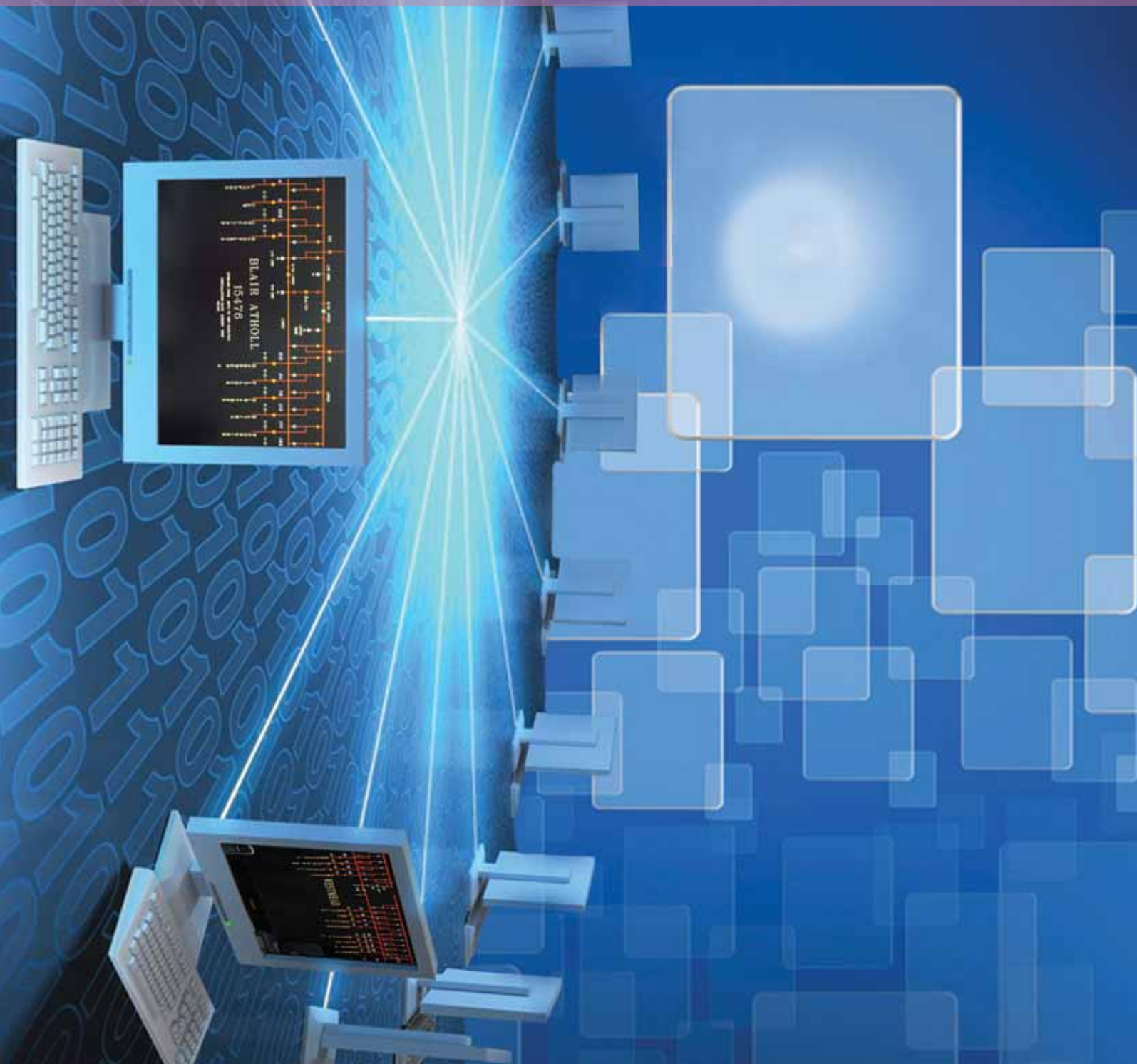


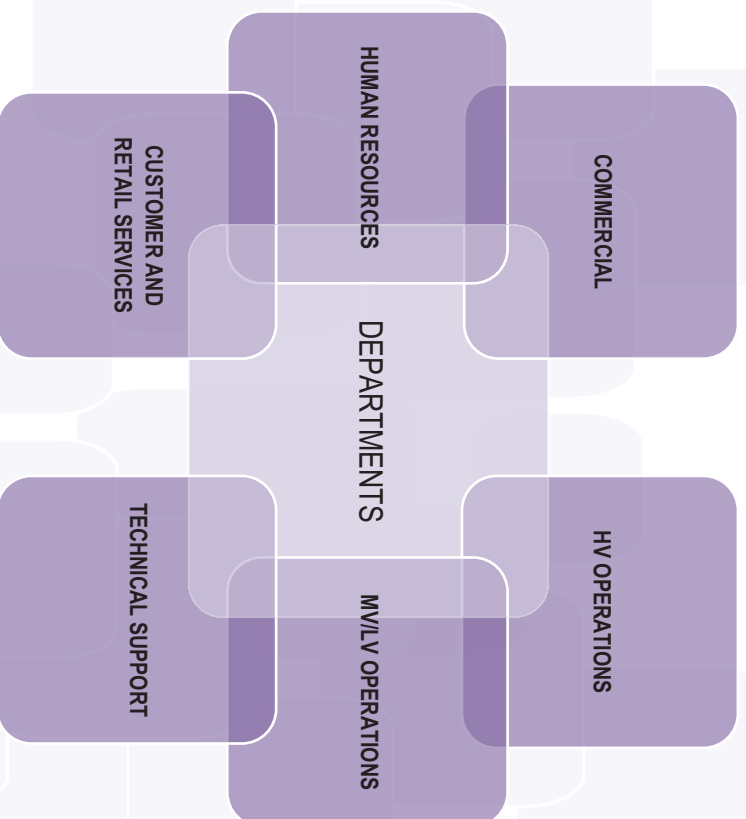


annual 2016 report

ETHEKWINI ELECTRICITY



To develop the Electricity Unit as an undertaking that maximises the value of its electricity supplies and makes effective use of all its resources



VISION

EThekwini Electricity - a leader in electricity distribution providing energy for the future.

MISSION

To provide electricity, public lighting and other energy services that satisfy our customers and community whilst maintaining sound business principles.

SCOPE

EThekwini Electricity supplies more than 734 000 customers in an area covering nearly 2 000 square kilometres. This encompasses the area of the eThekweni Metropolitan Region and some adjacent areas.

Electricity for the main supply to the Metro Region is purchased at 275 000 Volts from Eskom. EThekweni Electricity also purchases electricity from Eskom for Kingstburgh, Mpumalanga and Magabeni. From these points electricity is transmitted and distributed for use by the full spectrum of customers ranging from the large industrial and commercial sector to the residential communities. EThekweni Electricity purchases just over 5% of the total energy generated by Eskom. EThekweni Electricity operates under the Electricity Regulation Act, 2006. Its policies are determined by the Metropolitan Council of Durban and the National Energy Regulator of South Africa (NERSA).

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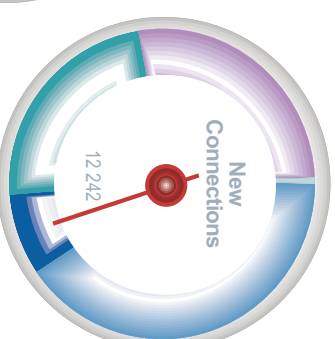
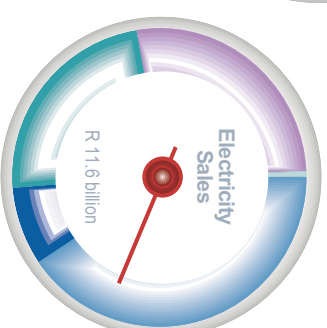
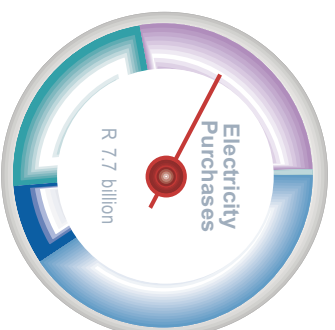
When I look back at the 2015/2016 financial year, I will agree that it was a year filled with important events. Some events motivated us, some events tested us but overall these events strengthened us. It is this strength that keeps in focus our mandate, of uplifting the lives of our people through the provision of services.

Our financial position was strong as we closed off the books for the year. We managed to push through 1.32% more kWh's through the network when compared to last year. This increase is welcomed as it breaks the gloomy trend of negative year on year growth as experienced for the last 7 years. Our total revenue for the year amounted to R 12.5 billion. R 7.74 billion accounted for our bulk energy costs while repairs and maintenance and employee related costs accounted for R 523 million and R 901 million respectively. These three cost items account for the majority of the total expenditure incurred for the year. Expansion and refurbishment capital programs progressed well, reaching a total investment of R 600 million.

Outages are inevitable when operating a distribution grid, however theft of electricity and infrastructure are exacerbating the problem. A record of insurance claims against infrastructure theft has amounted to R 54 million for the year. Consequential losses far surpass this amount as the estimated cost of unserved energy is between R 75-R 100 / kWh. Although numerous efforts are underway to curb this scourge, the size and vastness of the network makes this a difficult task.

There has been a welcomed amendment to the Criminal Matters Amendment Act regarding infrastructure theft. The amendment places stricter measures for the granting of bail and the sentencing of offenders that are involved in infrastructure theft that negatively affects the provision of basic services to the public. We are confident that this amendment to the act will play a vital role in discouraging theft.

Electrification programs were ongoing during the year and we managed to connect in excess of 11 000 new customers to the grid. Despite the challenges in making these services available, the sheer smile on the customers face when receiving electricity for the first time, warms my heart and makes all efforts in overcoming these challenges worthwhile.



Our call centres were kept busy during the year as they logged an average of 15000 faults per month. 10% of these faults were related to street lighting. Faults teams responded to all outages and ensured that power was restored. There was an influx of faults recorded during the rainy seasons, as the network is prone to more outages in these inclement weather conditions.

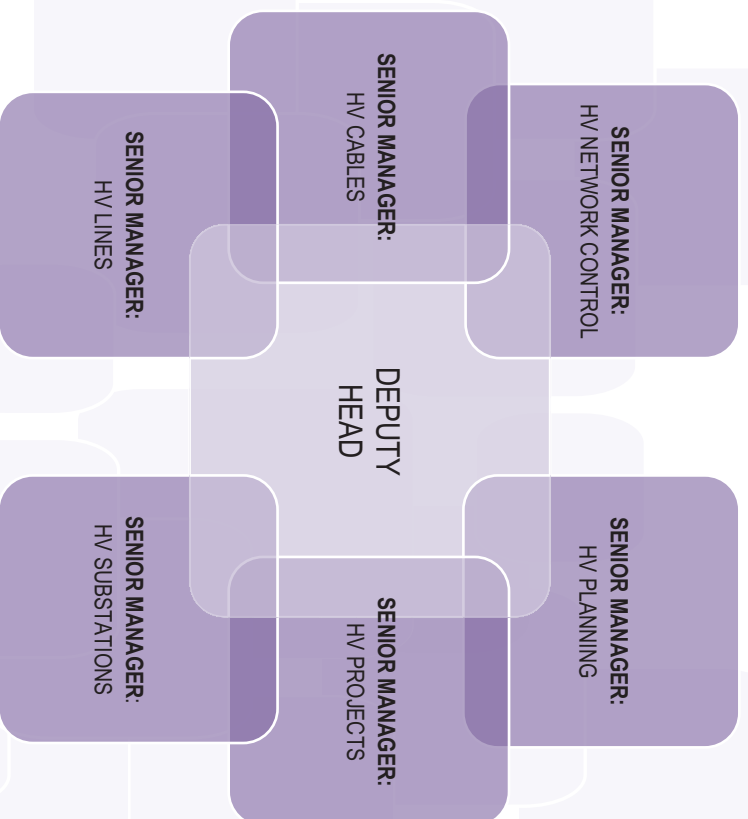
There has been major strides taken in migrating our customer base to the new and improved Revenue Management System (RMS). We are eager to start using the new billing system and take advantage of its enhanced capabilities. At this stage, we are working closely with the project teams to ensure that we overcome the 'teething phase' quickly, so that we minimise any disruptions and inconvenience to the end customer.

During the financial year we were inundated with requests to entertain reverse power flow. Customers not only want to buy power from Municipalities but would also like to generate and sell power back. This phenomenon is becoming more popular as generation technology becomes cheaper against a backdrop of rising electricity prices. We have worked closely with the Regulator to design and prepare a small scale residential embedded generation framework to manage these requests. We endeavour to formally launch this program in 2017. The program will allow for the off-setting of generated electricity at a rate equivalent to the bulk electricity purchase price. Stringent technical and commissioning criteria will be enforced, prior to the connection of these generators to the grid.

I wish to extend my sincere gratitude to my executive team and to all staff for their tireless contributions to the organisation. Gratitude must also be extended to our leadership structures for their support and guidance during the year.

R. S. MAPHUMULO

Planning, construction, operation and maintenance of high voltage lines, cables and substations



HV OPERATIONS

The HV Operations Department is responsible for the planning, construction, operation and maintenance of eThekweni Electricity's primary network of high voltage lines, cables and substations. The projects undertaken by this Department are to provide for increased bulk capacity and to improve the reliability of the regions HV electricity supply.

Accordingly they are typically large, high cost projects which require considerable time and attention to satisfy environmental legislation in the first instance and then 30 months or more in the construction phase.

Our Department prides itself in providing reliable, state of the art solutions for the delivery of high voltage power from our intake points to our customers and secondary networks.

HV PLANNING BRANCH

The HV Planning Branch is responsible for planning the unit's primary network of high voltage cables, lines, switching stations and substations. The timelines for providing HV infrastructure spans several years and therefore necessitates careful planning so as to ensure that there is sufficient HV infrastructure in place to meet the demand of all customers in a sustainable manner. The HV Planning Branch is the custodian of the transmission network master plan which is inclusive of a 20-year capital program that allows for HV network development, reliability requirements and refurbishment requirements. Analysis of the transmission network is carried out, using system analysis software for network load flows, voltage stability and fault level analysis. Key initial capital project life cycle processes, namely, application for Council funding, acquisition of land and servitudes, environmental impact assessment approvals and completion of preliminary designs are also completed by the branch.

Highlights

Handed over the following to HV Projects Branch for execution:

- Upgrade 132 kV Klaarwater-Hillcrest overhead line from Klaarwater Substation to Stockville Substation
- Upgrade of 132/11 kV Kingsburgh Substation
- Replacement of 132 kV cables from Rossburgh Substation to Congella Substation
- Replacement of 132 kV cables from Grosvenor Road Sealing End Site to Dalton Road Substation
- 132/11 kV Woodlands Substation

Progress on existing projects

- 132/11 kV Alice Street Substation - Preliminary design stage
- 32/11 kV Cornubia 1 Substation - Design proposal stage
- 132/11 kV Inyaninga 1 Substation - Preliminary design stage
- 132/11 kV Inyaninga 2 Substation - Preliminary design stage
- 132/11 kV Isipingo Substation - Preliminary design stage
- 132/11 kV Morelands Substation - Preliminary design stage
- 132/11 kV Moriah Substation - Design proposal stage
- 132/11 kV Longcroft Substation - Geotechnical studies
- 132/11 kV Sibiya Substation - Preliminary design stage
- 132/11 kV Verulam Substation - Land acquisition stage
- 132 kV Oil Filled Cable Replacement (CBD) - Preliminary design stage
- 132 kV Oil Filled Cable Replacement (Durban South) - Preliminary design stage
- 132 kV Verulam Switching Station - Land acquisition stage
- 275/132 kV Bellair Substation - Design proposal stage
- 275 kV Durban North Substation Yard Upgrade - Preliminary design stage

Key challenges

- Delays in obtaining clearance for new high voltage infrastructure in the immediate vicinity of King Shaka International Airport from Civil Aviation Authority
- Expansion of high voltage networks in the northern and western suburbs are dependent on Eskom's strengthening its network to the City, which risks delays due to resource constraints at Eskom

Achievements

- Updated HV network parameters on Digsilent software model
- Completed asset replacement programme for power transformers
- All HV Planning Engineers have attended the PLS CADD software training
- Geographical load forecasting model - 90% updated

HV PROJECTS BRANCH

The HV Projects Branch is responsible for the detailed design and specification of equipment and management of major system reinforcement projects. There were 25 major projects in progress during the 2015/2016 year. The status of the projects at the end of the period under review is as follows:

- Austerville 132/11 kV Substation: New 132/11 kV substation aimed at relieving the aged 33/11 kV substations in the Jacobs area and further reinforcing the 11 kV network. Detailed civil design process in final stages.
- Jacobs 132/11 kV Substation: Addition of the 132 kV GIS to provide switching flexibility and reinforce the Jacobs 132 kV network by creating links between HV substations in the area. Civil designs completed and site works to commence.
- Kingsburg 132/11 kV Substation: The commercial and residential load demand in the area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Detailed electrical design in progress.
- Kloof Substation 132/11 kV Substation: New 132/11 kV substation aimed at replacing the ageing Kloof Substation and increasing reliability in the area. Detailed civil design in progress.
- Rossburgh 132/11 kV Substation: New 11 kV capacity to replace the 33 kV network that is being phased out. Civil designs completed and site works to commence.
- Phoenix Industrial 132/11 kV Substation: Replacement of the ageing and unreliable 11 kV switchgear, final testing in progress.
- Klaarwater 275/132 kV Substation: Upgrade current 250 MVA transformers to 315 MVA due to the increase in load. Procurement for the replacement of the other 4 x 250 MVA 275/132 kV transformers and associated equipment completed. Installation in progress.
- Pinetown 132/11 kV Substation: The commercial and residential load demand in the Pinetown, New Germany and Cowies Hill areas has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Final phase in progress.

- Newlands 132/11 kV Substation: The commercial and residential load demand in the area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Installed 2 x 30 MVA transformers and associated 132 kV equipment. Commissioned.
- Blair Atholl 132/11 kV Substation: The commercial and residential load demand in the Westville area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Commissioned.
- Ridgeview 132/11 kV Substation: The commercial and residential load demand in the Cato Manor area has increased and the 11 kV system needs to be reinforced. Commissioned.
- Greenbury 132/11 kV Substation: The commercial and residential load demand in the area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. All primary plant has been installed and final testing in progress.
- Umdloti Beach 132/11 kV Substation: The commercial and residential load demand in the area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Transformers previously relocated. New replacement transformers currently being installed.
- Dalton Rd 132/11 kV Substation: The commercial and residential load demand in the area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Commissioning tests in progress.
- Plangweni 132/11 kV Substation: Due to load growth the existing substation is required to be upgraded from 30 MVA to 60 MVA. Final testing in progress.
- Jameson Park 132/11kV Substation: The commercial and residential load demand in the area has increased resulting in the need to upgrade the existing 33/11kV Substation and replace it with two new 30 MVA 132/11kV transformers and associated plant and equipment. Civil work completed. Installation of the 132 kV GIS in progress.
- Umlazi 132/11 kV Substation: The commercial and residential load demand in the area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Pre commission testing in progress.
- Durban South 275kV Bus Section: Required to improve the security of supply at this strategic substation. Installation of plant and equipment pending network constraints.
- K E Masinga 132/11 kV Substation: The commercial and residential load demand in the city area has increased and the 11 kV system needs to be reinforced. Installation of plant in progress.
- Springpark 132/11 kV Substation: The commercial and industrial load demand in the Springpark area has increased and the 11 kV system needs to be reinforced. Civil works in progress and plant has been ordered.
- Bulwer 132/11 kV Substation: The commercial and residential load demand in the Glenwood area has increased and the 11 kV system needs to be reinforced. Civil works in progress.
- Underwood 132/11 kV Substation: The commercial and residential load demand in the Pinetown area has increased and the 11 kV system needs to be reinforced. Civil works in progress.
- La Mercy 132/11 kV Substation Reinforcement: The commercial and industrial load demand in the area has increased and the firm capacity needs to be upgraded from 30 MVA to 60 MVA. Installation of additional transformers in progress.

- Stockville 132 kV Switching Station: New switching station proposed to feed the new proposed substation in the Mahogany Ridge and Kloof areas. This switching station will also feed the existing Westmead, Marriannidge, Hillcrest and Waterfall Substations which will eliminate security risks and operational limitations which apply to existing circuits. Detailed civil design in final stage.
- Mahogany Ridge 132/11 kV Substation: The commercial and residential load demand in the Westmead and Mahogany Ridge areas has increased and the 11 kV system needs to be reinforced with additional capacity (60 MVA firm). Detailed civil design in final stage.

Lowlights

- Early retirement of the Senior Manager who was at the helm of this Branch for over 20 years.

Key Challenges

- High vacancy rate in the department. This limits the department's ability to run many projects concurrently.
- Theft of materials such as copper at brownfield sites is on the rise and sometimes delays the projects significantly due to long lead times of replacing certain items.
- Increased trend of communities rioting for increased quotas of local labour and bringing construction projects to a halt. This delays project progress.
- Network constraints dictate the availability of existing plant and sometimes affect progress at brownfield sites.

Future Focus

- Acceleration of the replacement of oil filled underground cables constituting the bulk of the city's cable network to be completed before 2022.
- Completion of all projects that are in the final stages.
- Filling of vacant posts for resources required for site supervision of projects in order to improve on implementation.

New Technologies

- The following low maintenance technologies have been introduced on new high voltage transformers:
 - Vacuum Tap Changers
 - Dehydrating Breathers
 - Resin Impregnated Bushings

HV SUBSTATIONS BRANCH

The HV Substations Branch is responsible for the operation and maintenance of equipment that has voltage ranging from 11 kV up to 275 kV. Energy is imported from Eskom at 275 kV. The 275 kV is then transformed to 132 kV, 132 kV transformed to 33 kV and 11 kV, and 33 kV is then transformed to 11 kV and in few cases to 6,6 kV.

The types of equipment that the HV Substation Branch is responsible for includes, but not limited to, busbars, capacitors, circuit breakers, instrument transformers, isolators, lightning masts, power line carriers, power transformers and surge arresters.

Highlights

- The committed work order scheduled attainment increased significantly from an average of 51,65 % in 2014/2015 to 58,54 % in 2015/2016. This subsequently resulted to a significant reduction of work order backlog in committed schedules by approximately 11 %.
- In 2015/2016, the tactical maintenance undertaken by the Branch increased by 17 %. This is one of the crucial Key Performance Indicators as it is known that tactical maintenance generally results in low probability of equipment failures.
- There was also a significant decrease in the number of catastrophic failures of equipment when compared to the 2014/15 statistics.
- Following the completion of power transformer online assessment, the focus shifted to the offline assessment where significant progress was made and the results thus provided the HV Substations Branch an understanding of the condition of each transformer evaluated, thereby allowing for the proper prioritisation of maintenance, as well as obtaining an indication of transformers that are candidates for replacement. The results of this assessment also allowed the Branch to identify transformers with a high risk of failure, most notable the 275/132 kV T2A transformer at Durban South Substation. The success of the Branch's transformer fleet assessment programme was shared with other utilities at the 2015 AMEU Convention, and the Electricity Unit was presented with the Cigre Best Paper Award for this contribution.
- Significant progress was made in the compilation and implementation of some of the once-off and periodic Network Reliability Programmes (NRPs).
- The decommissioning of old 33 kV substations, namely the Umhlanga Rocks Substation and partly Sydenham Substation.

Lowlights

- The incidents of copper theft in HV substations are on the rise and they are threatening the functionality of substations.
- The delay in the installation of CCTV cameras in substations to deter the prospective copper thieves.
- The increase in the number of 132 kV outdoor circuit breaker failures equipped with hydraulic mechanism.

Key Challenges

- The oil circuit breakers are of old technology that render themselves uneconomical to maintain and unsafe to operate. Consequently they are gradually being phased out and replaced by vacuum and gas circuit breakers. However there is still a large number of oil circuit breakers present in substations especially at 11 kV and also at 33 kV. As a result more resources (staff, labour, material, and time) are spent on maintaining this type of switchgear. There are frequent problems associated with their old age such as shortage of spares, mal-operation and severe failures. The decision was taken to phase out 33 kV plant and equipment because of age and other associated problems such as unavailability of spares and multi transformation. The decommissioning of such plant and equipment has been made possible by construction of new 132/11 kV substations.
- The difficulty in filling a number of vacant crucial positions within the Branch also continues to be a challenge. This is limiting the Branch's capability in undertaking maintenance work effectively and efficiently and thus exposes the equipment to increased risk of failure.

Future Focus

- Significant progress was made in the drafting of Service Level Agreements (SLA) with the Original Equipment Manufacturers (OEM). In 2016/2017, the Branch intends to have these SLA finalised and signed with the OEMs. This will ensure that specialist skills are provided by the OEMs when required to undertake planned maintenance and to respond timeously to breakdowns.
- Filling of critical vacancies which will enhance the productivity and effectiveness of the HV Substations Branch.
- Securing of additional posts through the proposed organogram changes which will allow the HV Substations Branch to significantly reduce the maintenance backlog.
- To continue with the compilation and implementation of once-off and periodic Network Reliability Programmes (NRP).
- To compile the strategic spares policy and also identify and fill gaps in spare requirements in order to ensure that the Branch responds timeously to any equipment failure in the network.
- The return to service of five strategic transformers, namely Clermont T2B, Congella T2B, Durban South T2A, Ntuzuma T1A and Westmead T1A, as well as the Hector Bay at Klaarwater, will be one of the Branch's key focus in 2016/2017.
- Phase one of the transformer fleet assessment revealed that a large number of power transformers have high moisture content. For this reason, the Branch is currently in a process of outsourcing the online transformer drying equipment to ensure that transformers are dried out without having to take them out of service, thereby ensuring continued equipment availability.
- The Branch will be fast tracking the introduction of online monitoring for some strategic equipment such as transformers and gas insulated switchgear.
- The Branch will also embark on the bulk replacement of the problematic 132 kV outdoor circuit breakers equipped with hydraulic mechanism.

HV LINES BRANCH

The HV Lines Branch is responsible for the operation and maintenance of the high voltage overhead lines network consisting of 141 circuit kilometres of 275 kV, 478 circuit kilometres of 132 kV and 13 circuit kilometres of 33 kV overhead line.

