 Tariff study & review																				
I3 Implementation of KDM CRM system																				
I4 Implementation of single platform iLembe Indigent Management System																				
I5 Implementation of Data Warehousing & Business Intelligence (BI) platforms																				
I6 Establishment of Revenue Protection Unit																				
S1 Community Engagement																				

6.3 Costs Summary

Project	Reference	Budgeted / To be Sourced / Vuthela	Cost
T1 Eskom POS Metering assurance	5.3.1.4	B	R 1,311,000
T2 Ensure all LPU Customers on AMR	5.3.2.4	B	R 3,540,750
T3 Technical & Non-technical losses separation	5.3.3.4	B	R 3,374,000
T4 Implementation of SCADA System & Control Centre Phases 1-3	5.3.4.4	B/S	R 50,247,591
T5 Electrification & prepaid metering of informal settlements	5.3.5.4	S	R 9,682,133
F1 LPU (MD) customer audits & consumption verification	5.4.1.4	S	R 822,650
F2 Bulk metering of stands with multiple prepaid meters	5.4.2.4	S	R 476,050
F3 SPU customer metering / vending assurance	5.4.3.4	B	R 18,653,500
F4 Review of credit control processes & activities	5.4.4.4	B	R 2,908,895
I1 Intra- & Interdepartmental Standard Operating Procedures enhancement	5.5.1.4	B	R 420,000
I2 Tariff study & review	5.5.2.4	B	R 780,000
I3 Implementation of KDM CRM system	5.5.3.4	B	R 675,000
I4 Implementation of single platform iLembe Indigent Management System	5.5.4.4	B	R 3,052,174
I5 Implementation of Data Warehousing & Business Intelligence (BI) platforms	5.5.5.4	S	R 5,625,000
I6 Establishment of Revenue Protection Unit	5.5.6.4	B/S	R 29,308,046
S1 Community Engagement	5.6.1.4	B	R 4,145,000
Totals			R 135,021,789

Note:

The budget for T4 SCADA has an allocated budget of R21, 897,592.00 for phase 1 with additional budget requirements for future phases.

For a detailed breakdown of each cost item over years and per item, please see reference number in document.