Key Priority Projects

Refurbishment of the following assets:

- Ottawa-Parlock 132 kV Double Circuit Line: Painting of structures and re-insulation
- Bellair-Rossburgh 132 kV Double Circuit Line: Foundations refurbishments
- Re-design of Klaawater-Ungeni 132 kV Double Circuit Line for upgrade with High Temperature

Low Sag Conductors (HTLS)

- Design of Klaawater-Hillcrest 132 kV Double Circuit Line for upgrade from single to twin ELM.
- Design of Stockville-Mahogany Ridge 132 kV Double Circuit Line.
- Detailed condition assessment for the determination of the remaining life of existing 132 kV and 275 kV overhead lines and needs analysis for refurbishment.
- Procurement of new contractors for the refurbishment and the construction of 132 kV and 275 kV overhead lines of which actual work will commence in 2016/2017 financial year.

Key Challenges & Mitigations

- Encroachment of asset servitude and corridors still remain the highest risk to the infrastructure: This challenge need proper enforcement of Municipal laws and policies.
- Maintenance backlog has increase due to the delay in staff appointments.
- Inability to meet employment equity targets hence results in an increase in vacancies: A program to train and upskilled personnel, specifically the target group as per the employment equity plan will need to be developed and implemented urgently.
- Suitable off road (4x4) vehicles is a challenge as the access roads are becoming more difficult to negotiate with the encroachment of informal settlements and developments within the power line corridors: This will be mitigated by working with Transport Branch to procure suitable vehicles.
- Maintenance of access roads and vegetation: Vegetation management contractors have been appointment to assist with the implementation of the vegetation management plan.
- Faults resulting from lightning strikes: Studies to be conducted on the lightning performance of the HV Lines infrastructure.

Highlights

- Steel theft has been reduced significantly with the success of theft monitoring system.
- HV Lines Branch has successfully manage to divide the Construction and Refurbishment contract into various sections.

This has opened the markets and allowed four contractors to be appointed instead of only one contractor, as it has happened over the past decades.

- In addition to the above, HV Lines Branch has also successfully implemented the Contract Participating Goals to afford local contractors an opportunity to also participate in this previously isolated market. This will also allow skills transfer to local contractors, hence eThekweni Municipality skills base.

Future Focus

- Execute the Klaawater-Ungeni 132 kV Double Circuit Line upgrade project.
- Procure and install more tower steel theft monitoring devices.
- Focus on access roads maintenance and Vegetation Management plan implementation.
- Continue with Asset Refurbishments project.
- Participate on national and international technical platform to learn and share knowledge with other utilities.

HV CABLES BRANCH

The HV Cables Branch is responsible for the operation and maintenance of 132 kV, 33 kV, and 11 kV cable assets which form part of the primary network.

The maintenance of pressurised gas and fluid-filled cables continues to be a problem. A number of leaks and faults had to be located and repaired on several strategic cables which have now been in service in excess of 40 years. Several 33kV circuits have already been decommissioned with the new 132kV substations being commissioned. Focus now is on the decommissioning of the 33kV gas filled cables. Plans are in place for the replacement of fluid filled 132kV cables feeding the city grid starting early in 2017.

A number of cables had to be relocated to suit major development projects i.e. the bus rapid transport system, the new Umhlanga interchange, etc. The laying of new fibre networks has resulted in damage to HV infrastructure. Several interventions have been attempted to minimise the damage. This up-swing in the construction sector also resulted in additional cable damage, requiring immediate attention to restore security of supply.

In addition to the above, three 132kV substations, Ridgeview Quarry, Mondl and SAPREF have been commissioned. Ridgeview will alleviate the loads from Huntleys 33/11kV substations in the near future. This will eventually allow the decommissioning of the problematic gas filled cables feeding Huntleys.

HV NETWORK CONTROL BRANCH

The Network Control Branch comprises of four Divisions: HV Network Control, System Performance, Network Management and Control Systems.

The HV Network Control Division is responsible for the safe operation and efficient performance of the High Voltage Network, which incorporates a 24-hour, manned HV network control centre with remote control and alarm facilities. Durban's primary transmission network, being the supply from 275 000 V, is monitored and controlled from this network room, using a sophisticated Supervisory Control and Data Acquisition (SCADA) system.

The System Performance Division is responsible for network optimisation, ensuring the HV Network can meet the demand for electricity, statistical reporting and quality of supply to the bulk supply points for the 11 000/6 600 V distribution system and large industrial customers that are connected directly to the HV network.

The HV Network Management and Control Systems Divisions are responsible for the installation and maintenance of systems that are required for the efficient monitoring and control of the Unit's critical infrastructure.

Highlights

- The Branch has successfully deployed a fully interconnected diagram of the HV network for control operations. This allows operators to have a clear overview of the entire HV network of eThekweni.
- The Branch has successfully achieved better than 99% uptime of the SCADA system in-line, with international standards for Operations Technology (OT) availability. This is partly due to the replacement of legacy equipment with newer leading edge technology.
- The Branch has increased its SCADA visibility of HV substations to 97%, bringing it up by 7% since last year.
- Through the successful development of an alarm management philosophy, the Branch was able to reduce the daily SCADA alarm count by 45%. This increases operator effectiveness in controlling the HV network.
- As per the requirements set out by Eskom and NERSA, HV Network Control have designed eThekweni Electricity's black start plan, which will assist Eskom to start up the national grid, should a national blackout occur.
- The Branch has developed a cane fire management programme where it is expected that the implementation of this programme will reduce the number of cane fire related faults on the network.

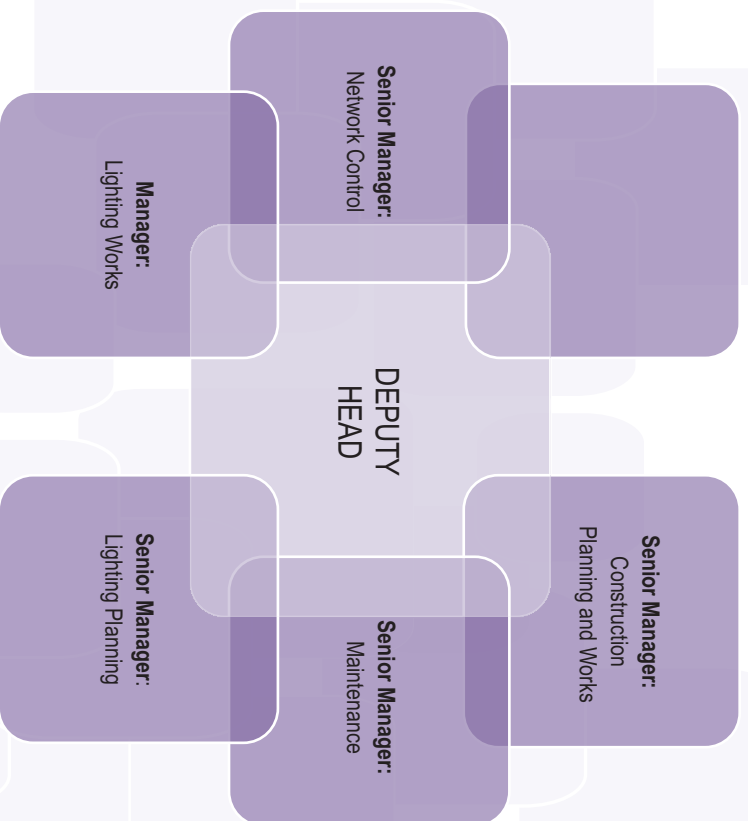
Challenges

- Staffing of the HV control room continues to be a challenge given that Eskom and other municipalities compete for a very small pool of scarce skilled employees. The implementation of the progression grade has not succeeded in the recruitment/retention of HV Control Officers.
- The Branch has to manage network fault levels that have increased due to the commissioning of additional HV and EHV equipment and generation on both Eskom's and eThekweni's network. The challenge is to maintain fault levels below equipment ratings while ensuring security of supply.
- EThekweni Electricity faces the same security challenges as other major electricity distribution utilities in South Africa. The HV Network Control Branch has embarked on a large scale security drive in utilising electronic technologies to help prevent a growing trend of theft in substations.

New Technologies

- The Branch is investigating a Fault Detection Isolation and Restoration (FDIR) tool to limit and prevent the amount of load lost when a network fault occurs. This reduced risk of loss of supply on the HV network will allow for a higher volume of maintenance work to be carried out.
- The Branch is currently investigating the application of Internet of Things (IoT) technologies to increase grid visibility at remote sites.
- The Branch is in the process of procuring the latest power quality instruments and advanced software to manage power quality in near real time. This will improve situational awareness and decision making in the Control Centre.

Planning, construction, operation and maintenance of medium and low voltage networks



MV/LV OPERATIONS

The MV/LV Operations department is responsible for the planning, construction, operation and maintenance of the Unit's medium and low voltage network. The Department plays a major role in connecting new customers to the electrical grid, thus helping to spread electrical services to all sectors of the Community. The Department is also responsible for providing public/street lighting and has a strategic focus of introducing new and improved energy efficient lighting technologies into the City. Further to the above roles, the Department manages and controls all medium to low voltage substations.

Advancements in technology with the benefit of cost/operational optimization is driving significant changes in the electricity supply industry and the MV/LV Department is strategically embracing these advancements to improve the overall operation, stability and reliability of the Network.

CONSTRUCTION PLANNING AND WORKS BRANCH

Connections to housing projects, transit facilities, informal settlements and rural areas has reduced the backlog of dwellings without electricity from 27.56% to 26.24%. During the year 11,424 prepaid connections were completed at a cost of R93m. The Department of Energy, through the Integrated National Electrification Program, provided R30m to electrify 3,298 of these dwellings. A further 46,000 people can now enjoy a better life.

An amount of R135m was spent on supplying electricity to new commercial, industrial and non-prepaid residential customers. A total amount of R263m was spent on capital projects. Some of the major projects include:

- Commissioning of new 11 kV distribution substations
- Replacement of ageing medium voltage switchboards
- Laying of cables from PineTown Major
- Laying of cables from Ridgeview Major
- Installation of new infrastructure to Cornubia Industrial Estate
- Installation of new infrastructure to Cornubia Housing
- Relocation of services to accommodate the Bus Rapid Transport
- Electrification of informal settlements

Lowlights

The year was a very challenging one. We experienced delays in awarding of service contracts. Delays in obtaining material also hindered service delivery. Protests and work stoppages led to further delays. Even with these constraints staff and contractors put in a lot of effort to satisfy our customers.

Key Challenges

The Construction Planning and Works Branch has a number of technical and supervisory posts vacant. The Branch utilises the services of Consultants to process applications for new connections, and manage the installation of service connections. Contractors have continued to complement our staff in implementing our infrastructure projects and providing services to the community. The efforts of all our staff and agents are greatly appreciated.

MAINTENANCE BRANCH

The Maintenance Planning and Works Branch is responsible for inspection, maintenance planning and maintenance implementation on all medium and low voltage apparatus as well as repair of associated faults on the electrical distribution network within the municipal supply area.

This Branch comprises of six regional Maintenance Works Depots and a Maintenance Planning Division based at the Electricity Headquarters. The Branch consists of a Senior Manager, Managers, Specialist Engineer, Engineers, Technicians, Electricians and the various levels of administration and assistant Staff.

The maintenance of eTrekwini Electricity's distribution network is vital in ensuring the integrity and reliability of supply to our large customer base. This Division prides high standards and strives to comply with various national standards and the Power Quality Charter in order to meet the requirements of customers.

With the ever-growing and ever-aging Electricity Unit's distribution network, the Maintenance Planning Division is constantly seeking strategies to better manage and maintain all the assets installed on the distribution network to ensure reliable electricity supply to the customers of eTrekwini Electricity.

Highlights/Lowlights

The major challenge facing the Division is the growing pandemic of theft and vandalism of electrical infrastructure. The growing global need for non-ferrous metals such as copper has resulted in high volumes of theft of electrical infrastructure both locally and abroad. The net result for this Division is that theft, vandalism of electrical infrastructure and high faults due to aged network have significantly increased the workload hence maintenance budgets had to be considerably increased, supply restoration times have increased and the reliability of the electrical network becomes compromised. The Electricity Unit is however investigating various methods of monitoring and dealing with the scourge of theft. Ten electricians left the branch which negates the productivity of the branch. Slow progress with the filling of vacant posts also contribute negatively to the branch. Challenges with procurement and servicing of vehicles and trucks cause delays and affect productivity of the branch.

Theft of copper conductors and damaging of the infrastructure by third parties compromise the quality of supply to our customers. This leads to more unplanned outages that must be prioritized resulting to backlogs in preventative maintenance which is undesirable.

The rapid growth of the electrical network coupled with the shortage in human resources and an increase in failures, has resulted in significant backlogs of planned and preventative maintenance work. The Division has undertaken an aggressive recruitment drive, during the year under review to bolster its internal resources and reduce the reliance on external service providers.

Various appointments were made at all levels and the staff vacancy levels have significantly reduced. The technical staff will however, need to go through a mandatory pre-competency period before they are deemed to be fully functional and are able to work independently.

Copper clad steel earthing conductor project

Year on year, the magnitude of copper theft has been increasing and eThekweni Electricity's substations have been the victims of vandalism. The fundamentals of an electric circuit for distribution require a well-defined electrical system with earth reference. The removal of this reference poses significant risk to eThekweni customers for a number of reasons (Health and Safety, Electrostatic and Lightning, Protection). The Branch has spent R200 000 on a pilot project to install and evaluate the performance of Copper Clad Steel (CCS) and in particular, discoloured CCS (Canno), as a suitable replacement for earthing. The Maintenance Technicians obtained skills during the installation especially on exothermic welding. The Branch has also procured four exothermic welding equipment and recommended the use of CCS through the distribution network. The Division has budgeted R 500 000 to procure CCS for 2016/17 financial year.

Replacement of aging overhead line switchgear

The Division has replaced over 60 auto-reclosers and over 40 sectionalisers in 2015/16 financial year with the aim of not only replacing due to age and reliability but Smart Grid and most importantly public safety. The current auto-reclosers and sectionalisers are equipped with sensitive earth fault (SEF). For the next two years, the Division has planned to replace all mechanical auto-reclosers and sectionalisers

Condition based preventive maintenance

The Division is in the process of researching various technologies that may assist with the extremely challenging conditions and the immense workload. The Branch has procured 2 partial discharge detection (with TEV and Ultrasonic measurements) and 2 partial discharge locating (Ultra TEV Locator) equipment from EA Technology. The Division in the process of procuring two more partial discharge detection (with TEV and Ultrasonic measurements). The branch's Technicians and Engineers are currently being trained by the supplier. The Branch in conjunction with supplier, are planning to send the branch Engineers abroad to obtain skills on partial discharge measurement techniques and switchgear health index based on partial discharge. The Division also has plans to procure 2 sophisticated infrared cameras to detect hot spots and SF6 leaks in the distribution network equipment which forms part of condition monitoring.

Key Challenges

Over the past 10 years there has been a high rate of failure on the Reyrolle LMS switchgear installed on the distribution network of eThekweni Electricity. These failures have presented an extremely hazardous condition to the Electricity Unit staff operating the Reyrolle LMS switchgear. Based on findings and recommendations of past investigation reports and in the interest of safety to personnel, the Division has taken a decision to change the maintenance cycle of the Reyrolle LMS switchgear from 5 years to 1 year. The change in maintenance cycle is expected to increase the Tactical Maintenance Work Order backlog for all six Maintenance Work Depots.

LIGHTING PLANNING BRANCH

The planning, design, inspection and maintenance planning of the public lighting infrastructure for the eThekweni Municipality is undertaken by the Lighting Planning Branch. This includes the planning and design of new lighting installations, upgrading of existing lighting infrastructure, maintenance and maintenance planning of existing installations, research and investigation into new lighting technologies and bulk lamp replacements.

The Lighting Planning Branch comprises 3 divisions, which are as follows:

- Lighting Planning & Design
- Lighting Research & Investigation
- Lighting Maintenance Planning

The annual operating budget of the branch is approximately R 75 million, which includes a provision of R 50 million for street light consumption costs within the municipal area. The remaining R 25 million is allocated to salaries, allowances, general expenses, repairs and maintenance. Repairs and maintenance accounts for 80 percent of the general operating budget and this is further broken down into planned lighting maintenance, bulk lamp replacement and pole painting. There are approximately 200 000 streetlight installations, 49 cemeteries, 250 parks, 12 beaches, 17 subway lanes, 31 swimming pools and 93 stadia and sports fields for which the municipality is responsible and provides lighting for. The Branch has filled 95% of posts within its structure and continues to work on building their skills and experience. The long-term goal of the branch is to implement modern, energy efficient and effective public lighting systems that are vandal proof and easily monitored and controlled.

Lighting Planning & Design Division:

Planning and design of capital projects form a major part of the Branch's responsibility. The annual capital budget for the financial year under review was approximately R 10m. Projects were planned for upgrades from conventional technologies to LED streetlighting, major route improvements, new major routes, lighting of parks and sundry lighting. Various grant funding options are being evaluated for the installation of LED streetlights to replace the 80 W mercury vapour luminaires in residential areas, 150 W high pressure sodium (HPS) luminaires on secondary roads and 250W high pressure sodium luminaires on main arterial roads. These funding option include EEDSM, Department of Energy, Swiss and German donor funding. Other major projects for the current and future financial years include: Bridge City to Pinetown on the Integrated Rapid Public Transport Network (IRPTN) route, Illovo Road (Kwanashu), Umgeni Road/N2 Interchange, completion of MR 577 (Kwadebeka), School Road (Verulam), M4 Ruth First Northern Freeway, Inanda Road (Waterfall) and floodlighting for ablation facilities in informal settlements. The lighting for all High Voltage (HV) substations is currently being audited and upgraded in a phased approach from HPS (orange light) to Metal Halide (white light) to cater for the requirements of CCTV cameras. Other significant projects include:

- Redesigned street lighting circuits by removing 9m gum poles and replacing with 9m steel poles and concreting of underground cables where large scale theft and vandalism have occurred in the following roads: Umdloti Main Road, Matielvale Road, Kies Avenue, Ocean Terrace, Bilberry Avenue, Dilkoosh Road, Granada Street, Simla Street, Cathedral Street, Helwin Street, Chicory Road, Silversage Road, Desert Rose, Universal Place, Sisal Place, Cashew Avenue and Violet Lane.
- Installed in excess of 500 LED streetlights mainly in the 36 W range to replace the 80 W HPMV lamps as part of our commitment to reduce our carbon footprint.
- Increased illumination levels at the following 132/11 KV substations due to theft of infrastructure: Roberts Sealing End, Quarry Sealing End.
- Introduced mSCOA requirements onto capital projects as required by National Treasury.
- The following major capital projects were completed: Acacia Crescent, Walter Perfect Road, Sunset Grove, Umziyathi Sportsfield, John Dory Sportsfield, Drewstead Road, Kashmiri Street, Flame Road, Sasti Circle, South Ridge Road, Solar panel LED lighting in Ablutions, Inanda Road, Edgebury Road, Vusi Mzimela Road, Mapangale Drive, M7/M14 Enhlabeni, Syringa Road and Chris Hani Road.

Many of the projects undertaken by the branch involves liaison and interaction with other units within the municipality and external entities such as Roads Provision, Architectural Department, Parks, Leisure & Cemeteries, Roads and Stormwater, Strategic Projects, Tongaat Hulets and a host of developers and external electrical consultants. The branch plans and designs conventional and special lighting projects for these entities, and takes into account any specific requirements for each of them.

Lighting Research & Investigation Division:

The Lighting Research and Investigation Division is responsible for all activities related to the Electricity Procurement Forum as well as the Bid Specification, Bid Evaluation and Bid Adjudication Committees. The following contracts totaling R 189 320 000 were handled by this division:

- E.9280: Supply, delivery and off-loading of steel frames, galvanised steel enclosures, Photo-Electric Control Units (PECU) boxes and concrete bases for streetlight switch pillars during a twenty four month period. R 4M
- E.9312: Supply, delivery and offloading of photoelectric control units and associated items during a twenty four month period. R 6M.
- E.9216: Supply, delivery, off-loading, installation and commissioning of solar energy powered light emitting diode (LED) light for ablation block/container facilities in eThekweni municipality's informal settlements during a twenty four month period. R 2.5M
- E.9362: Supply, delivery, off-loading and stacking of fibre glass street-lighting poles during a twenty four month period. R 0.72M
- E.9320: Supply, delivery and off-loading of decorative Christmas lighting material for Dr-Pixley Kaseme Street (formerly West Street) and Dr Yusuf Dadoo Street (formerly Grey Street). R 8M

- E.9334: Painting of steel poles, arms and attachments during a twenty four month period. R 2M
- E.9199: Supply, delivery, off-loading and stacking of pre-stressed and reinforced concrete poles during a twenty four month period. R 8M
- E.9364: Removal and disposal of potentially hazardous lamps during a twenty four month period. R 0.6M
- E.9233: Supply, delivery, off-loading and stacking of steel street-lighting poles during a twenty four month period. R 10M
- E.9194: Supply, delivery and off-loading of street light and floodlight luminaires during a thirty six month period. R 140M
- E.9292: Supply, delivery and off-loading of electrical discharge lamps and incandescent electric lamps during a thirty six month period. R 6M

Lighting Maintenance Planning Division:

The Maintenance Planning Division continues to inspect and identify hazards on the public lighting system. Major challenges are illegal connections and infrastructure theft. Various methods are being investigated to assist with these challenges. A summary of the division's activities are as follows:

- Continued inspections of street light poles, arms, fittings and infrastructure to identify hazardous conditions.
- Preventative maintenance due to identifying and hazards and repairing and redesign in advance Pole testing of all poles along highways, freeways and major routes
- Identifying losses due to cable theft
- Different methods of supplying street lighting due to these conditions
- High mast inspections along the beaches, townships and roads
- Inspections of sport fields, park and footpaths.

Over the past financial year the division has done the following:

- Maintenance division has inspected total of 114002 lighting installations
- Highway inspections totaling 7895 were done, identified hazards and reported.
- Sport fields totaling 631 Inspected and reported
- Bulk lamping routes of 104 866 installations inspected
- Identified 610 hazards in beaches
- A total of 770 lighting installations inspected in Eskom areas

Lighting Telemangement Project:

Continuous research and investigation into new lighting technologies and electrical apparatus is conducted by the branch. All of the available technologies are evaluated to assess for the ideal solutions for the city's needs. eThekweni is currently in the process of rolling out a lighting telemangement system. A pilot project for the implementation of an Owllet Telemangement system for 20 light fittings on Umgeni Road is currently underway. The cost of the project is R 200 000.

The benefits of telemanagement are summarized below:

- Dimming capability
- Adjustable on/off timing
- Lamp failure detection
- Energy consumption monitoring
- Open circuit detection
- Lamp-burning hours monitoring

The Owllet lighting telemanagement system is used to manage, control, monitor and meter outdoor lighting systems. The main objectives of the system are to reduce greenhouse gas emissions, reduce energy consumption, improve reliability and minimize maintenance costs. Individual lighting points can be controlled and the system is based on open technologies. A central repository collects and stores data and time stamped critical information such as energy consumption, operating states and failures which could also be geographically categorized.

LED Streetlighting:

The use of LED for various applications has increased exponentially over the past few decades and is even being hailed as the future of lighting by many. The suppliers and manufacturers are claiming various advantages which include a compact size, longer life spans, lower maintenance, improved design capabilities, color rendering features and increased luminous efficacies, amongst others. LEDs are changing the tradition of photometry and are being continuously improved to maximize benefits.

The benefits of LEDs are as follows:

- Lower energy costs
- Reduce power consumption
- Improved controllability
- Improved lumen constancy
- Longer life
- Predictable life span
- Redirection of light emissions
- Improved reliability
- Environment friendly
- Quick turn on/off
- Dimming capability

The following table shows the cost and energy saving breakdown when converting to LED:

QUANTITY	ROAD CATEGORY	EXISTING WATTAGE	LED REPLACEMENT WATTAGE	ENERGY SAVING PER STREETLIGHT	ACTUAL ENERGY SAVING PER STREETLIGHT	TOTAL ENERGY SAVED PER WATTAGE	PER UNIT COST OF LED (INCL. VAT)	TOTAL COST IN RANIS
2 888	B1	80 W/HPMV	69 W LED	35%	33 W	96.3 kW	3 892.97	10 665 306
974	A4	150 W/HPS	86 W LED	50%	91 W	88.6 kW	4 270.12	4 159 098
971	A3	250 W	148 W LED	46%	130 W	126.2 kW	5 293.97	5 175 398

Lighting for Informal Settlements:

One of the major challenges faced in eThekweni Municipality is the provision of water and sanitation as well as electricity to informal settlements. Due to a lack of existing infrastructure and the backlog, ablution blocks/containers are provided as an interim measure to cater for the sanitation requirements for these settlements. Ablution blocks are combined water and sanitation facilities consisting of both male and female toilets, showers, basins and laundry facilities. A critical service required is the provision of electricity for lighting for these containers. Various methods were researched to supply electricity to these areas. After careful consideration, it was decided to procure and implement the use of solar panel, battery and LED modules to provide lighting in the absence of existing infrastructure. The project began by scoping the work to be undertaken. In locations prone to high incidences of cable theft or the absence of existing electrical infrastructure, innovative solutions were investigated to alleviate cable theft and/or various methods to provide electricity without the support of existing electrical infrastructure. After analysis, the most technically feasible option was to use solar panel modules for the project.

LIGHTING WORKS BRANCH

Lighting Works Division is responsible for the construction and maintenance of more than 200 000 streetlights in the whole of the eThekweni Municipality area of supply. Other than complaints from the public, Lighting Works Branch is also responsible for the maintenance and repairs of inspections conducted by our Lighting Planning inspectors.

Highlights

- The Branch welcomed four female pre-competent electricians who have just passed their general streetlighting competency so as to work independently.
- The old fleet was replaced with eight new trucks.
- The Branch maintained a five star NOSA rating as per DEIR report on Health and Safety Environment.
- Contract E9275 for construction and maintenance of streetlighting network started and is for a duration of 2 years.
- Operational budget was within the budgeted parameters.
- Completion of the Bridge City project by internal staff during a limited resources period.

Lowlights

- The theft of cables and cutting of streetlight poles.
- Meeting equity in the recruitment process renders filling of posts very challenging.
- Delays in acquiring materials due to procedural policies.

Key Challenges

- Improving the cable fault location skills of our electricians as well as looking at ways to secure the streetlighting infrastructure especially along the main roads and highways.
- Management would like to acknowledge staff in the branch for their efforts and dedication in keeping the lights burning during the challenging times.

NETWORK CONTROL BRANCH

As part of MV/LV operations the Network Control branch is responsible for the 24/7 running of the electrical network, monitoring and controlling planned and unplanned outages.

The electrical network in eThekweni spans more than 2000 square meters and serves in excess of 734 000 customers. The network is closely monitored around the clock by Control Officers in our dedicated control center. The Control Officers optimize the allocation of resources, identify risks, prioritize safety and manage load flow throughout the electrical network. We have dedicated teams of Field Crews and external contractor teams that work in unison with the Control Officers. They strive to promptly facilitate the co-ordination of outage restoration, as it directly impacts on the quality of life to our citizens

While we always intend to ensure an acceptable quality of supply and service to our consumers, there are certain factors beyond our control which adversely impact the performance of our service delivery. The high rate of illegal connections, damage to equipment from severe weather conditions and theft of infrastructure on the electrical network remain an ever increasing challenge.

Significant progress is being made in improving our outage response times with the implementation of multiple devices and systems that will eventually enable us to bring much needed transformation to the electric grid. A Smart Grid enables vastly improved system reliability.

Network Control is in the implementation phase of one of the components of a smart grid system. The Advanced Distribution Management System (ADMS) is a software platform that supports the full suite of distribution management and grid optimization. An ADMS includes functionality that automate outage restoration and improve the performance of the distribution grid. The ADMS functions developed for electric utilities include fault location, isolation and restoration.

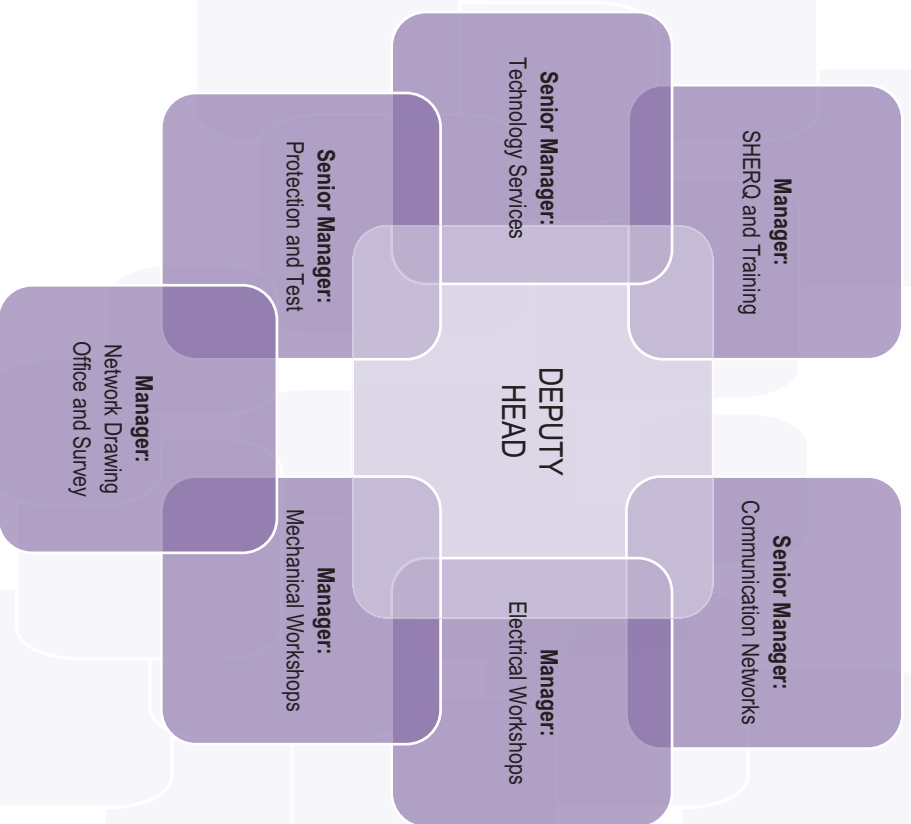
Network Control plans to deploy Distribution Automation (DA) as part of the Smart Grid Initiative to improve reliability, efficiency, asset utilization and performance of the electric distribution system. Distribution automation is an integration of technologies and protocols that can remotely control and monitor the electrical distribution system operations. Distribution automation is the long term vision of eThekweni Electricity to increase visibility throughout the grid which aims to provide reliable and high quality power. Distribution automation enhances the quality of supply by allowing the faults team to locate faults earlier and easier. Field staff are dispatched quicker to attend to faults, therefore reducing the outage times. The data acquired from site also assist the controllers to identify if and when the network is under stress and can then make the necessary adjustments to secure the network to ensure it runs efficiently and safely.

Network Control also provides dedicated teams of standby staff for special events. Our staff works behind the scenes to ensure a stable power supply and backup power in the event of a power disruption.

Future Focus

In the year ahead Network Control seeks to improve our service to our citizens by emphasising our commitment to the back to basics campaign launched by eThekweni Municipality.

Provides a diverse range of technical services to support the Unit



TECHNICAL SUPPORT

The Technical Support Department provides a diverse range of specialist services within the Electricity Unit. These services contribute towards the Vision of the Unit, which is to be a leader in electricity distribution providing energy for the future. The department comprises of seven branches, namely, Communication Networks Branch, Electrical Workshops Branch, Mechanical Workshops Branch, Network Drawing Office Branch, Protection and Test Branch, SHERQ & Training Branch and Technology Services Branch. Collectively, these Branches ensure that all resources are effectively and efficiently utilised so that value is added to approximately 730 000 customers that the Electricity Unit currently supplies.

COMMUNICATION NETWORKS BRANCH

The Communication Networks Branch is responsible to provide and maintain secure and reliable communication links for all technical systems that monitor, control and protect all electrical plant and equipment in the HV transmission and MV distribution networks from which all customers are supplied. In addition the Branch provides communication channels for other support services required to operate an electrical utility such as Information Technology (IT) wide area network (WAN) links, closed circuit television (CCTV) and access control, as well as support municipal communication requirements where possible.

This is achieved by researching, designing, planning, procuring, operating and maintaining the required communication networks that ultimately enhance the security and quality of electricity supply in the most effective manner and provide other users with communication links for the effective operation of their systems.

Routine activities

- Planning, acquisition, installation and commissioning of fibre optic, data, wireless and copper pilot communication network links, customised dust proof equipment/termination panels, ruggedised carrier class DWDM and SDH access multiplexers, optical switches/routers/media converters, GPRS cellular radio modems, wireless communication equipment and protocol converters at substations/other sites; to enable the commissioning of SCADA, Protection, Security/Access Control, Telephone, IT and City systems by set deadlines.
- Location of all communication link and system equipment failures and restoration of critical user system services/operations.
- Maintenance and repair of all communication links and system equipment to ensure continuous reliable operation of critical user systems.

Highlights

- *Protection, Automation and Control (PAC) World Conference*

The Communication Networks Engineering Division in conjunction with the Protection Engineering Division drafted and presented at paper at the Protection, Automation and Control (PAC) World Conference. The conference was hosted in Johannesburg between 12 & 13 November 2015. The paper was entitled "Application of IEEE C37.94 Standard for Interfacing a Two Terminal Differential Protection Relay Pair to SDH Multiplexor Equipment." The paper investigated the application of the IEEE C37.94 standard for interfacing a two terminal current differential relay pair to existing synchronous digital hierarchy (SDH) multiplexor equipment installed on the fibre optic backbone network. Furthermore the failover mechanism of the primary communication channel to the secondary communication channel of the relays was investigated.

- *2015 UNESCO Africa Engineering Week*
Staff participated in the 2015 UNESCO Africa Engineering Week. The event was hosted at the Mangosuthu University of Technology.

New and exciting projects undertaken

- *Mini-Smart Grid pilot project proposal*
The mini smart grid pilot project was suggested in order to provide direction in solving the above challenges. A project proposal report was successfully completed. It was decided by the Chairman of the Smart Grid Workgroup and the Chairman of the Advanced Transmission and Distribution Solutions Committee to proceed with implementation.
- *Installation of fibre optics to distributor substations*
A decision was taken that Fibre Optics was the preferred communication medium for Distributor substations. The Communication Networks Branch was mandated to develop a proposal for the installation of fibre optics to distributor substations. A project team was established to implement the technology change.

The scope of work for the 2015/16 financial year included:

- Implement internal branch process for the identification of fibre optic installations
- Plan fibre optic installations DLs for 2016/17
- Update MV Planning on the latest fibre optic installation practices
- Recommend DL design changes to MV Planning
- Implement DL Review / Revision request system
- Introduce technical instructions for fibre optic installations
- Update and submit a fibre optic installation tender for BSC approval
- Evaluate fibre optic installation tender bids
- Introduce fibre optic installation components as stock codes.
- Introduce DSS construction meeting to co-ordinate fibre optic installations.

Due to the limitation in resources, it was agreed that a master list of outstanding fibre optic installations will be prepared. Jobs at the top of the list will be executed as and when resources are available. Links identified as Tier 1 or originating from the latest MV Planning DL at the time will receive priority and jump straight to the top of the queue.

Key Challenges

- At present the forecast business requirements exceed the available staff resources.
- The Smart Grid implementation plan is still outstanding.

ELECTRICAL WORKSHOPS BRANCH

This Branch was established to ensure that all equipment received, from the manufacturers, is tested prior to installation into the Electricity Network. It has been responsible for repairing equipment which has failed while in service. This Branch is also responsible to supply other departments with mineral oils which are utilized as coolant medium in the transformers, autoreclosers, etc. Over the years this Branch has evolved to undertake specialised intrusive maintenance on MV switchgear and transformers.

Routine activities

- Acceptance testing on all new equipment purchased, i.e. Mini substations, transformers, ring main panels, autoreclosers, sectionaliser and motors in the workshop or site, prior to it being handed over to stores.
- Repairs and overhauls to transformers, mini substations circuit breaker in the workshop or on site.
- Provide a breakdown service to attend to faulted transformers, mini substations, circuit breakers, autoreclosers and sectionalisers within the MV/LV Operations network either on site or in the workshop.
- Oil processing is carried out to provide MV/LV Operations and HV Operations with regenerated transformer oil which ensures the effective management of the processing, storage and issuing of regenerated transformer oil.
- Reclamation of waste and scrap is carried out by the reclamation division. The disposal of cables which have returned from site due to failure or new network developments is processed by this division. These cables are cut into 1 metre lengths to prevent being utilised unlawfully.

Highlights / Lowlights

- Research and development into test methods for new equipment has lead to improved quality control at the Electrical Workshop. During a trend analysis it was highlighted that we were experiencing a large failure rate of the secondary circuit feeding the analog ammeters found on the mini-substation units received from the contracted supplier. It was then decided to revise the current test procedure by introducing an additional test on the secondary circuit of the mini-substation. To conduct this test successfully, additional test equipment had to be procured. The standard test procedure was successfully revised, resulting in a reduced number of secondary circuit failures on equipment.

New and exciting projects undertaken

- Due to the rising cost of electrical energy, it was decided to investigate methods to reduce the energy consumption within the oil processing division at the Oil Store. A load profile was conducted for equipment within the work area, due to the results it was decided to introduce pneumatic pumps for the transfer of oil. This also introduced the challenge of providing sufficient compressed air with reduced moisture content. After careful plan and design, a compressor was purchased to pump air into a network of pneumatic line to feed the oil pumps. The benefits are largely visible with reduced costs and better operational capability.

- Large number of electrical equipment are manufactured with electronic control panels. This brought about the need to develop the skills and introduce a dedicated Electronics Test Bay to conduct testing and repairs to electronic panels. To conduct these tests, specialized equipment had to be researched and procured, these include Oscilloscopes, accurate read out meters and precise power supply units. Staff will require on-going training to ensure the project remains a success.

Challenges

- As the design of electrical equipment continuously evolve, effective training and updating of procedures become essential to provide a quality service. Mechanism for skills transfer and training needs to be constantly reviewed and evaluated to ensure challenges are overcome.

Achievements and awards

- Two Electricians specializing in switchgear repairs successfully completed the test and was deemed competent.
- One Electrician has successfully completed a transformer competence test.

MECHANICAL WORKSHOPS BRANCH

Mechanical Workshops Branch provides a specialist mechanical support service to the Electricity Unit. These are the Work Programming Division, Fitting, Machining & Rigging and Welding Workshops. The Branch is involved with a wide range of repetitive fabrication, production and maintenance, and also a diversity of mechanical tasks that change on a daily basis as per our customer's requirements, in line with our function of being the mechanical support function to our electricity distribution network.

Routine activities

- Costing, planning, design, research and purchasing of materials and equipment for works orders received.
- Manufacturing of galvanized equipment, repairs to fibreglass ladders, maintenance and fabrication of electrical equipment, installation of support structures, rigging services and safety inspections.
- Repetitive production work, maintenance, manufacturing and repair of electrical infrastructural equipment and component fabrication.
- Maintenance of ISO 9001 accreditation by ensuring successful audits.
- Practical training of Mechanical Apprentices.

New and exciting projects undertaken

- Structural supports for piping equipment - K. E. Masinga Substation
- Training staff on the rigging HV equipment
- Support the electrification of informal settlements by manufacturing 30 000 pre-payment brackets.

Challenges

- Ventilation equipment installations - Welding Workshops
- Recertification of SANS 9001:2008 Management System
- A further manufacturing of 18 000 pre-payment units to support the electrification of informal settlements

Achievements and awards

- Re-accredited with ISO 9001

NETWORK DRAWING OFFICE AND SURVEY BRANCH

The Network Drawing Office and Survey Branch is a support Branch to the Electricity Unit that comprises of six Divisions, namely Administration, Network Records, Geographic Information Systems (GIS), Special Projects, Utility Plans and Survey Services. The main focus of the Branch is to maintain an accurate geo-spatial representation of all Underground and Overhead electrical assets in a connected network, provide an efficient GIS, to support other enterprise systems and first line GIS User Support to all GIS Users and to provide a Survey service, within the Electricity Unit.

Routine activities

- The Administration Division provides an administrative service to the six internal Divisions and, a printing and scanning service, to the Electricity Unit and external Service Providers that are contracted to the Unit. The Division also scans all as-built documents to an image repository. The Special Projects Division uses CAD technology to update and maintain the Low Voltage Circuit Diagram database and make these diagrams available via a web browser. This Division produces design and documentation for the Unit and also updates the code of practice, drawings and illustrations, for the Technology Services Branch.

The Survey Division provides survey services to internal and external customers by:

- a) Surveying property and servitude boundaries to avoid encroachments,
- b) Surveying overhead line, underground cable and equipment location for GIS update,
- c) Locating cable and pole encroachments for insurance claims, and
- d) Tracing cables for accurate cable location.

- The Network Records Division is responsible maintain an accurate geo-spatial representation of the Underground and Overhead Electrical Network in the GIS to provide information for other systems. The Division also provides Depot Draughtspersons at the Units Construction and Maintenance Depots, to assist the technical staff by providing reticulation information from the GIS. The GIS Division is the custodian of the ArcGIS enterprise database. Its primary function is to ensure data integrity and makes data available via the ArcGIS Server web browser to all employees in the Unit.

This Division also provides GIS support services to all staff in the Unit and provides specific GIS software applications to assist other Branches in some business processes.

- The Utility Plans Division attends to all way leaves, provides network information to visitors and responds to all written correspondence received by the Branch.

Highlights / Lowlights

- Completed all CAD drawings for the Overhead Mains (OHM) Codes of Practise, for the Technology Services Branch
- Surveyed 16 Informal Settlements and Transit Camps with a total house count of 5 376 Units in 2015/2016
- Completed the upgrade of the ArcGIS Server to serve out the connected network and various other datasets.
- Upgraded the Planning Applications module on the ArcGIS Server to assist Customer Services to obtain a suitable Property Key for the migration of Customers to the Revenue Management System (RMS).
- Modelled 92% of the outstanding MV sites in the GIS.

New and exciting projects undertaken

- Providing cable routes to technical staff in the field, using social media (Whatsapp) to improve restoration times.

Challenges

- Contribute survey resources towards the achievement of 40 000 new connections.
- Procure an Electric specific domain software and data model to update and maintain the electrical and communications networks in the GIS.
- Model all HV sites to support incremental updates to the HV SCADA system.
- Finalise the GIS Roadmap for the Unit.
- Cleansing data to do spatial analysis on customer location for various Branches.

Achievements and awards

- Some staff obtained their Exploring Geographic Information Systems qualification from UNISA
- One Survey Attendant achieved 100% pass in the first semester of his IT Diploma at PC College.
- The Chief Survey Technician obtained his Post Graduate Diploma in Project Management from MANCOSA.

PROTECTION AND TEST BRANCH

The Protection and Test Branch comprises of four technical Divisions, namely Protection Engineering, Test, Protection Maintenance and DC Systems. These Divisions are collectively responsible for the forward planning, analysis, design, updating, testing, commissioning, auditing, maintenance and repair of all protection and DC systems in the electrical network. The Branch is also responsible for the investigation of all protection or DC related mal-operations. In addition, the branch provides other crucial services like cable fault location as well as various equipment testing, commissioning and repair services to the entire Electricity Unit.

Routine activities

- The calculation and application of optimised protection settings to ensure proper discrimination and effective fault clearance times in the MV and HV electrical network.
- The updating, maintenance and control of protection drawings and relevant databases to ensure accurate records and statistics.
- The investigation of protection and DC mal-operations
- The planning, maintenance and repair of all protection and DC equipment according to stipulated maintenance guidelines
- The testing and commissioning of substation installations, protection systems, DC systems and equipment to ensure that new substations are brought online timeously and that any protection upgrades are brought back into service within set target dates.

Highlights / Lowlights

- Thirteen battery banks and 5 battery chargers were replaced at Transmission substations and at Distribution substations 11 battery banks and chargers were replaced during the year as part of the Branch's upgrade programme to replace aged and failure prone DC equipment.
- The DC systems at 36 transmission stations were audited during the year to ensure that all the DC loads were correctly wired and labelled to facilitate troubleshooting and the safe isolation of control equipment.
- The protection settings at 15 Transmission substations was also audited by the branch to ensure that the settings and relay configuration at the substations is optimised to provide proper discrimination as well as fast and accurate fault determination and fault clearance.
- Fault locations for a total of 1702 HV/MV cable faults, 1637 LV cable faults and 1750 House service cable faults were provided by internal staff during the year.
- The addition of a cable fault location contract assisted the branch with both improving service delivery and reducing the overtime worked by the branch's fault location staff.
- The replacement of GE relay modules to prevent further failure of these devices claimed a significant amount of branch resources resulting in backlogs in some maintenance areas.

New and exciting projects undertaken

- The branch developed the configuration, test procedures and test templates for the VAMP range IEDs.
- A number of new Transmission substations were successfully commissioned during the year, including the new Rossburgh, Blair Atholl and Ridgeway Substations, and a temporary switchboard at Jacobs Substation.
- Refurbishment and upgrade projects were undertaken at Umzazi, Phoenix Industrial Park, Plangweni and Kwaanwater Substations.
- The use of hydrogen monitoring in battery rooms has been investigated and a system design has been proposed for piloting.

Challenges

- Addressing the relay failures that have occurred and identifying solutions with the relevant manufacturers to ensure that these modes of failure are eliminated
- Addressing the maintenance backlogs that were created by staff shortages and the GE module replacement programme.

TECHNOLOGY SERVICES BRANCH

The Technology Services Branch consists of three different divisions, namely the engineering division, quality and investigation division and the Library division. These divisions collectively ensure that the electrical products procured are fit for purpose by compiling the correct technical specifications, ensuring quality control at stores and investigating failed equipment.

One of the functions of the branch is research into cost effective ways of distributing electricity. This function can be divided into two, namely, the cost of goods purchased and the costs associated with the installation, operation, maintenance and disposal of the said goods. Over and above the issues relating to construction and maintenance, safety of staff and public is high on the agenda both during the selection of a particular type of good and during its application. Technology Services has as its primary goals the adjudication of all tenders for technical equipment, material and services supplied to the Service Unit, and the creation and maintenance of all technical codes of practice and instructions used by eThekweni Electricity staff and contractors.

The Branch has continued its active participation in NRS Workgroups and SANS Workgroups in conjunction with other municipalities, Eskom, mines and major suppliers, specifications and guidelines. This participation has been to promote uniform requirements for equipment and design methods for use in distribution systems.

Highlights

- The completion of the Overhead Mains Code of Practice (OHM CoP). This CoP was the last in the three part series (the others are the Substation and Underground Mains CoPs) originally planned for revision.
- Due to high number of theft incidents of steel trench covers (chequer plate) from substations, Technology Services investigated the use of alternative materials. Resin concrete proved to be suitable for the application. It is light weight (lighter than steel chequer plate) and meets the required specifications in terms of durability and strength. The key advantage of this material is that it has no scrap value, which will greatly assist in reducing theft from substations. A contract is in place for the replacement in identified high risk areas.
- The establishment of the Internal Procurement Forum has ensured that all tender reports are standardised and this forum provides a central repository for all documents.

New and exciting projects undertaken

- Embarked on a drive to improve the quality of materials procured by visiting depots and engaging with staff on problems experienced. Technology services is encouraging Electricians and Contractors to bring problems to their notice immediately and collect defective material so that this can be addressed with suppliers.
 - The technical specification and a bid award for the procurement of medium voltage (MV) cable jointing and terminating kits made provision for the sourcing of training for the staff and contractors that are responsible to install these cable accessories. The training requirement is in accordance with NRS 053/SANS 1332, SANS 10198 and relevant SAQA or ESETA requirements. Bidders are required to offer training of cable jointing and cable terminating using eTrekwin Electricity's cables, both PLC and XLPE, and approved cable jointing and termination kits of which the training consists of theoretical and practical training. The objective of this training is to reduce or eradicate failures caused by poor workmanship.
 - To further improve safety of staff, arc rated and flame retardant warm jerseys and balaclavas were introduced. This was rolled out to specific staff who could possibly be exposed to hazards of an arc flash.
- ## Challenges
- Availability of materials for maintenance and projects still remain a concern. A task team has been established to ensure that all items that are running low are addressed and possibly expedited with the supplier.

SHERQ & TRAINING BRANCH

The SHERQ and Training Branch was established within Electricity Unit due to a need for technical personnel to comply with safety rules and operating regulations when working on live equipment in the electrical system network. The branch comprises of four divisions, namely; Safety, System Operation Training, Technical Training and Engineering Skills Development. All four divisions are collectively responsible for planning, designing, implementing and monitoring of systems to ensure compliance with the Occupational Health and Safety Act, and associated Regulations. Skills Development Act, and related legislation throughout Electricity Unit. The Branch fulfils a critical role in training and development of special technical skills which are required to operate sophisticated equipment in various systems of the electrical network. With evolving technology the branch continues to provide valuable input into new engineering technologies that are introduced as they form an integral part of the business of Electricity Unit. The branch is also involved in various skills development programs.

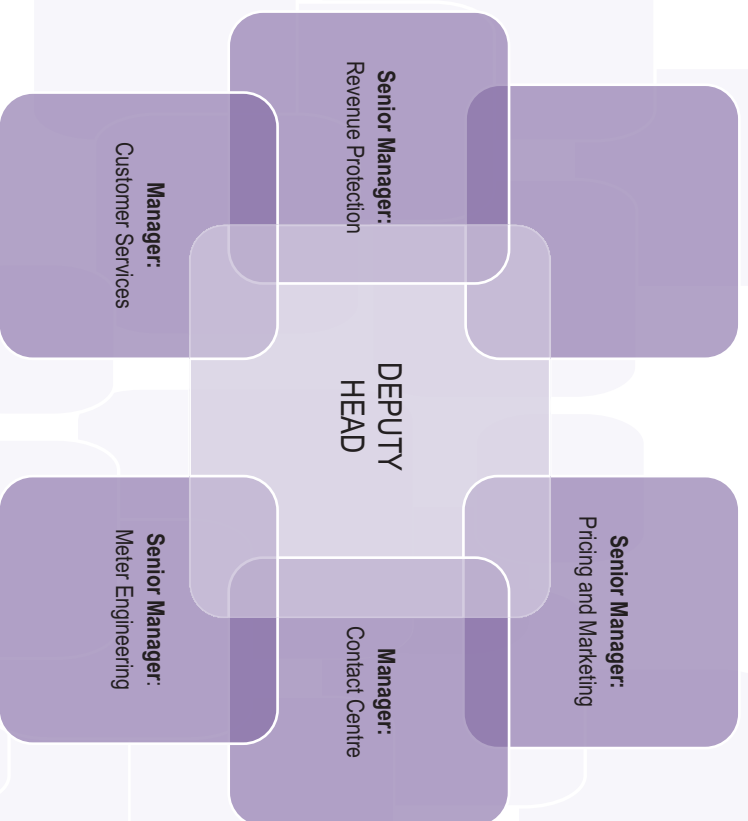
Routine activities

- Conducting Health and Safety risk assessments and surveys, conducting safety inspections and Chapter 25 audits, conducting environmental audits, provision of standby personnel, operational training/competency accreditation of all persons engaged in construction and maintenance, and investigation into machinery-related incidents and the introduction of measures to prevent recurrences.
- The Branch assists +/- 50 Line Managers to comply with Safety Rules, Operating Regulations, OHS Act, and related legislation, Codes of Practice, undertake accident investigation (Root cause analysis) and support the GMR 2.1's at safety investigations.
- Safety Officers conduct on-job observations and draws up deviation sheets that is sent to the relevant line manager to assist line managers operate and create a safe and healthy work environment resulting in fewer accidents.
- On the training side, trainers ensure that the staff across the Unit is competent, committed and suitably qualified to operate and maintain the electrical assets on the network.
- Systems Operations Training provides artisans with knowledge to operate electrical equipment safely, thus eliminating damage to equipment, injury to staff or fatalities.
- Technical Training ensures the transfer of critical technical skills to staff thus ensuring an acceptable level of quality with regards to workmanship, installation and maintenance of plant and equipment. This also ensures that work is conducted in accordance with specifications and codes of practices as laid out by equipment manufacturers and the Electricity Unit.
- As part of the skills outreach project, the division is highly involved in various career symposiums promoting Electrical Engineering to school learners and tertiary students as a career choice.

New and exciting projects undertaken

- Establish a new training centre with state of the art facilities for skills development and training of technical personnel. Construction is expected to be completed in 2017.

Provides a customer contact and retail services function for the Unit



CUSTOMER AND RETAIL SERVICES

The Customer and Retail Services Department provides a customer contact and retail services function for the Electricity Unit. The Department consists of more than 5 branches that collectively perform a diverse range of important functions.

PRICING AND MARKETING BRANCH

The Electricity Pricing and Marketing Branch has several primary functions namely:

- To raise awareness about key issues involving electricity
- To provide a technical and administration service to our key customers
- To design cost-effective and accurate electricity tariffs
- To maintain a statistical database for electricity purchases and sales and other important information
- Energy conservation and management have become key concerns in the industry due to the repercussions of the recent energy crisis.

MARKETING DIVISION

The Marketing division is continuously holding interactive events to raise awareness and promote the core activities of the department. Demand side management through behavioural changes and efficient technology adoption are being promoted by the marketing team, and this is being carried out at primary and secondary school-levels.

The activities of the Marketing Division create a platform to engage with the public to address the following:

- Energy-efficiency and demand-side management (DSM)
- Service delivery problems and constraints
- Theft of electricity and infrastructure
- Free Basic Electricity
- Electrical safety and electricity hazards

Future Plans

The Marketing Division has also been working closely with communities and the internal planning staff in order to assess the feasibility of electrifying areas that are without electricity. There are numerous challenges to overcome before all citizens are electrified, however the Branch is committed to make this a reality in the coming years.

With the looming introduction of smart grid technologies, the Branch has proactively commenced formulating a marketing plan to introduce the concept to the targeted customer base. Numerous communication avenues are being investigated to ensure that the strategy is ultimately effective and successful. It is envisaged that the smart grid marketing plan will be rolled out in conjunction with the technology roll out in 2017.

PRICING DIVISION

The Division designs electricity tariffs and provides tariff advice to Bulk users. Tariffs are designed to be cost-effective whilst ensuring accurate cost recovery and reflectivity. Bulk electricity costs were subject to a 14.24% increase for the year.

As a result of this major increase and other internal cost escalations, the National Energy Regulator of South Africa (NERSA) approved a 12.20% for the customers of eThekweni. Customers consuming electricity on the Scale 12, Free Basic Electricity tariff structure were subject to a reduced tariff increase of 9.6%.

The c/kWh charge per category is detailed below:

(Ex VAT)

Category	Tariff	Rate per kWh (c/kWh)	Service Charge (R)
Residential	Scale 3,4,8,9	129.39	NIL
Residential	Scale 12	90.51	NIL
Business & General	Scale 1	146.12	191.20
Business & General (Obsolete)	Scale 2	Basic: 62.61 Supplementary : 148.85	195.81
Business & General	Scale 10 & 11	162.24	NIL
Business & General (Obsolete)	Scale 5,6,7	152.47	195.81
Industrial / Commercial	Time of Use	The average c/kWh will vary depending on the consumption profile of the customer	

Electricity prices continue to experience higher than average increases, as we continue with the national electricity build program of introducing more generation capacity to the grid. As electricity prices soar, there is greater tendency to migrate to alternate and cheaper forms of electricity provision. Rooftop PV generation is becoming a popular site within the city and greater pressure is being placed on municipalities to allow for the buyback of generated electricity.

While the National framework for embedded generation is still being developed, eThekweni intends to pilot an embedded generation scheme to allow for the off-set of electricity generated by residential customers. Stringent technical and safety criteria will be enforced to ensure safety of network operators and grid stability.

While embedded generation is still in the emerging phases, it brings to the fore the reality that the distribution grid will have to compete with local generation facilities in providing electricity to customers. In view of this, we need to ensure that we further enhance the efficiency of our operations going forward and implement tariff structures that promote cost reflectivity and transparency.

Electricity sales for the year has risen by 1.32%. This is a welcomed increase when compared to the year on year decline as experienced over the recent past.

Future Focus

We are continuing with our efforts in rationalising our tariffs to become more transparent and cost reflective, to ensure that the correct pricing signals are passed onto customers. Non cost reflective tariffs are discouraged by the introduction of higher than average tariff increases.

We intend to pilot a residential embedded generation tariff structure to allow customers to generate electricity onto the grid. The tariff will allow customers to partially off-set generated electricity against consumed electricity. It is envisaged that this program will be implemented in 2017.

CONTACT CENTRE BRANCH

The Contact Centre provides a one-stop faults reporting service, we assist in capturing of meter readings, load shedding queries, theft reporting, the use of prepaid meters, vouchers and all other administration enquiries for the benefit of eThekweni Electricity's service delivery.

We aim to deliver excellent service through multi-media communication, such as Voice, Email, Website, SMS and via Social Media. We are available 24/7/365 and we communicate with our consumers through a number of channels. Voice: 0801 3131 11 (toll free), SMS: 0837000819, email: custocare@elec.durban.gov.za and website: www.durban.gov.za.

Highlights

- We employed multitasking call centre agents that assist our customers via voice calls, SMS and email. Our footprint of email/SMS and other media has grown dramatically in the past year, evidence that introducing these communication platforms and employing special agents to handle them was indeed an excellent idea. This has done so well that we did well over 150 000 thousand conversations via SMS and Email alone from July 2015 to June 2016.
- 90% Contact Centre interactions are now being routed via Genesys, a high tech telephony system, this has given us better communication with consumers, effective and efficient call handling and having real life and historical data for tracking and reporting.
- We introduced a Quality Assessment and Coaching function. This has been a huge success as we have been able to identify and bridge training gaps. In the last financial year a total of 82 employees were trained on Improving Service Delivery, taken to a technical field exposure to skill them in assisting consumers with minor technical queries, Supervisors, Management and support teams were also trained on courses such as Managing Poor Performance and Incapacity, Interview Skills, Initiating Disciplinary Enquiries etc.
- Lastly the launching of a Netball Team, that is representing the unit has been another highlight for the year.

Low lights

- Onsite work stoppages due to protests and external interference has lowered our service level standards but they are still in very high levels, and the abandoned rate still remained lower than the past two years.

New and exciting technologies

- No New technologies for this financial year however phase three of the Genesys systems procured in 2015 was implemented. Now 90% Contact Centre interactions are now being routed via this system, a high tech telephony system, this has given us better communication with consumers, effective and efficient call handling and having real life and historical data for tracking and reporting.

Challenges

- We do not foresee any major challenges in the next financial year. We have seen a more positive relationship between Contact Centre, Consumers and our other internal departments such as Depot and Control promising to get even better in the next year.

Achievements and awards

- No awards were received in the last financial year. We have however achieved very high quality standards, this shows by having received over 50 formal compliments from consumers on having met and exceeded their service expectations. Our sick leave has been the lowest in a very long time, hitting below the SAR standards.
- We introduced a rewards and recognition process for the Contact Centre, 35 certificates have been issued to several employees for being top achievers of each team, each month from Feb-Jun 2016, criteria include but not limited to; Best Attendance, Best Call Quality etc.

METER ENGINEERING BRANCH

The Meter Engineering branch is responsible for metering bulk customers which accounts for about 40 % of revenue. In addition to maintaining the metering of these large power users, the Meter Engineering branch is also responsible for clustered metering schemes and the metering installations for business customers.

The branch is further responsible for the acquisition of meters and metering systems equipment to cope with the demands of new technology and revenue protection challenges. All meter upgrades and new installations in the industrial and commercial sectors are undertaken by the branch.

The Meter Engineering Workshops is responsible for the repairs, testing and calibration of conventional and prepayment meters. Batch sample testing is done for new meters that are purchased.

The Aim and Strategy

The aim and strategy of the Meter Engineering branch is to provide an efficient metering service to our internal and external consumers by implementing new technologies and ensuring that there is compliance with recognized metering standards. The aim will be to develop a strategic framework for enhancing the effective management of all metering related processes. The projects undertaken are as follows:-

- *Phasing out of Electro-mechanical meters for Two - Rate Tariffs*
Our goal is to complete the changeover of all electromechanical meters that are on the two-rate tariff that are CT and direct driven to electronic programmable meters. Our aim will be to complete changeovers for 75% of the remaining meters that are electromechanical.
- *Smart Metering Roll-Out project*
The implementation AMI has already started. The original objective was to install all systems hardware and software (MVMS & MDMS) before the 31 March 2016, thereafter implement various systems integrations.

Phase	Task Name (Installation of)	Status	Project Plan Date	
			Planned	Actual
1	MVMS Suprima	Complete	Nov 2015 (system tested, requested delay) requirements)	Jan 2016 (delayed due to legal)
2	MVMS HES	Complete	Jan 2016 Delayed due to Phase 1 Pushed out	Feb 2016
3	MDMS	Complete (System and Hardware)	Mar 2016	Mar 2016
4	MDMS integration	Ongoing (planned for the next two years)	Mar 2016	_____
5	ICG testing & billing	RMS interface / bulk import tests between RMS and MDMS (APN communication testing ongoing)	Planned May	Delayed due to RMS go Live. Bulk (ICG) meter import file completed
6	Smart meter pre installation audits	Audit and site investigations. (meter enclosure tenders issued after audit findings)	Started Nov 2015	Smart meter installation will only start once this city billing systems are stabilized (RMS & COINS) -----
7	Data concentrator pre audits	Audits started in Nov 2015	Ongoing	Ongoing

- *Upgrade of the Metering Workshop*
Our goal is to upgrade the metering workshop equipment that has now been outdated and have reached the end of its lifecycle. The workshop needs to be revamped and the antiquated equipment replaced. This project will facilitate the procurement and setup of new high technology test benches for the testing of conventional and electronic meters. The use of portable test equipment will be investigated and utilised. The intention is to improve the workshop and to obtain ISO standards.
- *Policies and Procedures*
We will develop a closer working relationship with stakeholders and review all work processes. Our focus will be on creating and reinforcing effective policies and procedures to provide an improved service level. We will finalise the documentation and formalisation of all the installation and commissioning procedures that have been implemented in recent years.
- *Audit of Top Ten Customers*
We will commence with a full scale audit of the top ten customers to verify that they are being correctly billed. This exercise will provide skills transfer to our junior technical staff and equip them with the necessary skill to conduct such audits. The overall goal is to complete the auditing of at least the top 10 bulk metering installations that the branch is responsible for.

Other Deliverables

- Priority to be given to quality, throughput and the finalising of documentation of procedures and business rules within our branch with the intention of streamlining of our processes.
- Continue with the adoption of NRS 057, NRS 071 and NRS 049 guidelines.
- Ensure compliance with Chapter 25 and the promotion of Safety within the branch.
- Adhere to financial budgets and compliance with financial regulations.
- Fill all key vacancies within the branch.
- To provide training to new and current staff and ensure that we keeping abreast of new technologies.
- Continue working with the RMS development team for billing of consumers.
- Considering that staff morale is low at present, we will look into the promotion of team spirit, fostering of Balitro Pale principles and staff empowerment.

CUSTOMER SERVICES BRANCH

This branch is responsible for the processing of all applications for supply, registration of customers for billing purposes, meter reading services, auditing of meter readings, resolving account queries/disputes, technical advisory service and the cashiering facilities at various electricity customer services centres.

Highlights / Low lights

- *RMS (Revenue Management System)*
The "RMS System" has gone live and Customer Services administration staff are still assisting when required to ensure that Electricity's concerns are addressed. There have been delays in the launch of the RMS project and staff are working extra hours to cover up the lost time.
- *New Applications*
The ongoing provision of "RDP" Housing as well as the electrification of Informal Settlements has seen our administration staff efficiently processing applications to ensure the timeous "switch on" of electricity for these houses. This is only possible with the close co-operation between the Housing Department, Customer Services, Finance Department and the Depots and will be ongoing in this new financial year with new improved methods of communicating with Housing.
- *Meter Reading*
We investigated the market for new meter reading hand-held units due to the current high costs of maintenance and replacement of the present units. A cheaper local manufacturer was sourced. These are currently being utilized by the Electricity and Water Departments. We are now sourcing new software for the meter reading system due to the old system becoming redundant.
- *Improving Security*
In view of the high crime rate, Customer Services Centres are always improving security for both their staff and customers. New cameras are being rolled out to all centres.

Accommodation

A new Customer Service Centre was opened at 15 Twilight Avenue, Umhlanga. The Customer Service Department has identified the above property suitable for the relocation of the Northern Customer Service Section to the North of Durban for the convenience of customers due to the expansion of the region, presently we service approx. +/- 50 000 residential customers and 8 000 businesses in this area.

All customers from the Umgeni River area, up to and including the Westbrook/Tongaat areas are inconvenienced to travel approx. 60 kms to central Durban for all enquiries pertaining to electricity, +/- 13000 customers for the Cornubia proposed development will have easy access to the new proposed centre.

New Technologies

- *SMS technology*
This has been introduced to capture meter readings by consumers via cellphones. These reading are then capture on the system by staff at the Contact Centre.
- *Web Page Design*
This is being investigated to capture on-line applications, account queries, meter reading capture, token purchases and compliance information to be displayed. The project is being led by the Revenue Treasury Department.
- *Rotunda Displays*
These large screens will be placed at entrance of Rotunda displaying all necessary information to consumers regarding applications, queries and tariffs. Once this system is optimized, it will be installed in all Customer Service Centres.

REVENUE PROTECTION BRANCH

Revenue Protection Strategy is a systematic ongoing process and not a once-off operation. Utilities need to proactively identify and target consumers that actively contribute to revenue losses and take necessary action to minimize these losses. The pillars of successful revenue protection are People, Processes and Technology, need to be integrated into a Revenue Protection Strategy. The following projects or technologies are implemented by eThekweni Municipality to enhance Revenue Protection.

- Meter Management and Operation System
- Implementation of AMI
 - Smart Prepayment Module - Phase 1 (Suprima)
 - Registration of Customers
 - Revenue Management (Debt and credit management)
- Installation of Prepayment Meters and the principle of debt collection via a prepaid meter i.e. 80/20 & 50/50 policy.
- Protective Structures
- Audit of Business Customers.

Over the years eThekweni have embarked on projects that contributed in the success of eThekweni Electricity maintaining total losses to below 6 percent. Recently we are experiencing a challenge in accurately recording or calculating our losses, and as a result, for this financial year they were inflated to 10.7 %.

These losses are incorrectly inflated due to a series of issues affecting the reporting system. The reporting system only considers an electricity sale upon the input of a meter reading. The lack of meter readings entered into the system had an undue effect of understating the sales, leading to the overstatement of the calculated losses.

Meter reads entered into the system was affected by 3 main factors:

- Delays in meter reading contracts
- In order to improve billing accuracy, the upper and lower acceptance limits on the billing system were revised. This had the undue effect of placing greater number of readings in audit.
- Migration to a new billing system (RMS) interrupted the loading and capturing of meter reads. This had the undue effect of meter reads not acknowledged by the system, leading to an understatement of sales.

Highlights

Meter Management and Operation System

eThekwini Invested in a structured Revenue Protection department with three regional offices and field teams reporting to each office. They are focusing on reducing losses over the entire meter base, but the inherited challenges faced with the pre-payment system made it difficult to get "ahead of the game". The following was required to address this challenge:

- One Central Master System that reconciled all records
 - A structured field audit with the aim of normalizing all pre-payment and as well as residential credit meter records
 - An integrated Work Order system to manage all follow up field operations and record updates
 - Data Reporting and Data mining to plan and execute a pro-active Revenue Protection program
- With more than 350 000 pre-payment meters under our management, field operations and data management could quickly become a daunting task. A high level of data validation and seamless system integration would be required. Previous audits have met with limited success because of these challenges. The field operations consisted of two separate, but integrated actions. The first action was the physical meter audits. The primary aim of the audit was to update the meter records and to identify each meter position with an accurate GPS coordinate. The audit teams would first finish the work in a small designated area before the second action was initiated. This follow up action was to address all required remedial field work identified by the initial audit. These operations are executed by a separate specialised normalization team. The advantages of this approach included:
- The audit team could focus on the data acquisition and their productivity is optimized.
 - There is a negative impact with limited access when tamper disconnections are started. By first completing the audit sweep the access rate is much higher.
 - Fraud is limited since there is no impetus to bribe the audit team not to report anomalies. The audit team have no direct contact with the normalization team.
 - The normalization team's skill set is selected towards the remedial tasks to be performed.

An electrician's time is not wasted by being held back by the overhead of a full data audit.

We embarked on a program to normalize our pre-payment data set and in parallel launched a paperless works order system to follow up on all remedial tasks identified through this project. We are now in the position to run an intelligent revenue protection program based on back office analysis and targeted inspections. The positive results are already evident and the future returns should be even greater. The success of the operation can be measure by having the correct building blocks in place comprising:

- People - A project can only be effective with committed and dedicated resources
- Processes - The correct processes and procedures established at the start of the project are essential
- Technology - This is the last element, but it is only effective once the first two pillars are in place.

Implementation of AMI

The use of smart meters is widely viewed as effective for increasing energy efficiency and is consistent with the attempts of many countries in issues of energy efficiency and sustainable development.

Smart meter is an energy metering device with enhanced capacity to store and analyse information about energy consumption in real time. A smart meter also enables two-way communication function between energy utilities and each end user. Smart meter is a major component of next-generation smart grid because they can integrate information technology into the grid.

After collecting energy consumption data from customers using appropriate devices and communication infrastructure, eThekwini Municipality will be in a position to manage electricity demand more efficient and advise users to consume the power wisely. Based on the long-term power usage pattern, the feedback information from smart meter data analytics will offer consumers a better understanding of their energy consumption and help them increase end-use energy efficiency.

Leveraging Smart Meters

eThekwini Electricity intend to focused on integrating and optimizing information gathered by smart meters (and transmitted by AMI communications systems) and other investments in the digital grid to provide benefits and new capabilities to customers and system operators. The following are the few areas where eThekwini Electricity will be leveraging smart meters.

Systems Integration: AMI systems will be integrated with distribution management systems (DMS) to provide enhanced outage management and restoration and improved distribution system monitoring.

Operational Savings: Smart meters will result in operational savings such as reduced truck rolls, automated meter reading, and reduced energy theft.

New Customer Services: Smart meters will have enabled services such as automated budget assistance and bill management tools; energy use notifications; and smart pricing and demand response programs.

Smart Prepayment Module - Phase 1 (Suprima)

This phase was the implementation of the smart prepayment vending module. This was intended to be implemented as the last phase. However, based on business needs since the existing vending contract was expiring, then this was pushed to the top. This benefited the municipality in the following ways:

- The vending system is fully owned by the municipality as opposed to the previous one which was hosted.
- The management of the system in overseen by eThekweni Staff wholly
- Legacy systems from the previous system were eliminated, thus making the management of third party vendors easy. With the new system only was super vendor is managed by the municipality.
- System reporting is another major benefit to the municipality. Relative stakeholders can access and grant reports as per their assigned roles in the organization.
- Business processes for managing prepayment and its associated roles improved because reliance on legacy systems was eliminated.

Then central feature of Suprima is its ability to vend electricity to meters that are registered on the system. The meter needs to be registered so that the system has the details it needs to encrypt the credit transfer number (CTN) correctly.

There are 2 sets of information that are important, firstly the meter encryption details, such as the Supply Group Code (SGC), Tariff Index (TI) and Key Revision Number (KRN) that the meter is on.

If these are incorrect then the meter will not be able to decrypt the content of the CTN, and it will be useless.

The second set of information is the Tariff. Tax, Arrears and Fixed Charge information associated with the meter. These details are required so that the system can calculate the appropriate amount of electricity to issue to the customer for the money they tender.

Because the CTN can only be used in the meter that it is generated for, and because there are financial details associated to the meter, the first step is to find the meter that you are vending to, before you can do anything else.

Registration of Customers

eThekweni Electricity embarked on Customer Data Cleaning exercise that ensures that all prepayment customers are registered and this exercise was very critical in successfully implementation of Suprima prepayment vending system.

Before being able to vend to a meter there are a number of items that need to be registered on the system. This is so that Suprima can correctly determine the meter's configuration so that the correct encryption parameters can be applied and so that it can calculate the charges that are to be applied, and other amounts that need to be recovered.

The registration is also needed to be able to manage your meter park correctly, so that you can determine who the consumers are, where they live and how much electricity they use.

The thing to remember about the registration process is that the old Information Technology adage GIGO (Garbage In Garbage Out) applies. If a bare minimum of data is carelessly entered into the system, then that is all you will have, garbage.

Fixing this after the fact is nearly impossible, so you should spend the time to make sure that it is done properly when the meters are being installed.

The picture above depicts that eThekweni Electricity allows the Suprima system to vend to a meter. The central point of the setup is the Location, also known as a POC (Point of Connection) or Point of Supply. But in all cases, this is the fixed point where the electricity supply enters a house or building and it is usually determined by the physical address where it is located.

All eThekweni Electricity can change, a meter can go faulty and be replaced, customers can move in and out and even the vending categories can change as when a consumer opens a home business and the category changes from domestic to business supply/tariff.

Arrears balances are associated with the consumer, because it is the consumer that owes money. In the event that a consumer is linked to more than one Location any arrears owed by the consumer will be deducted when vending to any of the locations. Also, if a consumer moves out of one location and into another then the arrears will follow the customer to the new location.

Revenue Management (Debt and credit management)

This is based on the Smart Prepayment Vending System as it has been fully deployed since January 2016. The following are the benefits thus far:

- The system is fully owned by the Municipality as opposed to the previous system that was hosted by its supplier. The unit is set to break even in October 2016, this is based on comparing the monthly hosting fee that was paid by the municipality versus the capital cost of the system.

- The relevant municipality staff has full access to the system as per their relevant roles, as opposed to having an individual running the system with the supplier.
 - Debt management (arrears collection) is integrated in the prepayment system. This is implemented using open standards as opposed to bespoke/legacy methodology.
 - With the introduction of the system, the municipality now deals with one super vendor for selling electricity to the customers. Previously, the municipality dealt with 120 dispensing legacy system.
- Utilizing one super vendor has enabled the Municipality to improve on the collection on electricity sales.

Installation of Prepayment Meters and the principle of debt collection via a prepaid meter i.e. 80/20 & 50/50 policy

The installation of a prepayment metering system and the principle of debt collection via a prepaid meter played a crucial role in affording the poorest of the poor access to basic services, in the process partly alleviating the problem of non-payment of services. It is critical that one devise strategies that are complementing each other to ensure sustainability. We strategically targeted poor customers who are struggling to pay for their services to install prepayment meters, the majority of them are exempted to pay rates and their water consumption are low, as a result, they pay very little for Water or they don't pay at all due to the klr/s free that they qualify for. So, it make sense to encourage these customer to install prepayment meters due to the following advantages for a prepayment metering system:- Can budget for the cost of the usage of electricity; can purchase electricity for as little as R5; there are no shocking bills at the end of the month; you use only what you can afford, and pay for it in advance, your meter indicates which appliances use a lot of electricity; your meter indicates the credit you have left in your meter; when your electricity runs out, your meter switches off automatically; Thus, you will not incur any debt by using electricity for which you have no money for, as with the credit meters. Also there will not be any reconnection fees, penalties and interest charges, as there will not be any arrears; etc.

Split Prepayment Meters that uses Power Line Carrier (PLC) Technology

The split prepayment meter that uses power line carrier (PLC) technology is the electricity prepayment system that totally eliminates the need to install a dedicated communications cable. Instead, communication between the externally fitted Remote Energy Dispenser (RED) and internally installed Customer Interface Units (CIU) is achieved via existing mains cables.

This means that when you need to retrofit conventional meters that were installed using cables without a dedicated communications cable, there is no need to retrofit house service mains with communications cable. These meters communicate using advanced Power Line Carrier technology, which is widely used throughout the world as a method of communication for home automation systems.

The ability to use standard household wiring makes this an extremely attractive and cost-effective technology ideally suited to the retrofitting or replacement of conventional meters. We decided to install split prepayment meter that uses power line carrier (PLC) technology in some areas.

Protective Structures/Enclosures

In some instances Meter Room doors (Steel) are vandalised. As a result, customers were continuously tampering with electricity meters and illegally or dangerously connecting cables onto our electricity supply network.

In areas where vandalism is rife we decided to install Vandal Proof Meter Room Doors or Protective Structures with an electronic locking system. These Structures are designed with external hinges and an internal locking system. The design is such that with the hinges removed the door cannot be opened.

Benefits:

- Asset Protection to ensure minimal energy losses (non-technical)
- To prevent unauthorized access and damage.
- Enclosure has a high security features.
- It can be monitored and controlled remotely.

Audit of Business Customers (CT Driven Installations)

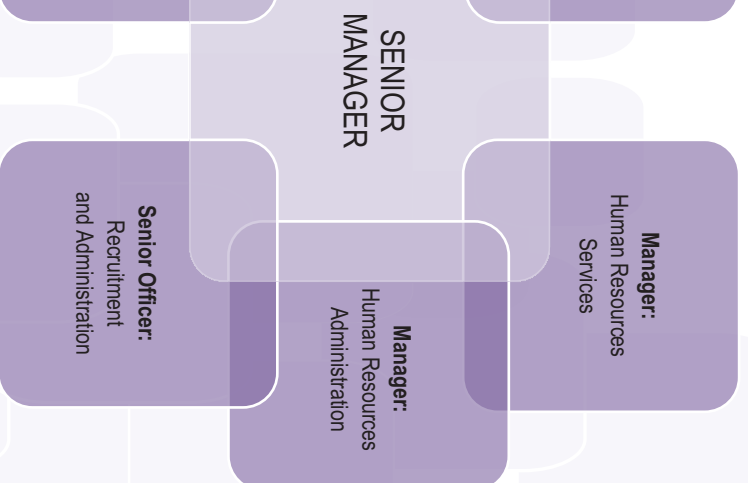
The annual financial losses to energy suppliers caused by connection errors in meter installations are not to be neglected. There are many possibilities in making incorrect connections during installation. In many cases, installation faults are rarely discovered at the time of billing and, sometimes, not recognised for many years. This results in considerable losses to energy suppliers. In the energy market the meaning of correct energy billing becomes even more important, especially because more parties are involved in this process.

It is imperative that utilities provide the necessary training to the Revenue Protection and Meter Engineering staff, set out procedures for the re-commissioning and verification of measurement and metering equipment and to provide the standard tools and test equipment required by technicians to perform their tasks to ensure that the required safety and/or quality standards are practised.

The policy that defines the criteria regarding planned maintenance on electricity metering and measurement equipment needs to be adopted to ensure that utilities comply with NRS 057 and the Electricity Metering Code of Practice.

Revenue Protection Division conduct annual audits to verify measurement and metering equipment and analyse the circuit faults found during the verification.

*Provides guidance and human resource support to employees
and the Unit*



HUMAN RESOURCES

The Human Resource Department is responsible for providing guidance and support to the employees of eThekweni Electricity Unit. HR Staff are involved in addressing issues which impact Human Resource management for the Unit as a whole, through coordination of policy issues and involvement in labor relations activities.

HUMAN RESOURCES BRANCH

This branch provides an integrated Human Resources Services to the staff of the Electricity Department in the field of Employee Relations, Talent Management, Pay Administration and Recruitment Administration.

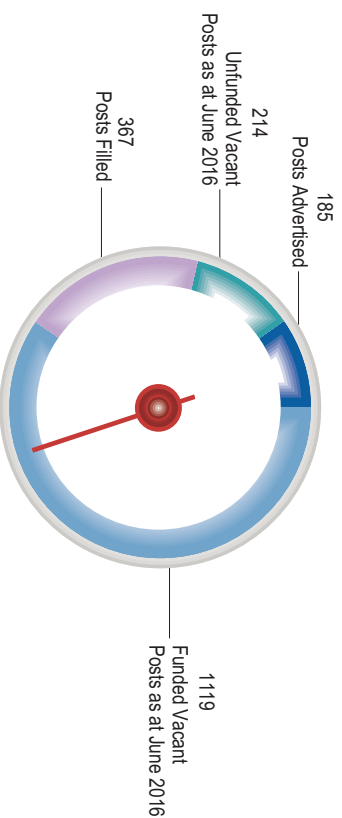
Highlights

- The launch of the LinkedIn project provided staff as well as prospective employees the platform to access vacancies using professional networking media.
- The Human Resources staff moved office from the Network Control building to the ground floor of the HQ building which made accessibility to staff more efficient.
- The business strategy to retain scarce skills was revived with the Talent Management Project.
- The move of the Finance department from the Electricity Unit to the Expenditure Unit was a challenge during the financial year and was concluded in the new year with outstanding grievances that are in progress.

Challenges

- The finalisation of all outstanding appeals was concluded and the retrospective pay of grade improvements remains a challenge for the new year.
- The filling of 1119 vacant funded posts have posed a challenge in terms of attracting the appropriate demographic group.
- The 185 posts that were advertised were targeted at female appointments to address targets in the Employment Equity Plan and the majority of applications received were from male applicants.
- The uncertainty regarding the Institutional review has caused delays with departments finalising their organograms and filling posts. This remains a challenge in the New Year.

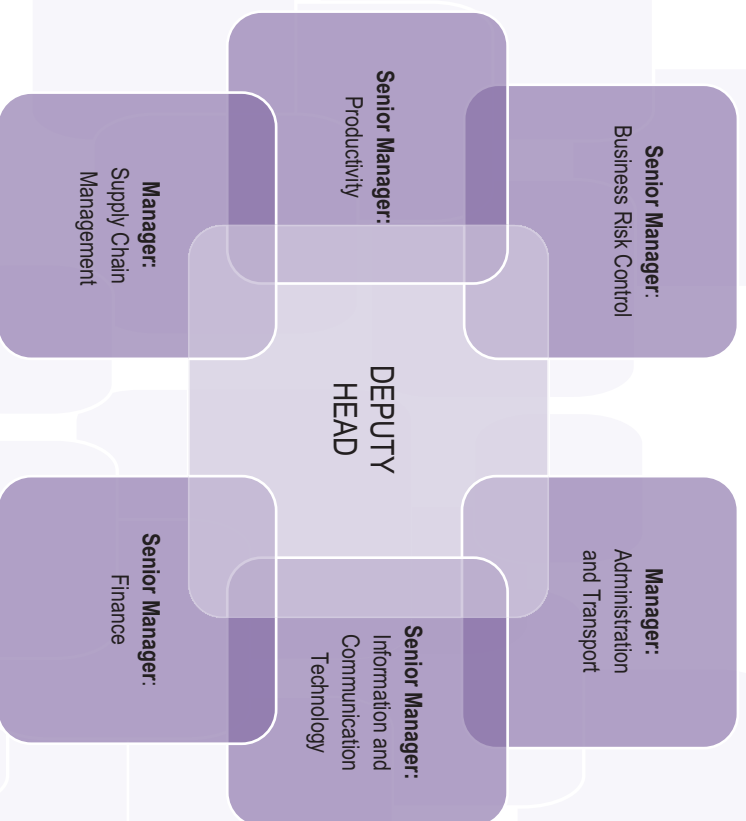
Electricity Post Analysis as at June 2016



Future Focus

- The completion of performance reviews on e-Performance was 50% achieved in the current financial year and the target for the new year is a 100%.
- The time attendance module of the HR System to be fully implemented successfully for all levels of staff.
- To achieve the filling of all funded vacancies with the appropriate demographics.
- To finalise all retrospective pay that resulted from grade enhancements during the appeal and grading process of job evaluation.

Ensures that legislative practices, controls, policies and procedures are adhered to



COMMERCIAL

The Commercial Departments of Finance, Information Communication Technology, Productivity and Business Process Engineering, Supply Chain Management, Business Risk, Administration and Transport play a vital support role to eThekweni Electricity. They also participate in numerous other Council projects/committees. Within the staffing constraints currently experienced they strive to provide effective logistical support to the technical operations. A key feature of these departments is to ensure that throughout, legislative practices, controls, policies and procedures are complied with.

In addition to the onerous Local Government Legislative and governance controls we also have to comply with, the National Electricity Regulator of South Africa (NERSA) has stringent requirements pertaining to reporting as a ring-fenced Business Unit.

ADMINISTRATION AND TRANSPORT BRANCH

The Administration Branch covers three key support areas, viz, Administration, Buildings / Security and Fleet. The Administration Section is responsible for providing an efficient and effective Document Management System, and operates within the parameters of an approved Governmental Archival System. The Sections undertakes various other Administrative Functions, i.e. the internal mail delivery service, management of the Telephone Management System, control of stationary stores, travel arrangement, Word Processing of letters, reports, contract documents and transcribing of meetings, disciplines/enquiries etc. and Security / Cleaning service management.

Challenges & Mitigations

- A major challenge is the lack of suitable office accommodation and parking space, from the ever increasing number of Staff being employed and the decision to reduce the number of lease premises. Additional office space is being built at our existing Training Centre and new Customer Centre, at our 34 Kings Road, Pinetown. Planned building extension will be undertaken at our H. Q. and Springfield Complexes, in the near future.
- The Fleet Section is responsible for the acquisitions, maintenance, and disposal of vehicles. The current fleet size is 1 359, consisting of various type of specialist trucks, cranes, bakkies, cars, trailers, compressors and generators. The majority of the fleet, are specially modified to suit the work activities undertaken by operational staff, in the field.
 - Challenges are the increase in the number of vehicle damages and accidents. Driver re-training, is proving successfully and the electronic monitoring / action taken against deviant driver behaviour has reduced the number of public complaints against our drivers.
 - The availability of replacement vehicles, when operational vehicles are scheduled for service and/or repairs, has proved to be a major challenge.
 - Standardisation of vehicle modifications/design has mitigate this challenge to some degree, however, other interventions will be explored.

INFORMATION AND COMMUNICATION TECHNOLOGY BRANCH

The 2014/2015 financial year has proved to be a challenging year for the I.C.T department. 2016 has proved to be another challenging year for the I.C.T department, dominated by the implementation of JDE for Finance, Materials Management and SCM. ICT resources have been stretched to the limit in ensuring that this major business initiative was a success. Notwithstanding numerous challenges, the implementation in July 2016 was relatively successful with data migration, system integration, process re-engineering and end user training, being significant undertakings due to the sheer scale and compacted project timeline. There are a however still a few issues that require resolution and the IMU unit together with the JDE Consultants are addressing these. Again, significant effort has been expended on recruitment, however human resource capacity and the slow pace of recruitment remains a concern affecting all divisions in ICT, exacerbated by a number of resignation in key posts.

Recruitment will remain a key internal focus for the department in the forthcoming year. Nevertheless, ICT continue to make progress in improvements in the governance of ICT at Electricity in particular in Change Control Processes and the monitoring and management of system changes. The Electricity ICT department has been working more closely with IMU and continues to align its processes and systems thereto.

FINANCE BRANCH

The Finance Branch is responsible for the financial control over all activities of the Department. This includes, inter alia, the management, monitoring and control of revenue, expenditure, capital expenditure, insurance claims, financial systems, procedures and the provision of advice and guidance on matters related to finance to all personnel. The Department's annual and medium term budgets, annual financial statements and monthly management reports are prepared by the Finance Branch.

The Branch also monitors compliance with statutory and internal regulations. In addition the annual financial statements for the 2015/2016 year and the multiyear budgets for the 2016/2017 year onwards were prepared and approved within the stipulated deadlines.

The Regulatory Financial Report (RFR) was submitted as per National Energy Regulator of South Africa's (NERSA) requirements during the year under review.

With the Audit and successful completion of the 2015/16 Annual Financial Statement compilation, Management would like to recognize the dedication and enthusiasm displayed by the staff.

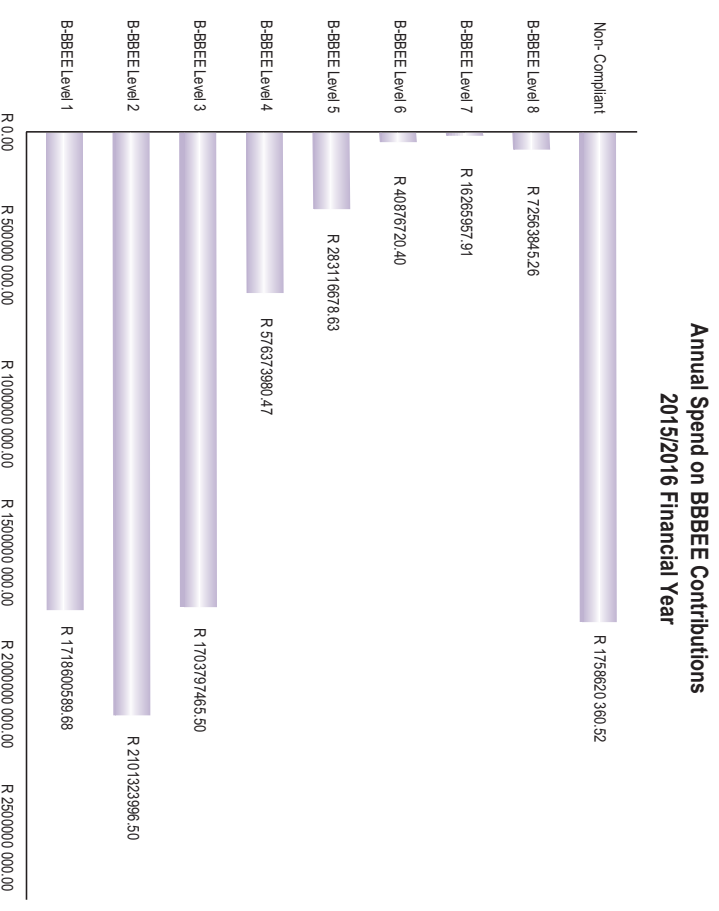
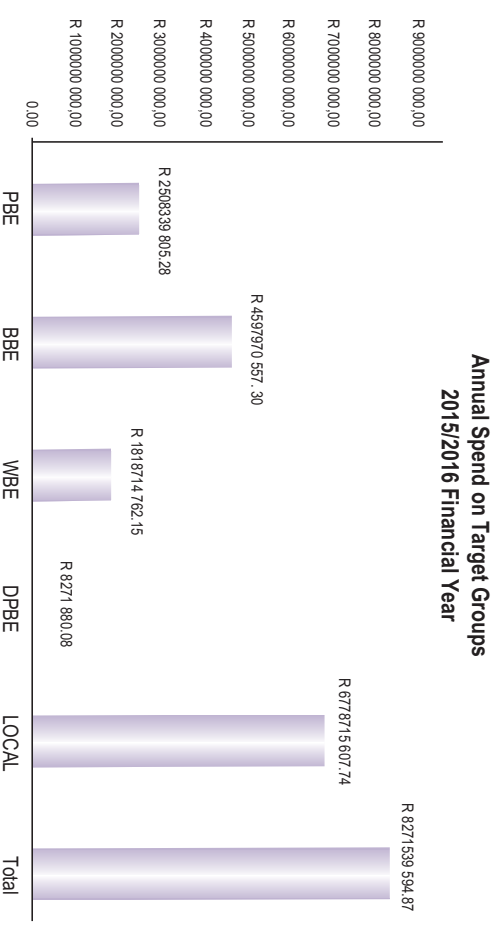
SUPPLY CHAIN MANAGEMENT BRANCH CONTRACTS AND BUYING DIVISION

The Bid Administration Section administers 200 contracts for the supply of goods and services of which 53 are labour contracts. Four appeals were received by the Appeals Committee and were successfully defended.

The following table is reflective of the actual awards to Black Business Enterprises for all public tenders. Note: the statistics are for the entire City, EThekweni Metropolitan Municipality:

TENDERS & CONTRACTS REGISTER			
	No. of award	Value	% of Total
Tenders awarded to PBE's	2025	R 2 508 339 805.28	30.3%
Tenders awarded to BBE's	2474	R 4 597 970 557.30	55.6%
Tenders awarded to WBE's	1457	R 1 818 714 762.15	22.0%
Tenders awarded to DPBE's	1	R 8 274 880.08	0.1%
Tenders awarded to Local Companies	LOCAL	R 6 778 715 607.74	82.0%
Total Tenders awarded	Total	R 8 271 539 594.87	
Premium Paid		R 0.00	

MAY - 16				
BBE Score	Levels	No. of award	Value	% of Total
> 100	B-BBEE Level 1	672	R 1 718 600 589.68	20.8%
85 ~ 100	B-BBEE Level 2	252	R 2 101 323 996.50	25.4%
75 ~ 85	B-BBEE Level 3	875	R 1 703 797 465.50	20.6%
65 ~ 75	B-BBEE Level 4	84	R 576 373 980.47	7.0%
55 ~ 65	B-BBEE Level 5	21	R 283 116 678.63	3.4%
45 ~ 55	B-BBEE Level 6	10	R 40 876 720.40	0.5%
40 ~ 45	B-BBEE Level 7	5	R 16 265 957.91	0.2%
30 ~ 40	B-BBEE Level 8	7	R 72 563 845.26	0.9%
< 30	Non-Compliant	1000	R 1 758 620 360.52	21.3%
	Totals	2926	R 8 271 539 594.87	



STORES DIVISION

Stores is a Division within the Finance & Administration Department of Electricity Service Unit, that forms part of the Materials/Buying division.

We operate 17 Stores located throughout the distribution area and stock 3 500 items. In addition to the warehousing and issuing of stock items, the Stores are responsible for receiving of all direct (outside) purchases.

PRODUCTIVITY BRANCH

The Productivity Branch contributes to the upgrading of productivity and efficiency throughout the Unit by closely monitoring the productivity of both in-house and contractors teams, and ensuring that the undertaking remains cost effective whilst maintaining a high level service standard to management. With the ever increasing number of contractors working for the Unit, monitoring and verification of worked claimed is essential in ensuring that a high standard of efficiency and productivity is maintained and that any fraudulent booking of work is brought to the immediate notice of management. We are currently in the process of developing an in-house computer programme to assist with the calculation of productivity. This should be completed within the year and will greatly assist the Division in accurately assessing the work claimed.

There are two vacant posts, a Senior Clerk and one Productivity Officer, both posts have been advertised and should be filled shortly

BUSINESS RISK CONTROL BRANCH

The Business Risk Control Branch comprises of the Risk Management Division and the Infrastructure Theft Investigation Division.

The Risk and Compliance Management Division is responsible for the formal identification, evaluation and mitigation of risks within eThekweni Electricity. Compliance to policies and procedures is assessed for the different Departments within the Unit to assist to improve controls by generating appropriate solutions to resolve problems/ issues.

Risk workshops were conducted during the year with all the Departments, where the Unit's strategic and operational risks were identified and assessed. Together with the relevant stakeholders, risk mitigation strategies were designed. The workshop also led to the development of the Unit's risk register which is considered an integral part in the effective management of the business.

Regular monitoring of progress on the various tasks allocated to task owners has been conducted and it is envisaged that completion of the various tasks would meet their desired target dates and consequently support the mitigation strategies.

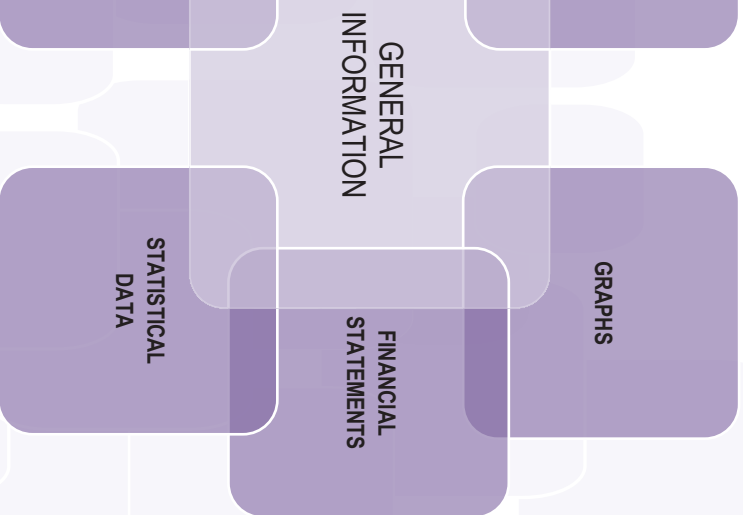
The vision of eThekweni Municipality is "By 2030 eThekweni will be Africa's most caring and liveable City" hence the Enterprise Risk Management strategy was adopted to provide assurance that the risks that might hinder the City from achieving its objectives and its vision, are managed. It is our aim to conduct identification of the Unit's future potential risks with a view to alerting management timely to ensure that adequate time is available for the development and implementation of mitigating strategies. A major risk identified was the potential collapse of the national electricity grid. This was due to the generation shortage at Eskom. The Unit drafted and adopted a 'black start plan' as its mitigation strategy.

The Infrastructure Theft Investigation Division is responsible for the identification, investigation and mitigation of infrastructure theft on eThekweni Electricity's reticulation network and electrical infrastructure. Special operations were planned in hot spot areas with the assistance of SAPS.

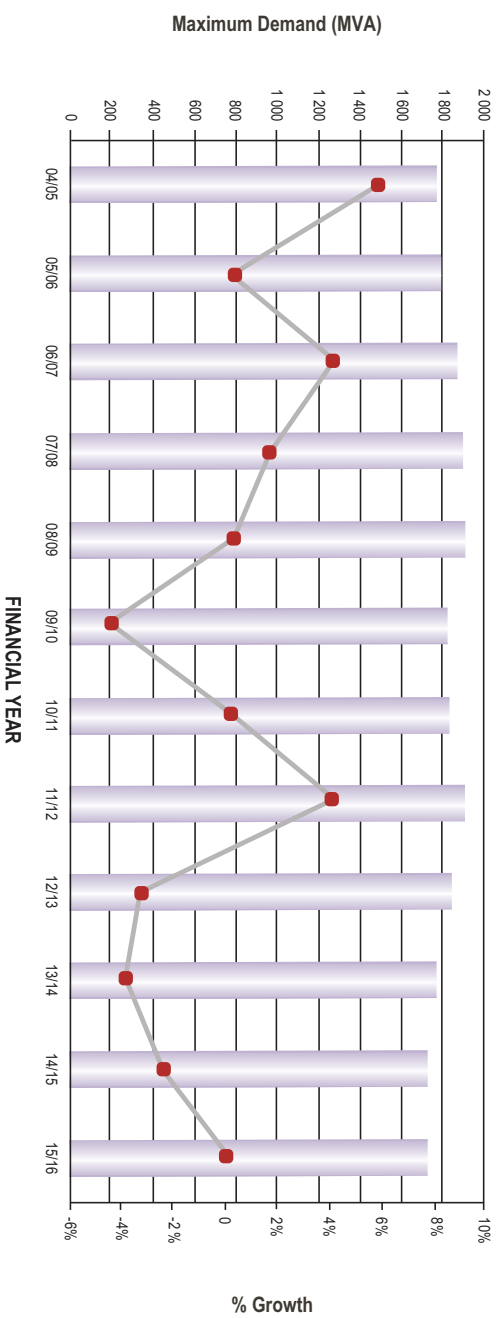
Our focus on awareness campaigns will continue, where we campaign in the eThekweni area educating communities and other Law Enforcement Departments regarding the impact of infrastructure theft to the economy and also partnering with them in preventing the theft thereof. Currently, our emphasis is on building stronger relationships with the prosecuting authorities to secure successful convictions.

Statistical data and financial performance

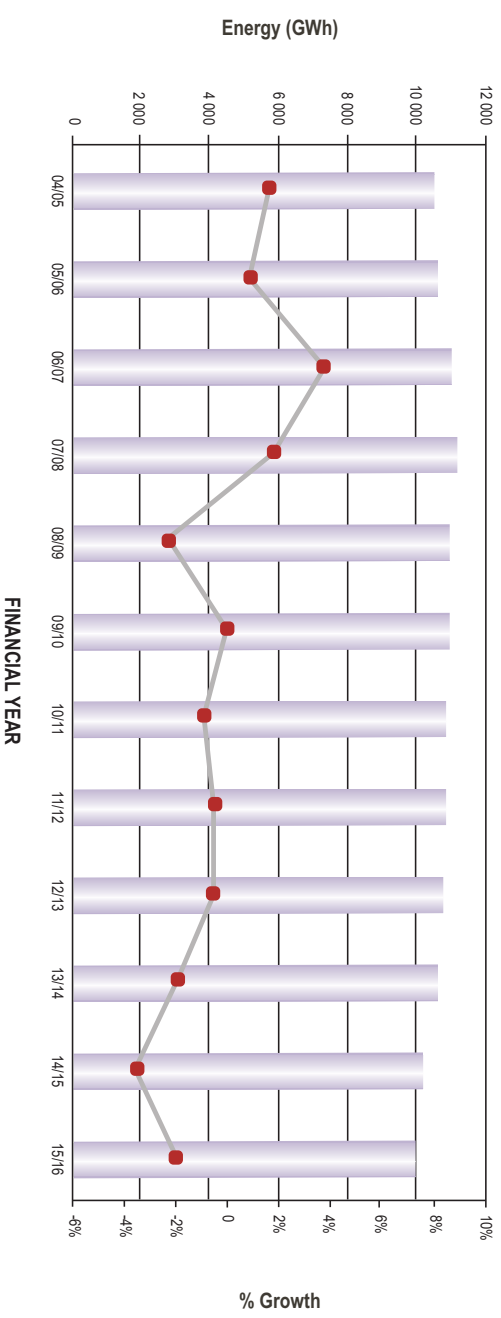
GRAPHS
FINANCIAL
STATEMENTS
STATISTICAL
DATA



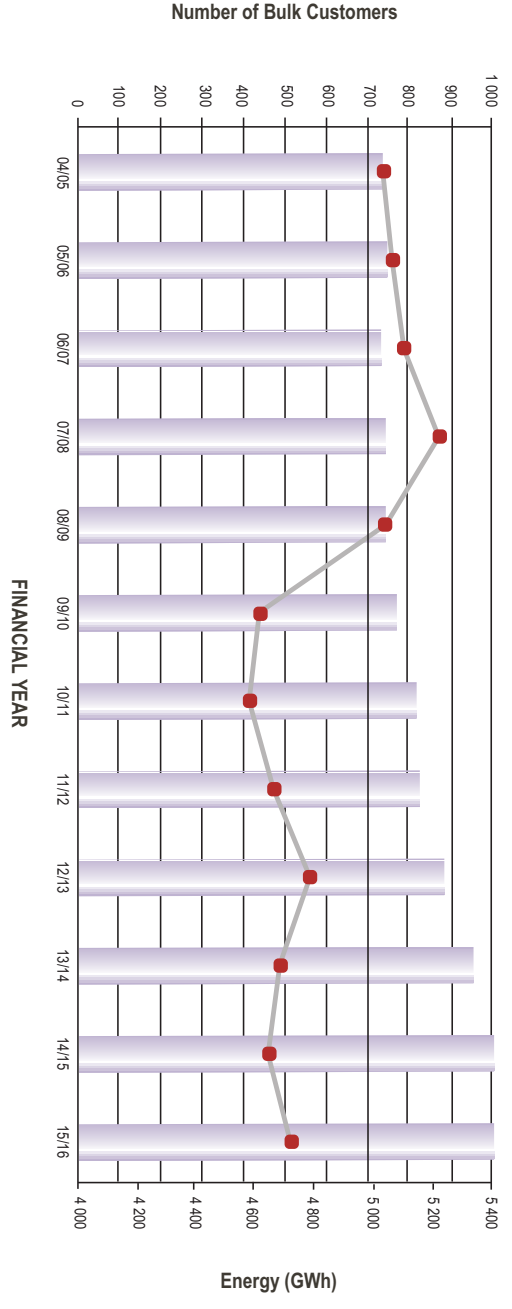
SYSTEM MAXIMUM DEMAND



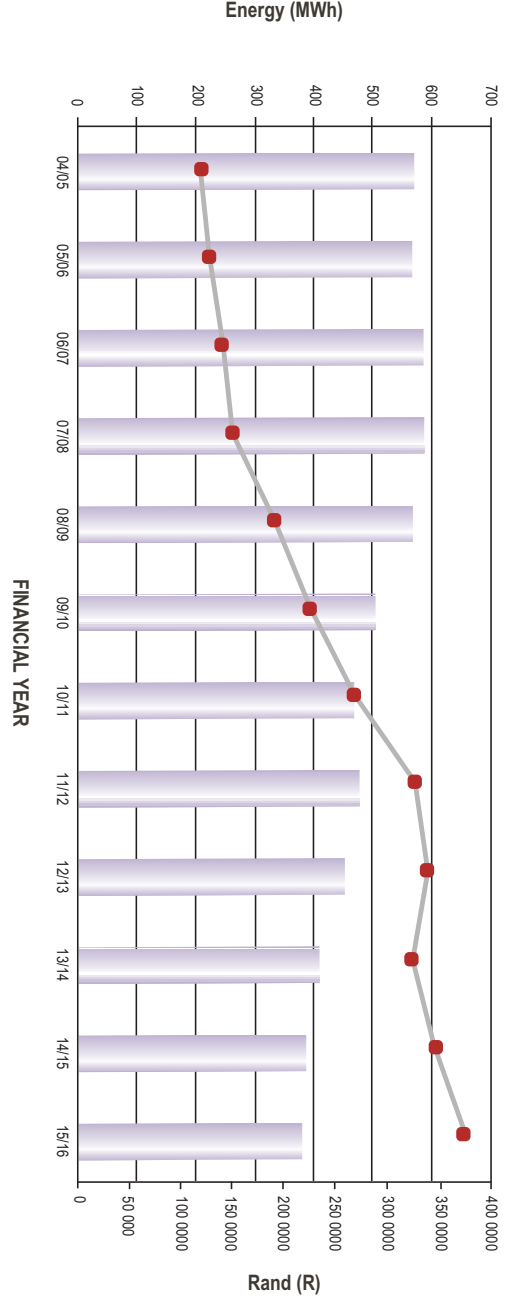
ENERGY SALES PER ANNUM



GROWTH OF BULK CUSTOMERS

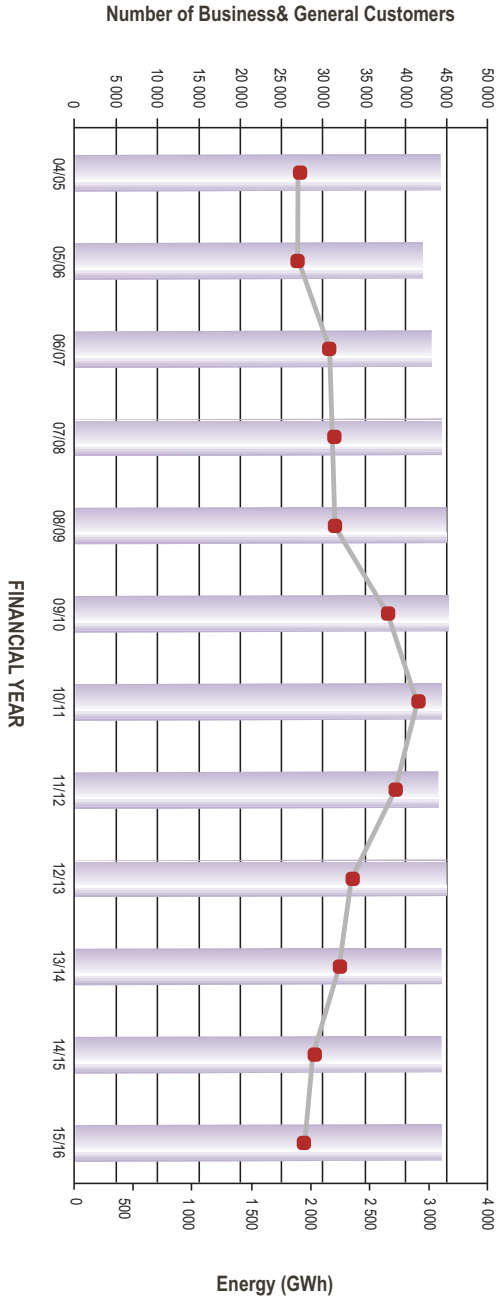


AVERAGE MWh PER BULK CUSTOMER/MONTH

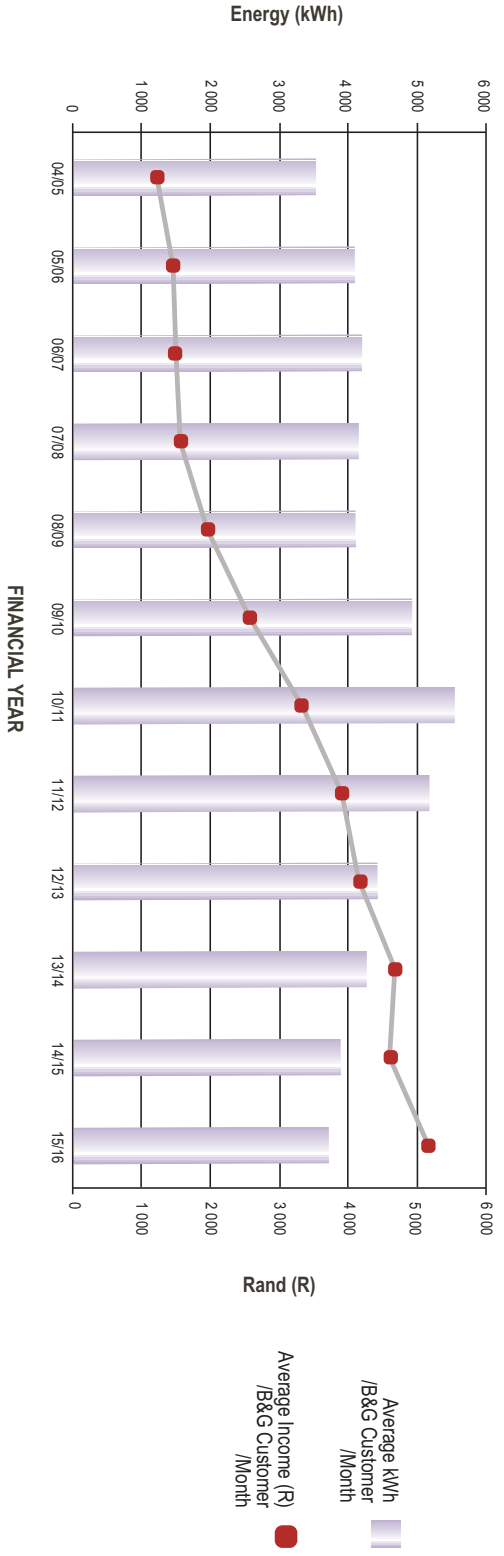


- Number of Bulk Customers
- Average MWh / Bulk Customer / Month
- Energy Sold (GWh)
- Average Income (R) / Bulk Customer / Month

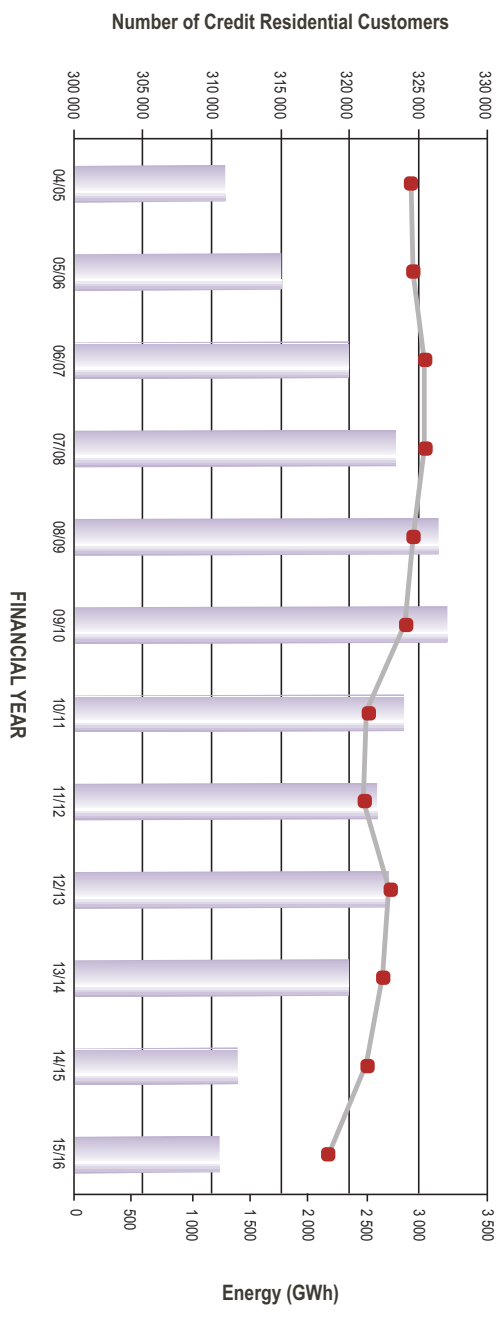
GROWTH OF BUSINESS & GENERAL CUSTOMERS



AVERAGE KWH PER BUSINESS & GENERAL CUSTOMER/MONTH

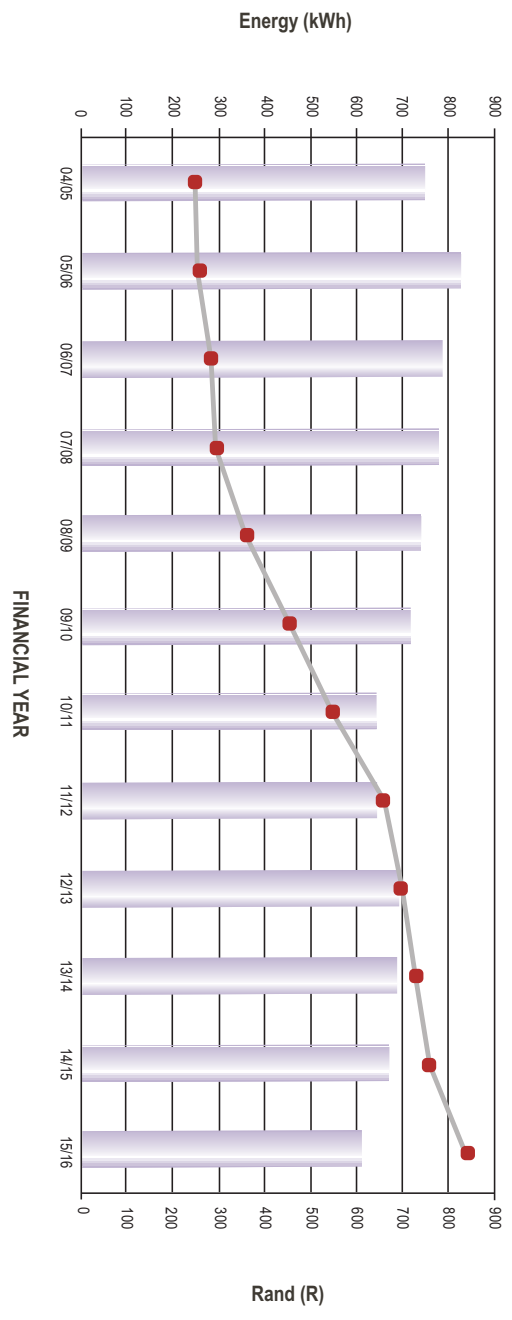


GROWTH OF CREDIT RESIDENTIAL CUSTOMERS



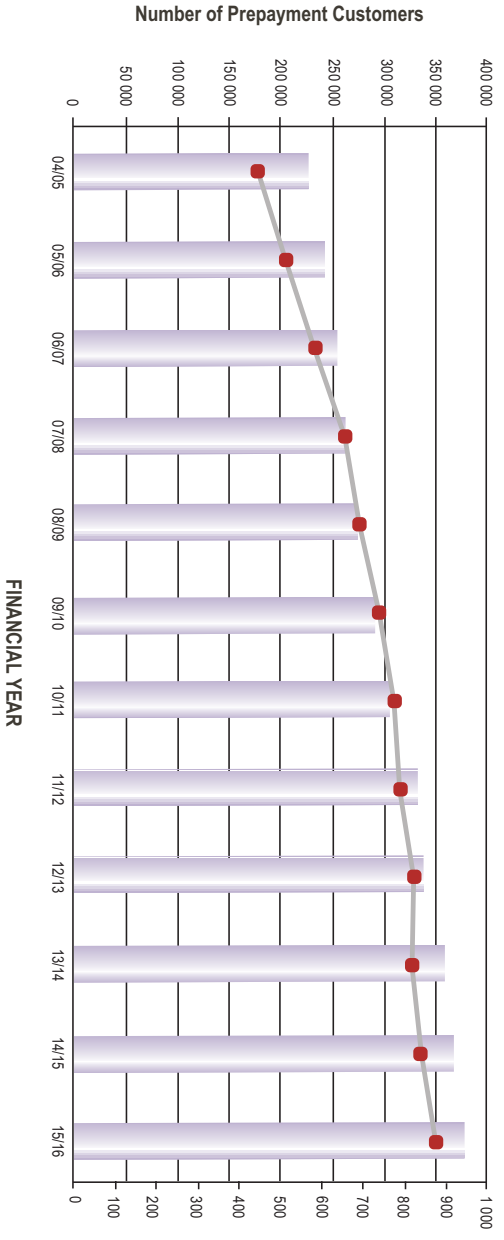
Number of Credit Residential Customers
Energy Sold (GWh)

AVERAGE kWh PER CREDIT RESIDENTIAL CUSTOMER/MONTH



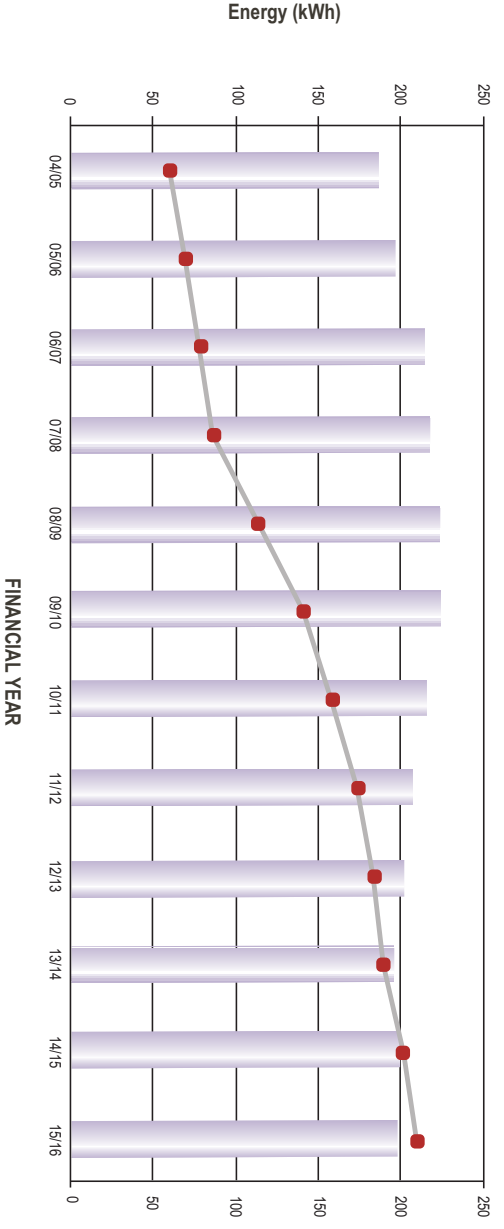
Average kWh /Credit Residential Customer/Month
Average Income (R) /Credit Residential Customer/Month

GROWTH OF PREPAYMENT CUSTOMERS



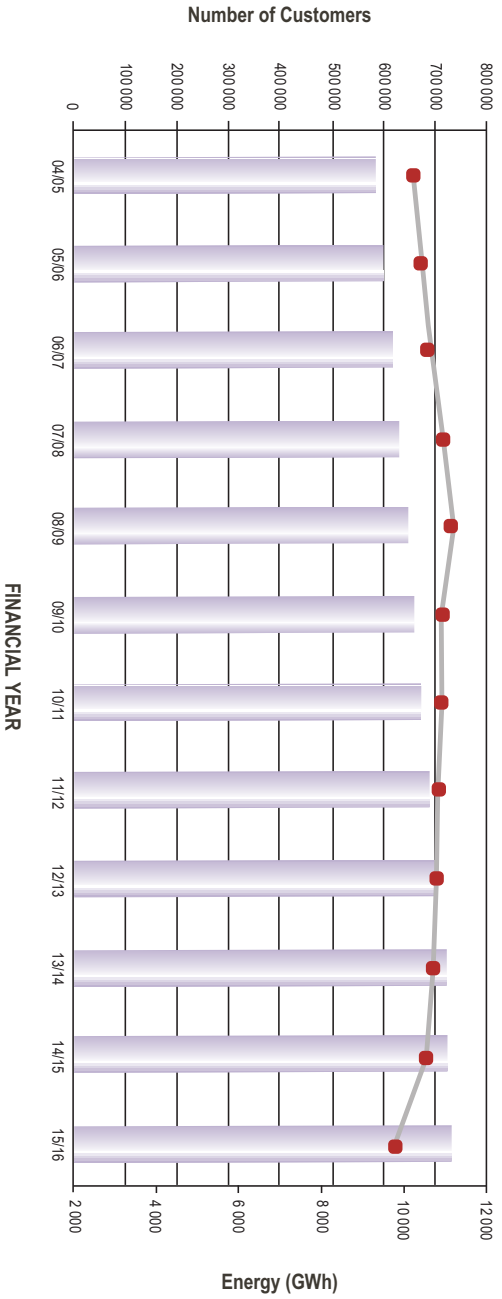
Number of Prepayment Customers
Energy Sold (GWh)

AVERAGE kWh PER PREPAYMENT CUSTOMER/MONTH



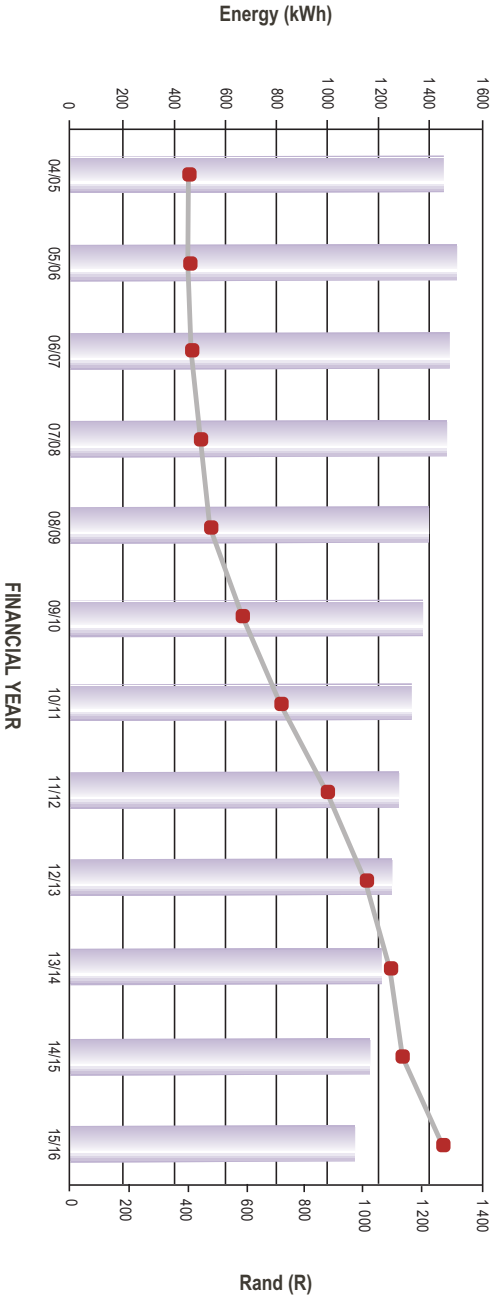
Average kWh /Credit Prepayment Customer/Month
Average Income (R) /Prepayment Customer/Month

OVERALL GROWTH OF CUSTOMERS



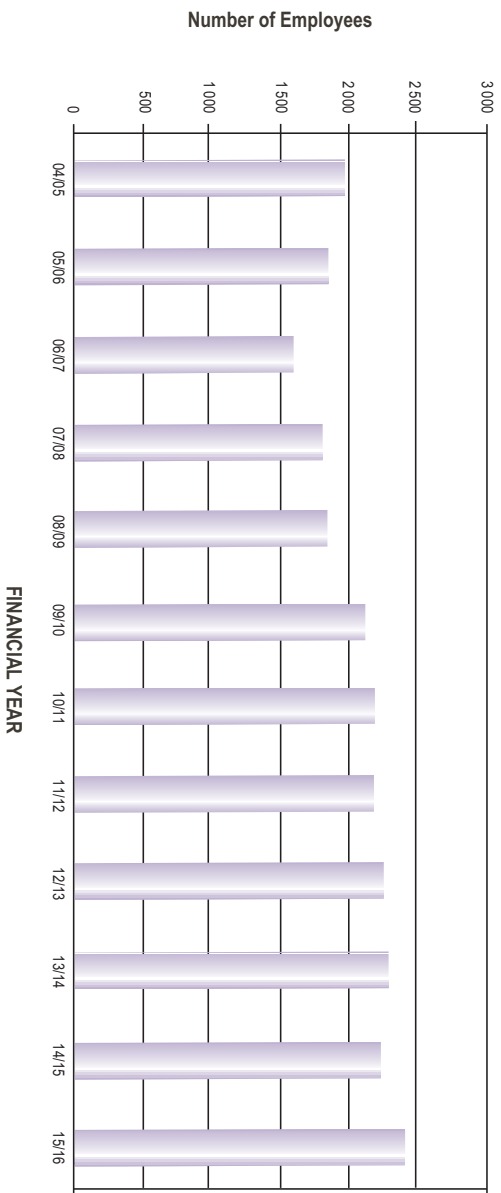
Number of Customers
Energy Sold (GWh)

OVERALL AVERAGE kWh PER CUSTOMER/MONTH



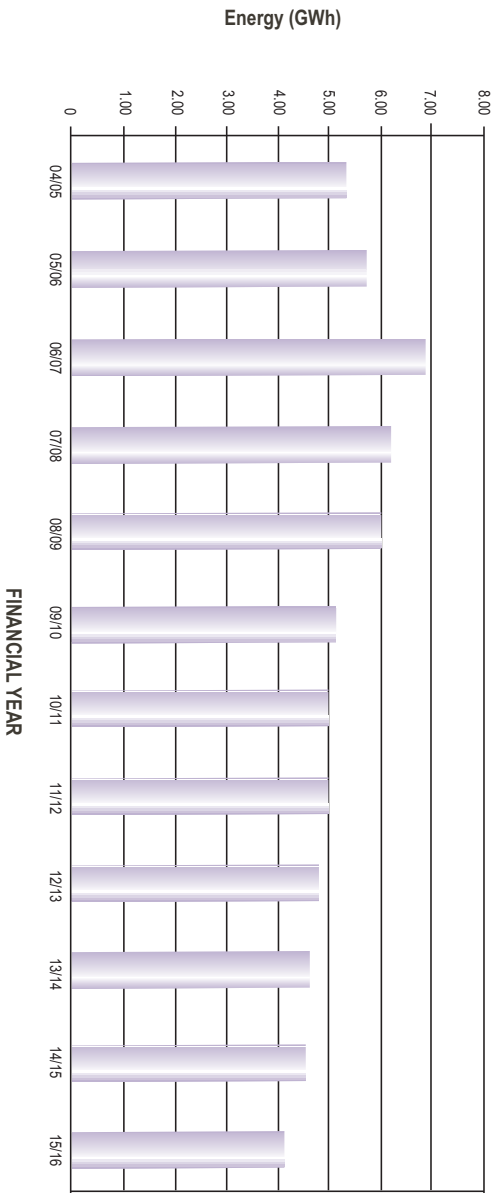
Overall Average kWh / Customer/Month
Average Income (R) / Customer/Month

NUMBER OF EMPLOYEES



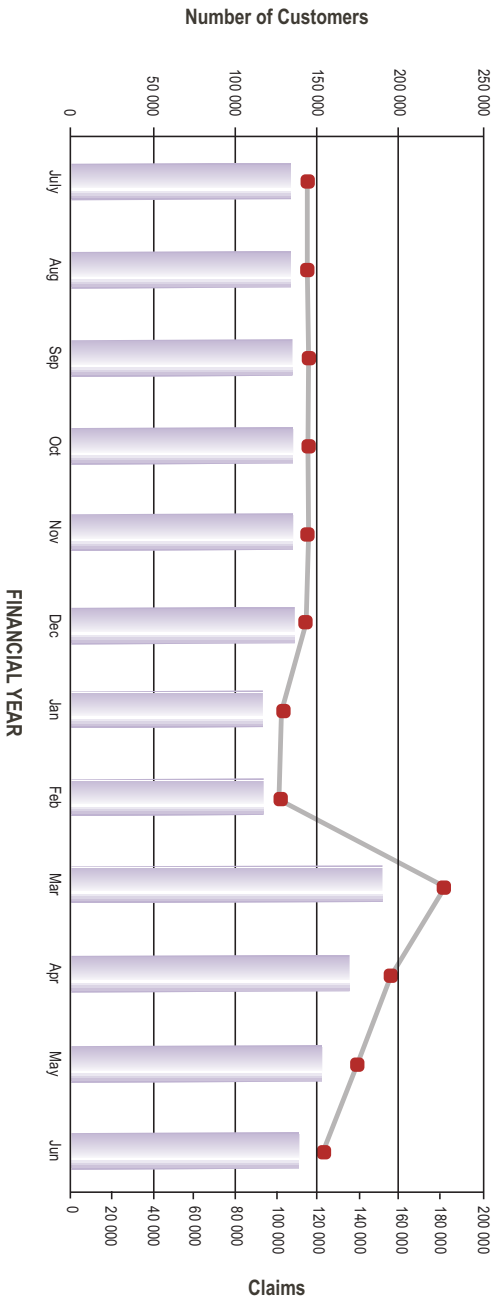
Number of
Employees

ENERGY SOLD PER EMPLOYEE

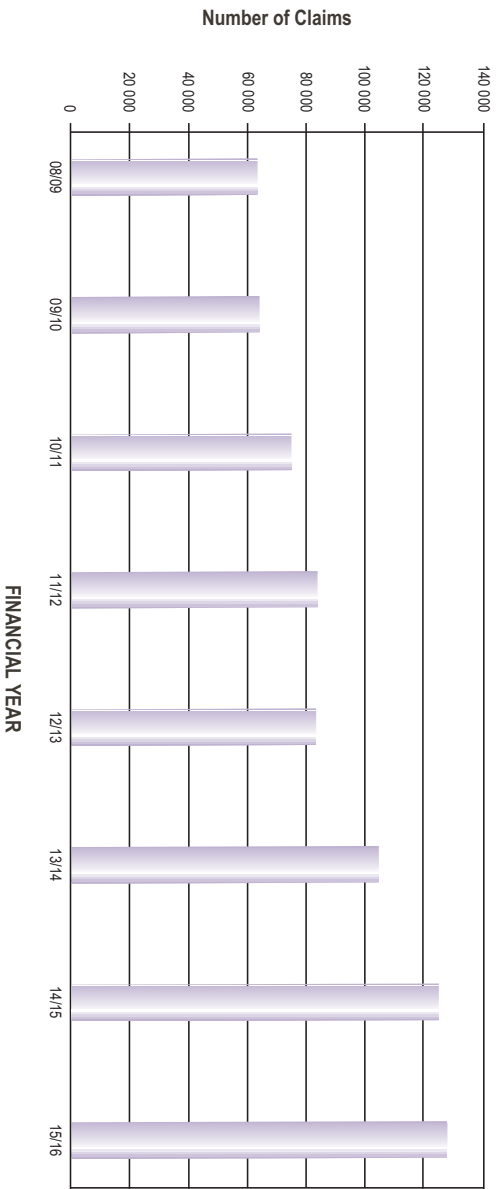


Energy Sold Per
Employee (GWh)

FREE BASIC ELECTRICITY CLAIMS PER MONTH



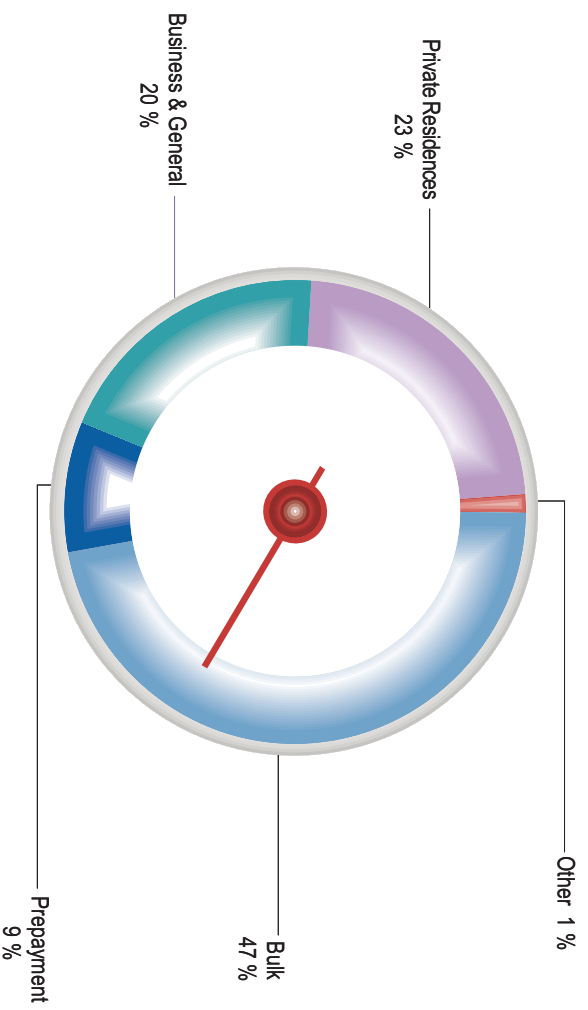
AVERAGE MONTHLY FREE BASIC ELECTRICITY CLAIMS



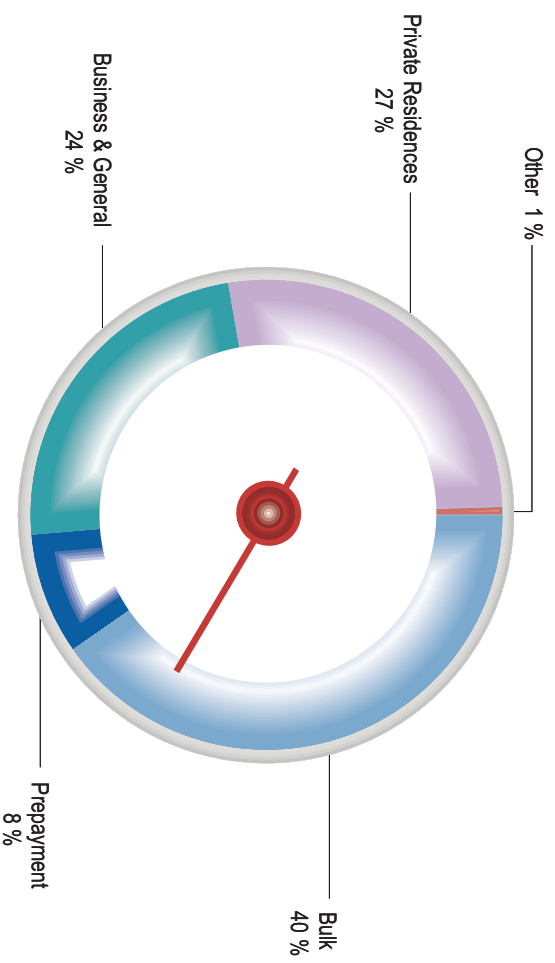
Average Monthly
FBE Claims

Qualifying
Customers
Total
Claims

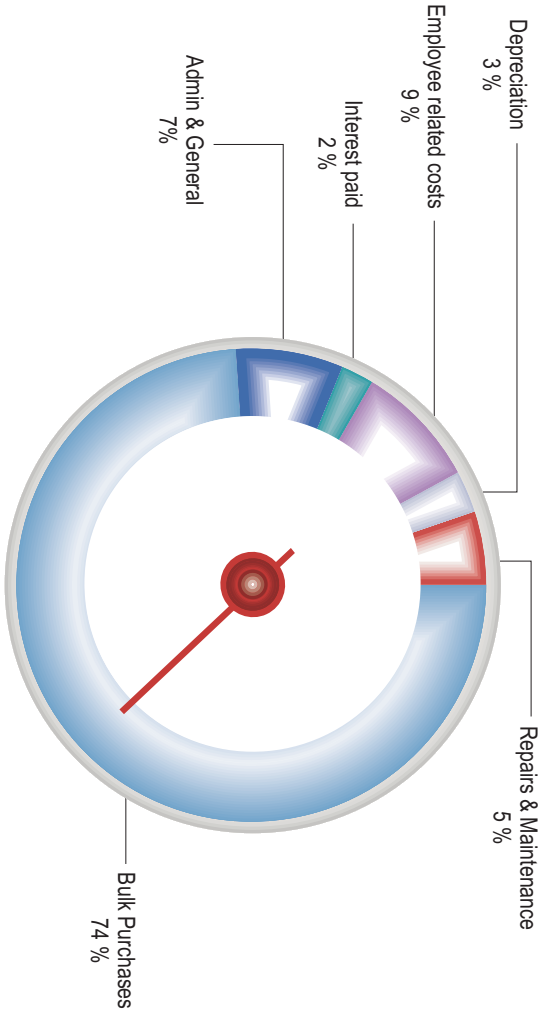
DISTRIBUTION OF ENERGY SALES 2015/2016



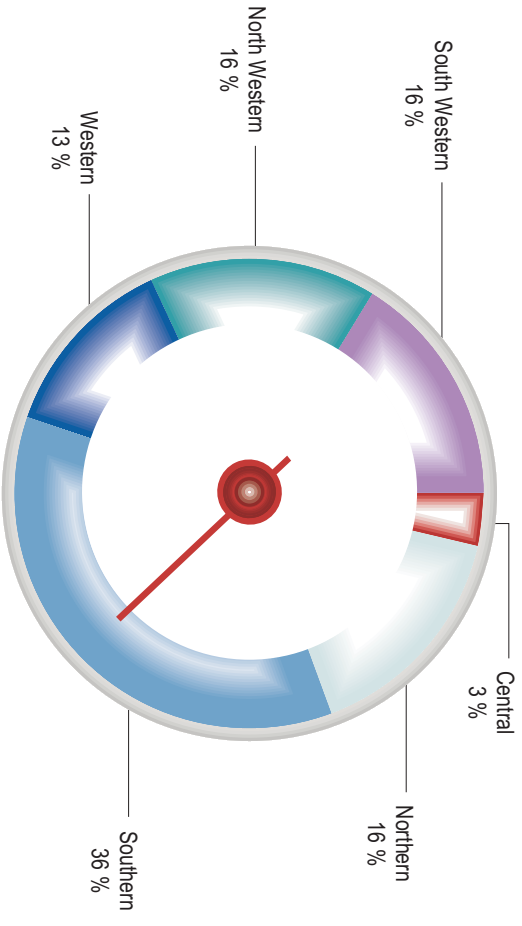
DISTRIBUTION OF REVENUE FROM SALES 2015/2016



DISTRIBUTION OF EXPENDITURE 2015/2016



NEW CONNECTIONS PER REGION 2015/2016



Annual Financial Statements

STATEMENT OF FINANCIAL POSITION AT 30 JUNE 2016

	NOTE	JUNE 2016 R	JUNE 2015 R		JUNE 2016 R	JUNE 2015 R
NET ASSETS AND LIABILITIES						
Net Assets		7 863 015 949	6 722 672 375	ASSETS		
Capital replacement reserve		3 730 314 595	2 869 965 340	Non-current assets	5 703 974 555	5 429 278 969
Capitalisation reserve		0	0	Property, plant and equipment	5 330 255 344	5 337 800 006
Government grant reserve		0	1 144 020 774	Intangible Assets	73 719 210	70 592 984
Donations and public contribution reserves		0	204 718 680	Investments	0	20 885 980
Self-insurance reserve		0	0			
COVID reserve		0	0	Current assets	6 851 317 343	5 942 936 790
Revaluation reserve		0	0	Inventory	127 508 927	141 580 194
Accumulated Surplus/(Deficit)		4 132 701 354	2 503 967 581	Consumer debtors	887 447 276	1 154 553 072
				Other debtors	9	162 581 111
				VAT	0	0
				Bank balances and cash	5 502 298 959	4 484 222 413
LIABILITIES				Total Assets	12 555 291 898	11 372 215 760
Non-current liabilities		1 858 502 521	2 077 187 593			
Long-term liabilities	1	1 858 502 521	2 077 187 593			
Non-current provisions		0	0			
Current liabilities		2 833 773 428	2 572 355 793			
Consumer deposits	2	1 428 924 731	1 256 069 174			
Provisions		0	0			
Creditors	3	1 341 994 376	1 240 501 388			
Staff leave		56 207 063	53 702 986			
Unspent conditional grants		0	0			
and receipts		0	0			
VAT	4	6 647 259	22 082 243			
Bank overdraft		0	0			
Total Net Assets and Liabilities		12 555 291 898	11 372 215 760			

STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR ENDED 30 JUNE 2016

	NOTE	ACTUALS JUNE 2016 R	ADJ. BUDGET JUNE 2016 R	ACTUALS JUNE 2015 R
REVENUE - from exchange transactions				
Service Charges	11	11 553 332 257	11 725 732 870	10 358 321 369
Rental of Facilities and Equipment		475 272	501 750	475 407
Interest Earned		335 089 720	170 005 050	214 167 117
Interest Earned - Outstanding Debtors		32 707 113	31 110 480	29 635 289
Other Income	12	124 978 529	145 079 670	138 785 889
Public Contributions and Donations		68 820 643	24 000 000	8 955 289
Gains on disposal of Prop; Plant; Equip		568 454	3 000 000	17 554 106
Internal Income		263 511 098	287 150 060	255 493 685
Total Revenue from exchange transactions		12 379 483 086	12 386 579 860	11 023 388 109
REVENUE - non-exchange transactions				
<i>Transfer revenue</i>				
Government Grants and Subsidies	13	167 850 000	157 231 000	186 541 089
Total Revenue from non-exchange transactions		167 850 000	157 231 000	186 541 089
Total Revenue		12 547 333 086	12 543 810 860	11 209 929 198
EXPENDITURE				
Employee Related Costs	14	901 810 118	1 029 418 940	858 991 026
Contribution to Provision for Bad Debts		69 997 632	25 636 450	26 903 696
Depreciation		306 001 999	270 984 630	281 795 420
Repairs and Maintenance		523 407 672	783 756 820	584 608 343
Interest Paid	15	226 261 126	221 631 620	229 927 177
Bulk Purchases	16	7 735 740 533	7 948 980 250	6 716 137 398
Contracted Services		135 868 987	210 312 830	170 605 599
General Expenses		190 786 692	220 173 100	201 665 944
Loss on disposal of Prop; Plant; Equip		9 839	525 000	44
Internal Charges		389 551 584	464 165 670	382 662 989
Total Expenditure		10 479 436 182	11 175 585 310	9 453 297 636
OPERATING SURPLUS				
Gross Subsidisation		2 067 896 904	1 368 225 550	1 756 631 561
Other		-927 553 330	-927 553 340	-776 762 748
SURPLUS FOR THE YEAR		-1 140 343 574	-440 672 210	-979 868 813
		0	0	0

STATEMENT OF CHANGES IN NET ASSETS FOR THE YEAR ENDED 30 JUNE 2016

	Housing Development Fund	Capital Replacement Reserve	Capitalisation Reserve	Government Grant Reserve	Donations and Public Contributions Reserve	Self-Insurance Reserve	C.O.I.D. Reserve	Revaluation Reserve	Accumulated Surplus / (Deficit)	TOTAL
	R	R	R	R	R	R	R	R	R	R
ELECTRICITY										
Opening Balance 01 July 2014 as restated	0	2 124 397 646	0	1 092 527 932	189 749 264	0	0	0	2 346 112 626	5 752 787 467
Surplus / (Deficit) for the year	0	0	0	0	0	0	0	0	969 884 906	969 884 906
Transfer to Capital Replacement Reserve	0	903 422 649	0	0	0	0	0	0	-903 422 649	0
PPE purchased	0	-157 854 955	0	0	0	0	0	0	157 854 955	0
Capital Grants used to purchase PPE	0	0	0	109 266 000	0	0	0	0	-109 266 000	0
Donated / contributed PPE	0	0	0	0	8 955 269	0	0	0	-8 955 269	0
Contribution to Insurance Reserve	0	0	0	0	0	0	0	0	0	0
Insurance claims processed	0	0	0	0	12 841 379	0	0	0	-12 841 379	0
Transfer to Housing Development Fund	0	0	0	0	0	0	0	0	0	0
Offsetting of Depreciation	0	0	0	-57 773 158	-6 827 230	0	0	0	64 600 388	0
Closing Balance at 30 June 2015 as restated	0	2 869 965 340	0	1 144 020 774	204 718 680	0	0	0	2 503 967 581	6 722 672 375
Surplus / (Deficit) for the year	0	0	0	0	0	0	0	0	1 140 343 574	1 140 343 574
Transfer to Capital Replacement Reserve	0	1 140 343 574	0	0	0	0	0	0	-1 140 343 574	0
PPE purchased	0	-279 994 319	0	0	0	0	0	0	279 994 319	0
Capital Grants used to purchase PPE	0	0	0	0	0	0	0	0	0	0
Donated / contributed PPE	0	0	0	0	0	0	0	0	0	0
Contribution to Insurance Reserve	0	0	0	0	0	0	0	0	0	0
Insurance claims processed	0	0	0	0	0	0	0	0	0	0
Transfer to Housing Development Fund	0	0	0	0	0	0	0	0	0	0
Offsetting of Depreciation / Asset Disposals	0	0	0	0	0	0	0	0	0	0
Transfer Grants and Contribution reserves to Accumulated Surplus	0	0	0	-1 144 020 774	-204 718 680	0	0	0	1 348 739 454	0
Balance at 30 June 2016	0	3 730 314 595	0	-0	0	0	0	0	4 132 701 354	7 863 015 948
Reconciliation of Surplus for the year 2016										
Surplus for the year		1 140 343 574								
Capital Replacement Reserve Transfer		0								
PPE Purchased:										
Capital Grants used to purchase PPE		0							0	
Donations and Public Contributions		0							0	
Offsetting of Depreciation		0							0	
Total Received for the Year		1 140 343 574								

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED 30 JUNE 2016

1. LONG-TERM LIABILITIES

	JUNE 2016 R	JUNE 2015 R
External Financing Fund		
Development Bank of South Africa	1 217 824 127	1 536 925 989
European Investment Bank	59 094 624	70 724 958
RMB & FRB external Loans	203 279 071	52 585 424
Nedbank Loan	242 375 480	55 660 187
ABSA Loan	135 929 218	361 291 035
Total External Loans	1 858 502 521	2 077 187 592

3. CREDITORS

Trade Creditors	1 246 977 866	1 151 349 020
Payments Received in Advance	51 891 046	41 195 556
Retentions	13 617 976	17 757 239
Other Creditors	28 792 488	29 304 573
Guarantees in Lieu of Deposits	715 000	895 000
	1 341 994 376	1 240 501 388

2. CONSUMER DEPOSITS

Electricity Deposits	1 324 633 794	1 179 568 689
Guarantees in Lieu of Deposits	0	0
Interest on Consumer Deposits	104 290 936	76 500 486
Total Consumer Deposits	1 428 924 731	1 256 069 174

4. VAT

VAT Payable

VAT is payable on the receipts basis. Only once payment is received from debtors is VAT paid over to SARS

6 647 259

22 082 243

Included in deposits is an accrual of interest at an effective rate of 3.00% p.a which is paid to consumers when deposits are refunded.

Guarantees ino prepayment vendors

715 000

895 000

Interest paid on consumer deposits

29 944 819

30 867 797

5. PROPERTY, PLANT AND EQUIPMENT

Reconciliation of Carrying Value

	Land R	Buildings R	Infrastructure R	Plant & Equip. R	Total R
Carrying Values at 1 July 2015	131 572 172	143 214 914	4 731 858 122	331 154 807	5 337 800 007
Cost	131 572 172	179 978 436	7 063 994 426	736 621 188	8 112 166 222
Valuation	0	0	0	0	0
Accumulated depreciation	0	-36 763 522	-2 332 136 305	-405 466 382	-2 774 366 209
- Cost	0	-37 398 577	-2 343 258 286	-434 577 594	-2 815 234 457
- Revaluation	0	635 055	11 121 981	29 111 212	40 868 248
Acquisitions	175 000	5 436 270	323 276 900	95 568 514	424 456 683
Capital under construction	0	38 676 502	122 396 452	5 963 933	167 036 887
Increases/decreases in revaluation	0	0	0	0	0
Transfers - Cost	0	0	0	0	0
Transfers - Depreciation	0	0	0	0	0
Depreciation	0	-3 530 973	-215 961 813	-79 470 942	-298 963 728
- based on cost	0	-3 530 973	-215 961 813	-79 470 942	-298 963 728
- based on revaluation	0	0	0	0	0
Carrying value of disposals	0	0	0	-9 839	-9 839
Cost/revaluation	0	0	0	-186 155	-186 155
Accumulated depreciation	0	0	0	176 316	176 316
Impairment losses	0	0	-64 666	0	-64 666
Other movements - Intangible Assets - Cost	0	0	0	0	0
Other movements - Intangible Assets - Accumulated Depreciation	0	0	0	0	0
Carrying values at 30 June 2016	131 747 172	183 796 705	4 961 504 994	353 206 482	5 630 255 344
Cost	131 747 172	224 091 207	7 509 667 778	837 967 480	8 703 473 638
Revaluation	0	0	0	0	0
Accumulated depreciation	0	-40 294 503	-2 548 162 784	-484 760 999	-3 073 218 285
- Cost	0	-40 929 558	-2 559 284 765	-513 872 211	-3 114 086 533
- Revaluation	0	635 055	11 121 981	29 111 212	40 868 248

	Land R	Buildings R	Infrastructure R	Plant & Equip. R	Total R
Reconciliation of Carrying Value					
Carrying Values at 1 July 2014	131 531 225	123 703 955	4 489 122 817	342 106 543	5 086 464 532
Cost	131 531 225	157 086 486	6 618 272 205	678 668 044	7 585 557 960
Valuation	0	0	0	0	0
Accumulated depreciation	0	-33 382 531	-2 129 149 389	-336 561 501	-2 367 562 196
- Cost	131 531 225	-34 017 586	-2 140 271 370	-365 672 713	-2 408 430 444
- Revaluation	0	635 055	11 121 981	29 111 212	40 868 248
Acquisitions	40 947	11 449 939	439 262 013	83 467 049	534 219 948
Capital under construction	0	11 442 011	6 460 208	-19 127 873	-1 225 654
Increases/decreases in revaluation	0	0	0	0	0
Transfers - Cost	0	0	0	0	0
Transfers - Depreciation	0	0	0	0	0
Depreciation	0	-3 380 983	-202 966 916	-69 639 754	-276 007 653
- based on cost	0	-3 380 983	-202 966 916	-69 639 754	-276 007 653
- based on revaluation	0	0	0	0	0
Carrying value of disposals	0	0	0	-5 651 167	-5 651 167
Cost/revaluation	0	0	0	-6 386 032	-6 386 032
Accumulated depreciation	0	0	0	734 865	734 865
Impairment losses	0	0	0	0	0
Other movements - Intangible Assets - Cost	0	0	0	0	0
Other movements - Intangible Assets - Accumulated Depreciation	0	0	0	0	0
Carrying values at 30 June 2015	131 572 172	143 214 914	4 731 858 121	331 154 807	5 337 800 006
Cost	131 572 172	179 978 436	7 063 994 426	736 621 188	8 112 166 222
Revaluation	0	0	0	0	0
Accumulated depreciation	0	-36 763 522	-2 332 136 305	-405 466 382	-2 774 366 209
- Cost	0	-37 398 577	-2 343 258 286	-434 577 594	-2 815 234 457
- Revaluation	0	635 055	11 121 981	29 111 212	40 868 248

6. INVESTMENTS

C.I.F. Investment

Investments held in the Consolidated Investment Fund are invested in accordance with Municipal Investment Regulations which forms part of the Municipal Finance Management Act, No. 56 of 2003.

Moneys were invested in fixed deposits and call deposits with the Banks, earning an average interest rate of 5.993% (2014) and 5.518% (2013)

7. INVENTORY

Stock on hand

8. CONSUMER DEBTORS

As at 30 June 2016

Service Debtors

Total

As at 30 June 2015

Service Debtors

Total

Electricity: Ageing
Current (0 - 30 days)

31 - 60 Days

61 - 90 Days

91 - 120 Days

121 - 365 Days

+365 Days

Total

	JUNE 2016 R	JUNE 2015 R	
	0	20 885 980	
	127 508 927	141 580 194	
GROSS BALANCES	1 136 978 492	1 136 978 492	NET BALANCES
	1 136 978 492	-249 531 216	887 447 276
	1 136 978 492	-249 531 216	887 447 276
	1 350 459 888	-195 906 815	1 154 553 072
	1 350 459 888	-195 906 815	1 154 553 072
JUNE 2016 R	693 135 743	875 085 254	
	126 239 021	188 026 153	
	27 921 861	27 830 165	
	24 360 964	28 147 877	
	265 320 902	231 370 438	
	0	0	
	1 136 978 492	1 350 459 887	

Summary of Debtors by Customer Classification

30 JUNE 2016
Current (0 - 30 days)
31 - 60 Days
61 - 90 Days
91 - 120 Days
121 - 365 Days
+365 Days
Sub-total
Less: Provision for bad debts

Total debtors by customer classification

Summary of Debtors by Customer Classification

30 JUNE 2015
Current (0 - 30 days)
31 - 60 Days
61 - 90 Days
91 - 120 Days
121 - 365 Days
+365 Days
Sub-total
Less: Provision for bad debts

Total debtors by customer classification

Reconciliation of bad debts provision

Balance at beginning of the year
Contributions to Provision
Bad debts Written off against provision

Consumers	R	Industrial/ Commercial	R
494 217 172		198 918 571	
70 610 752		55 628 270	
24 934 033		2 987 828	
19 135 697		5 225 267	
257 123 571		8 197 331	
0		0	
866 021 226		270 957 266	
-190 064 571		-59 466 645	
675 956 655		211 490 621	

414 495 315	460 589 939
59 220 576	128 805 577
20 911 940	6 918 225
16 048 930	12 098 947
212 389 767	18 980 671
0	0
723 066 529	627 393 359
-104 892 905	-91 013 910
618 173 623	536 379 448

JUNE 2016	JUNE 2015
R	R
195 906 815	171 158 356
71 194 022	27 938 324
-17 569 622	-3 189 865
249 531 216	195 906 815

9. OTHER DEBTORS

Insurance Recoverables	
Private Jobs - Cost of Work done	
Prepayment Meter- Token Sales	
Sundry Debtors - General	
Metro Water	
Mechanical Workshops	
Debtors Capital	
Insurance Sundry Accounts	
Apprentice Tools Cost/Recovery	
CL A/C - Refuse Disposal	
Corporate Services	
Payments ex Sundries	
Mechanical Workshops - Consumables	
Sundry Debtors clearing account	
RMS Adjustment Accounts	

10. BANK, CASH & OVERDRAFT BALANCES

EThekwini Electricity has the following bank accounts: (Nedbank as of 01 October 2016)

Electricity Expenditure Account

Nedbank Cheque Account - 1107821436

Cash book balance at beginning of year	155 720 370
Cash book balance at end of year	19 867 189
Bank statement balance at beginning of year	1 480 290
Bank statement balance at end of year	746 961

Electricity EFT Account

Nedbank EFT - 1107821037

Cash book balance at beginning of year	37 678 083 814
Cash book balance at end of year	6 802 195 274
Bank statement balance at beginning of year	669 886 634
Bank statement balance at end of year	807 740 477

Electricity Foreign Exchange Account

NEDBANK EFT- 1107821428

Cash book balance at beginning of year	16 577 189
Cash book balance at end of year	0
Bank statement balance at beginning of year	222 587
Bank statement balance at end of year	135

	JUNE 2016	JUNE 2015
	R	R
	112 675 508	98 686 448
	35 254 207	15 920 369
	13 608 511	29 707 314
	171 511 104	16 854 191
	0	0
	0	0
	0	1 407 067
	828 681	0
	184 171	5 722
	0	0
	0	0
	0	0
	0	0
	0	0
	334 062 182	162 581 113
NEDBANK		STANDARD BANK
	155 720 370	130 374 394
	19 867 189	155 720 370
	1 480 290	1 723 790
	746 961	1 480 290
	37 678 083 814	28 621 214 301
	6 802 195 274	37 678 083 814
	669 886 634	639 653 132
	807 740 477	669 886 634
	16 577 189	14 508 233
	0	16 577 189
	222 587	0
	135	222 587

	ACTUALS JUNE 2016	ADJ. BUDGET JUNE 2016	ACTUALS JUNE 2015
11. SERVICE CHARGES			
00101 - Bulk Supply	4 666 435 297	4 485 949 220	4 194 313 701
00102 - Business Cooking - Scale 5	33 734 376	40 946 430	30 294 154
00103 - Business and General Scale 1	2 255 446 650	2 241 545 230	2 002 622 740
00106 - Industrial Water Heating & Pumping	7 968 307	12 018 210	8 123 953
00107 - Prepayment Meters - FBE	92 755 732	73 679 420	81 064 221
00108 - Prepayment Meters	859 966 853	913 383 180	807 903 739
00109 - Residential Scale 3 and 4	3 135 221 345	3 415 826 020	2 842 228 419
00111 - Sundry Income - Private Lights	1 326 308	1 634 840	1 022 943
00112 - Two Rate - Scale 2	436 750 376	477 104 410	407 886 402
00120 - Poverty Relief/Indigent/EBBST	119 007 897	122 200 000	94 111 747
00122 - Income Foregone - Load Shedding	0	0	0
20300 - Electricity	-17 728 362	-17 809 760	-17 138 902
20385 - Free Basic Electricity - Municipality	-119 008 191	-122 200 000	-94 111 747
00502 - Equitable Share	81 455 670	81 455 670	77 275 089
Total Service Charges	11 553 332 257	11 725 732 870	10 435 596 458
12. OTHER INCOME			
00119 - Traffic Signals	1 846 399	2 174 150	1 297 080
00201 - Surcharge Business Levy	0	0	0
00202 - EB Stearn - Wheeling Charges	69 920	121 550	79 146
00204 - Lotus Park - Wheeling Charges	174 421	173 650	160 002
00205 - Wheeling Incentive	2 922 158	5 512 500	7 361 591
00405 - Admin Charge - PAFC & Insurance	21 255 514	22 181 460	20 776 762
00408 - Meter Reconnection and Test Fees	1 430 436	1 447 700	1 869 745
00412 - Sundry Income - Taxable	5 621 106	1 449 590	3 169 853
00413 - Sundry Sales	269 237	2 094 750	857 671
00416 - Settlement Discount	440 150	300 980	244 197
00417 - Tender Document Fees	498 205	1 041 860	710 592
00418 - Sweep Reconnection Fees	101 754	324 210	86 842
00425 - Training - Local Government	123 420	267 990	204 026
00426 - Training - Contractors	529 835	701 730	452 658
00427 - Training - Outside Organisations	104 397	30 870	64 680
00431 - Meter Test Fees	7 572	6 680	4 621
00434 - Promotional Items	0	26 250 000	13 927 815
00435 - Proceeds from Insurance - Operating	0	0	0
00455 - Rural Electrification Project	11 537 085	9 000 000	15 940 534
00506 - Prepayment Connection Fees	70 742 460	60 000 000	58 736 698
00507 - Conventional Connection Fees	1 499 436	12 000 000	12 841 379
00508 - Proceeds from Insurance - Capital	1 052 864	0	0
00302 - Sale of scrap	4 365 225	0	0
00303 - Materials returned by contractors	361 223	0	0
00304 - Safety Equipment Income	25 711	0	0
00305 - Access ID cards	0	0	0
Total Other Income	124 978 529	145 079 670	190 151 404

	ACTUALS JUNE 2016	ADJ. BUDGET JUNE 2016	ACTUALS JUNE 2015
13. GOVERNMENT GRANTS AND SUBSIDIES			
00500 - Capital Grant - Urban Settlement Development	137 850 000	113 231 000	94 286 000
00501 - Capital Grant - Demand side Management	0	14 000 000	0
00503 - Capital Grant - Electr. Prog	30 000 000	30 000 000	15 000 000
Total Government Grants and Subsidies	167 850 000	157 231 000	109 286 000
13.1 Urban Settlement Development Grant 0500			
Balance unspent at beginning of year	0	0	0
Current years receipts	137 850 000	133 527 984	94 286 000
Conditions met - transferred to revenue	-137 850 000	-133 527 984	-94 286 000
Conditions still to be met - transferred to liabilities	0	0	0
13.2 Electrification Programme - INEP			
Balance unspent at beginning of year	0	0	0
Current years receipts	30 000 000	5 000 000	15 000 000
Conditions met - transferred to revenue	-30 000 000	-5 000 000	-15 000 000
Conditions still to be met - transferred to liabilities	0	0	0

14. EMPLOYEE RELATED COSTS	
10118 - Backpay - Conditions of Service	
10100 - Staff Salaries	
10101 - Staff Overtime	
10104 - Pensioners Medical Aid	
10105 - Council Pensions	
10106 - Housing Subsidy	
10107 - Durban Pension Fund	
10110 - Medical Aid	
10112 - Long Service Award	
10116 - Holiday Bonus	
10120 - Market/Scarce Skills Allowance	
10122 - Emergency Sustenance	
10123 - Shift Allowance	
10198 - Task Implementation	
10199 - Contingency Staff Vacancy	
10220 - Cell Phone Allowances	
10300 - Executive Packages	
10400 - Locomotion Allowances	
10401 - Travelling Allowances	
10402 - Telephone Allowances	
10403 - Travel and Subsistence	
10409 - Education Fees - Bursary Students	
10500 - Temporary Staff	
10501 - Uniforms	
10502 - Education Fees	
10503 - Travel & Removal Costs	
10506 - Unemployment Insurance Fund	
10507 - Employment Services	
10508 - Leave Comm - Trf Ex Provision	
10510 - Employ - Cost Capitalised Offset	
10700 - Ward Committee Training	
Total Employee Related Costs	

	ACTUALS JUNE 2016	ADJ. BUDGET JUNE 2016	ACTUALS JUNE 2015
	0	0	1 997 500
	497 603 850	567 009 370	463 992 218
	104 182 203	104 203 750	94 992 103
	12 636 084	12 636 080	11 684 880
	6 475 032	6 475 040	6 069 600
	4 707 475	4 707 700	2 367 274
	87 795 488	103 863 400	81 892 133
	45 749 841	42 673 790	42 086 442
	0	0	0
	39 327 384	46 882 630	36 904 994
	36 768 682	43 651 370	36 389 200
	2 292 842	2 404 290	1 825 808
	1 889 053	1 889 060	1 474 474
	0	0	0
	0	16 500 000	0
	3 592 339	3 853 880	3 576 795
	9 553 291	11 399 190	8 972 439
	42 799 429	46 108 730	41 636 319
	0	0	0
	0	0	0
	215 580	217 440	123 858
	382 341	0	3 136 383
	6 190 962	5 974 150	4 086 647
	5 995 049	7 148 360	5 816 855
	1 801 922	2 075 000	1 991 294
	146 808	146 810	47 552
	3 954 545	4 330 310	3 782 353
	22 415	2 377 290	2 873 813
	12 256 710	16 500 000	19 939 669
	-24 529 206	-23 608 710	-18 669 577
	0	0	0
901 810 118	1 029 418 940	858 991 026	

15. INTEREST PAID

29560 - Interest	196 316 307	209 230 690	199 059 380
29563 - Interest - Consumer Deposits	29 944 819	12 400 930	30 867 797
Total of Interest Paid	226 261 126	221 631 620	229 927 177

16. BULK PURCHASES

00901 - Eskom - Maximum Demand Charge	2 779 713	7 007 900	3 643 905
00902 - Eskom - Unit Charge	4 931 397	7 360 100	5 098 777
00905 - Service Fees	1 176 514	1 183 010	1 027 048
00908 - Elect - Landfill Site - Maranhill	5 363 716	5 372 990	2 888 667
00910 - Elect - Hullett Sugar	6 691 643	6 174 710	0
00911 - Elect - Landfill Site - Bisasar Road	25 864 562	33 437 900	21 345 409
00912 - Energy Charge (Peak)	2 187 635 522	2 300 684 960	1 924 126 961
00913 - Energy Charge (Std)	2 626 592 577	2 626 594 210	2 270 369 939
00914 - Energy Charge (Off-Peak)	1 622 071 586	1 678 913 910	1 399 686 265
00915 - Rate Rebalancing Levy	711 072 448	733 095 440	614 359 279
00916 - Environmental Levy	0	0	0
00917 - Eskom - Admin. Charge	212 096	262 010	215 006
00918 - Transmission Network Charge	211 389 999	213 659 880	185 608 443
00919 - Residual Connection Charge	507 506	619 420	501 552
00920 - KVARH Surcharge	0	47 740	9 349
00921 - Energy Charge	0	796 950	0
00922 - Energy Charge	32 305 251	32 999 940	27 509 209
00923 - Energy Charge	296 494 826	298 194 620	259 465 117
00929 - Co-Generation Energy	651 178	2 574 570	302 471
Total Bulk Purchases	7 735 740 533	7 948 980 250	6 716 137 398

17. CAPITAL COMMITMENTS

Commitments in respect of Capital Expenditure:
 Approved and contracted for - Electricity
 Approved but not yet contracted for - Electricity

Total

	ACTUALS JUNE 2016	ADJ. BUDGET JUNE 2016	ACTUALS JUNE 2015
46 663 579	46 663 579	675 207 776	
95 821 157	95 821 157	23 792 982	
142 484 736	142 484 736	699 000 758	

This expenditure will be financed from:

Government Grants	0	0	
Own Resources	142 484 736	699 000 758	

18. INTANGIBLE ASSETS

Services

Opening Balance (July 2015)	50 107 586
Acquisitions	4 515 350
Disposals - Cost	0
	54 622 936

Computer Software

Opening Balance (July 2015)	20 485 398
Accumulated Depreciation	0

Acquisitions	5 668 695
Work in Progress	-8 292 463
Disposals	-19 547
Depreciation for the year	-7 038 271
Transfers - Cost	0
Transfer - Depreciation	0
Disposals - Cost	0
Disposals - Depreciation	0
19. VAT	19 096 274
Vat Receivable	0

20. BANK AND CASH BALANCES

21. LOSS IN ELECTRICITY DISTRIBUTION

Estimated Electricity losses 1 197 963 034 kWh (2015: 849 426 488 kWh) occurred during the year under review which resulted in revenue losses to the municipality. These estimated electricity losses amounted to R 828m (2015: R 566m). The national norm for electricity losses ranges from 5.6% to 12%. The loss incurred by the municipality is 10.71% (2015: 7.70%) and is due to a combination of transmission/distribution losses and losses due to illegal connections.

Note: The losses is incorrectly inflated due to a series of issues affecting the reporting system. The reporting system only considers an electricity sale upon the input of a meter reading into the system. The lack of meter readings entered into the system will have the undue effect of underselling sales, leading to the overstatement of the calculated losses.

Meter reads entered into the system was affected by 3 main factors:

- Delays in meter reading contracts
 - In order to improve billing accuracy, the upper and lower acceptance limits on the billing system were revised. This had the undue effect of placing greater number of readings in audit.
 - Migration to a new billing system (RMS) interrupted the loading and capturing of meter reads. This had the undue effect of meter reads not acknowledged by the system, leading to an understatement of sales.
- As meter readings are consistently entered into the new billing system(RMS), this anomaly is expected to regularise leading to a decrease in losses.

22. OPERATING COMMITMENTS CONTRACTED FOR:

Payable in one year	70 517 284
Payable within two to three years	14 322 112
Payable after three years	2 800 102

	JUNE 2016 R	JUNE 2015 R
Opening Balance (July 2015)	50 107 586	48 435 503
Acquisitions	4 515 350	1 672 084
Disposals - Cost	0	0
	54 622 936	50 107 586
Opening Balance (July 2015)	20 485 398	19 134 394
Accumulated Depreciation	0	0
	20 485 398	19 134 394
Acquisitions	5 668 695	15 431 233
Work in Progress	-8 292 463	-8 292 463
Disposals	-19 547	0
Depreciation for the year	-7 038 271	-5 787 767
Transfers - Cost	0	0
Transfer - Depreciation	0	0
Disposals - Cost	0	0
Disposals - Depreciation	0	0
19. VAT	19 096 274	20 485 398
Vat Receivable	0	0
	5 502 450 934	4 484 222 413

Payable in one year	70 517 284	175 457 093
Payable within two to three years	14 322 112	11 558 909
Payable after three years	2 800 102	11 185 491
	87 639 498	198 201 493

Statistical Data: Customer Base Statistics

	05 / 06	06 / 07	07 / 08	08 / 09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
NUMBER OF CUSTOMERS											
Business & General	42 010	42 980	44 261	44 832	45 007	44 213	43 879	44 654	44 344	44 164	44 172
Private Residences	314 975	319 516	323 389	326 386	327 002	324 044	321 904	322 844	319 875	311 817	310 333
Other	1 173	4	4	4	4	4	4	4	4	4	4
Bulk	748	730	746	744	769	821	819	888	959	1 009	1 040
Prepayment	243 549	254 017	263 712	275 670	289 946	305 977	333 434	342 705	356 411	367 483	378 456
Total	602 455	617 247	632 112	647 636	662 728	675 059	700 040	711 095	723 593	724 477	734 005
UNITS (KWh)											
Business & General	1 887 628 514	2 161 999 560	2 203 077 556	2 206 256 603	2 662 458 083	2 921 756 030	2 723 365 860	2 367 758 535	2 263 456 147	2 042 812 264	1 968 393 447
Private Residences	2 900 907 487	3 006 373 582	3 013 288 241	2 900 914 449	2 826 464 487	2 500 569 276	2 495 936 487	2 680 118 904	2 644 041 922	2 505 800 359	2 271 613 260
Other	123 385 815	36 693 199	37 605 719	37 677 922	39 678 620	41 785 554	86 221 641	95 297 605	112 538 964	118 165 912	124 074 208
Bulk	5 086 990 152	5 106 603 247	5 221 414 480	5 037 894 890	4 621 341 025	4 582 863 945	4 666 663 006	4 781 979 791	4 688 943 005	4 641 845 461	4 725 934 395
Prepayment	567 881 511	652 855 481	667 805 495	738 475 562	774 714 890	789 573 652	826 397 419	819 810 059	840 892 154	878 206 982	894 271 613
Total	10 556 793 479	10 963 528 073	11 163 191 492	10 920 221 425	10 924 656 709	10 836 548 456	10 798 574 412	10 744 964 894	10 549 872 192	10 186 830 978	9 984 286 923
UNITS GROWTH											
Business & General	-6.91%	14.54%	1.90%	0.10%	20.73%	9.74%	-6.79%	-13.06%	-4.41%	-9.75%	-3.64%
Private Residences	0.96%	3.64%	0.23%	-3.73%	-2.57%	-11.53%	-0.19%	7.38%	-1.35%	-5.23%	-9.35%
Other	-12.01%	-70.26%	0.19%	0.19%	5.31%	5.31%	106.34%	10.53%	18.09%	5.00%	5.00%
Bulk	3.15%	0.96%	2.27%	-3.51%	-8.27%	-0.88%	1.83%	2.47%	-1.95%	-1.00%	1.81%
Prepayment	14.33%	11.05%	5.35%	7.37%	4.91%	1.92%	4.66%	-0.80%	2.57%	4.44%	1.83%
Total	0.95%	3.85%	1.82%	-2.18%	0.04%	-0.81%	-0.35%	-0.50%	-1.82%	-3.44%	-1.99%
INCOME IN RANDS											
Business & General	687 641 951	779 362 349	844 191 522	844 191 522	1 391 466 489	1 767 021 296	2 064 278 962	2 232 766 552	2 486 098 587	2 448 927 248	2 738 899 709
Private Residences	981 363 145	1 090 027 087	1 150 908 334	1 416 756 093	1 783 179 755	2 153 501 353	2 534 662 071	2 710 411 189	2 772 408 183	2 842 228 419	3 135 221 345
Other	20 181 773	13 433 024	15 189 096	19 709 806	25 254 174	36 500 000	51 154 591	51 019 505	50 940 590	56 883 781	64 701 771
Bulk	1 153 442 450	1 231 234 899	1 353 175 863	1 711 042 139	2 091 798 088	2 658 783 133	3 207 748 156	3 635 164 500	3 744 530 467	4 194 313 701	4 666 435 297
Prepayment	204 733 254	241 183 183	275 381 501	377 042 920	494 949 284	584 894 116	695 382 979	757 018 411	813 908 747	888 967 560	952 722 585
Total	3 047 362 573	3 355 240 542	3 638 846 315	4 599 591 348	5 786 867 710	7 200 499 898	8 553 226 758	9 386 380 338	9 867 886 574	10 431 321 108	11 552 980 707
CENTS/UNIT											
Business & General	36.43	36.05	38.32	48.75	52.26	60.48	75.80	94.30	109.84	119.88	138.89
Private Residences	33.83	36.26	38.19	48.84	63.09	86.11	101.55	101.13	104.85	113.43	138.02
Other	16.36	36.61	40.39	52.31	63.75	87.35	59.33	53.54	45.26	48.14	52.15
Bulk	22.81	24.12	25.92	33.96	45.26	58.02	68.74	76.02	79.86	90.36	98.74
Prepayment	34.83	36.94	40.04	51.06	63.89	74.08	84.15	92.34	96.79	101.23	106.54
Total	28.87	30.60	32.60	42.12	52.97	66.45	79.21	87.36	93.54	102.40	115.71
AV. UNITS/MNTH/CUST											
Business & General	4 087	4 192	4 148	4 099	4 930	5 507	5 172	4 419	4 254	3 655	3 714
Private Residences	825	784	776	741	720	643	646	692	689	670	610
Other	8 766	764 442	783 452	784 957	826 638	870 532	1 786 284	1 985 567	2 344 562	2 461 790	2 584 879
Bulk	563 390	582 831	583 268	564 280	500 796	465 171	474 833	448 759	407 451	383 370	378 681
Prepayment	196	214	217	223	223	215	207	199	196	199	197
Total	1 509	1 480	1 472	1 405	1 374	1 338	1 285	1 259	1 215	1 172	1 134
AV. RANDS/MNTH/CUST											
Business & General	1 489	1 511	1 589	1 998	2 576	3 331	3 920	4 167	4 672	4 621	5 158
Private Residences	260	284	297	362	454	554	656	700	722	760	842
Other	1 434	279 855	316 440	410 621	526 962	760 417	1 065 721	1 062 915	1 061 262	1 185 079	1 347 954
Bulk	128 503	140 552	151 159	191 649	226 619	269 872	326 389	341 138	325 355	346 408	373 913
Prepayment	70	79	87	114	142	159	174	184	189	202	210
Total	422	453	480	592	728	889	1 018	1 100	1 136	1 200	1 312

Statistical Data:

Maximum Demand and Energy Sales per Annum

Year	MaximumkVA	Percent growth	Energy (kWh) sold	Percent growth	Energy (kWh) purchased	Percent growth	Percent loss	Power factor at system peak	Average monthly load factor	Number of customers
90/91	1 268 538	2.91%	7 426 490 766	3.13%	7 697 377 076	0.82%	3.52%	100.00%	73.87%	290 070
91/92	1 286 335	1.40%	7 548 680 345	1.65%	7 928 532 199	3.00%	4.79%	97.50%	72.90%	299 948
92/93	1 313 385	2.10%	7 688 164 852	1.85%	8 145 319 531	2.73%	5.61%	100.00%	70.80%	329 989
93/94	1 383 431	5.33%	8 047 317 773	4.67%	8 494 913 446	4.29%	5.27%	99.90%	72.80%	359 516
94/95	1 426 277	3.10%	8 202 460 186	1.93%	8 738 907 153	2.87%	6.14%	99.90%	72.90%	386 361
95/96	1 469 266	3.01%	8 419 518 677	2.65%	9 021 770 028	3.24%	6.69%	99.90%	73.46%	428 035
96/97	1 585 122	7.89%	8 941 330 717	6.20%	9 571 358 173	6.09%	6.58%	99.90%	74.37%	451 751
97/98	1 585 060	0.00%	9 183 151 356	2.70%	9 813 695 486	2.53%	6.43%	99.90%	76.28%	477 416
98/99	1 601 635	1.05%	9 073 412 900	-1.19%	9 851 495 987	0.39%	7.90%	99.90%	76.55%	505 501
99/00	1 572 339	-1.83%	9 195 922 772	1.35%	9 956 607 592	1.07%	7.64%	98.60%	77.37%	523 176
00/01	1 592 211	1.26%	9 407 440 209	2.30%	10 105 748 000	1.50%	6.91%	98.60%	78.52%	525 551
01/02	1 610 173	1.13%	9 589 115 852	1.93%	10 224 641 034	1.18%	6.22%	98.10%	79.45%	548 702
02/03	1 650 089	2.46%	10 015 115 502	4.44%	10 552 641 000	3.21%	5.09%	98.00%	78.49%	533 527
03/04	1 667 942	1.08%	10 290 977 595	2.75%	10 803 947 948	2.38%	4.75%	99.90%	74.15%	564 527
04/05	1 765 855	5.87%	10 457 948 645	1.62%	11 053 953 456	2.31%	5.39%	99.80%	76.53%	585 130
05/06	1 783 038	0.97%	10 556 793 479	0.95%	11 186 048 110	1.19%	5.63%	99.90%	72.75%	602 455
06/07	1 857 178	4.16%	10 963 525 073	3.85%	11 580 771 534	3.53%	5.33%	98.13%	73.98%	617 247
07/08	1 890 043	1.77%	11 163 191 492	1.82%	11 751 787 312	1.48%	5.01%	97.27%	75.90%	632 112
08/09	1 897 005	0.37%	10 920 221 425	-2.18%	11 504 658 024	-2.10%	5.08%	95.65%	74.42%	647 636
09/10	1 812 881	-4.43%	10 924 656 709	0.04%	11 495 870 884	-0.08%	5.00%	95.57%	74.24%	662 727
10/11	1 817 870	0.28%	10 836 548 456	-0.81%	11 467 431 990	-0.25%	5.50%	95.46%	75.00%	675 059
11/12	1 893 125	4.14%	10 798 574 412	-0.35%	11 463 371 189	-0.04%	5.80%	99.18%	74.42%	700 040
12/13	1 828 468	-3.42%	10 744 964 894	-0.50%	11 412 377 063	-0.44%	5.85%	98.91%	74.55%	711 095
13/14	1 756 716	-3.92%	10 549 872 192	-1.82%	11 236 882 178	-1.54%	6.11%	98.31%	76.03%	723 593
14/15	1 713 185	-2.48%	10 186 830 978	-3.44%	11 036 257 467	-1.97%	7.70%	98.38%	76.88%	724 477
15/16	1 713 437	0.01%	9 984 286 923	-1.99%	11 182 249 957	1.32%	10.71%	99.24%	75.51%	734 005

Statistical Data:

Expenditure per Annum

NOTE: Ratios of Admin and General Distribution have varied as a result of restructuring
* Include depreciation of R160 million not included previously, owing to financial statements now presented as GAAP and GRAP

ITEM OF EXPENDITURE	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15*	15/16
DISTRIBUTION & ADMIN												
Admin and general	468 674 230	624 140 246	766 654 479	844 540 463	1 088 195 348	1 172 268 797	1 272 836 749	1 575 821 377	1 749 616 409	1 751 885 955	1 922 624 719	1 994 026 851
Distribution	237 287 044	248 674 868	258 564 682	351 321 008	391 069 539	536 667 113	548 069 997	508 323 496	520 567 882	613 840 961	584 608 343	523 407 672
Sub-Total	705 961 274	872 815 114	1 025 219 161	1 195 861 471	1 459 264 887	1 708 936 910	1 820 906 746	2 084 144 873	2 270 184 290	2 365 726 916	2 507 233 062	2 517 434 523
% Increase	8%	24%	18%	17%	22%	17%	7%	15%	9%	4%	6%	0.4%
% of total expenditure	24%	27%	28%	29%	29%	27%	24%	23%	23%	23%	22%	20.1%
FUNDS												
Capital Development	0	0	0	0	0	0	0	0	0	0	0	0
Rates and General	169 912 469	189 162 190	357 509 683	477 063 733	395 876 280	448 205 520	498 760 834	548 076 046	659 791 740	715 815 672	776 762 748	927 553 330
Working Capital	149 687 274	90 000 000	258 235 673	290 856 887	413 521 565	427 377 149	721 389 400	710 743 608	748 164 456	809 181 238	979 868 813	1 140 343 574
Durban Metro	0	181 914 287	0	0	0	0	0	0	0	0	0	0
Sub-Total	319 599 743	461 076 477	615 745 356	767 920 620	809 397 845	875 582 669	1 220 150 234	1 258 819 654	1 407 956 196	1 524 996 910	1 756 631 561	2 067 896 904
% Increase	14%	44%	34%	25%	5%	8%	39%	3%	12%	8%	15%	17.7%
% of total expenditure	11%	14%	17%	19%	16%	14%	16%	14%	14%	15%	16%	16.5%
LOAN CHARGES												
Sub-Total	316 056 450	0*	0	0	0	0	0	0	0	0	0	0
% Increase	0%	0%	-22%	-9%	17%	12%	3%	1%	2%	-8%	16%	-1.6%
% of total expenditure	11%	0%	5%	4%	4%	3%	3%	2%	2%	2%	2%	1.8%
Interest Paid	0	218 808 794	171 542 017	156 036 300	182 419 882	204 605 993	211 132 352	213 076 263	216 737 290	199 105 322	229 927 177	226 261 126
ELECTRICITY PURCHASED												
Energy	1 348 184 097	1 376 760 971	1 531 363 275	1 637 026 628	2 196 144 780	3 175 088 591	4 009 579 919	5 189 059 165	5 842 651 946	6 314 922 078	6 712 493 492	7 732 960 821
Demand	256 148 581	268 764 753	296 218 910	324 328 379	444 662 350	291 658 828	405 010 527	321 432 792	347 654 847	4 779 054	3 643 905	2 779 713
Sub-Total	1 604 332 678	1 645 525 724	1 827 602 185	1 961 355 007	2 640 807 130	3 466 747 419	4 414 590 446	5 510 491 957	6 190 306 793	6 319 701 132	6 716 137 398	7 735 740 533
% Increase	5%	3%	11%	7%	35%	31%	27%	25%	12%	2%	6%	15.2%
% of total expenditure	55%	52%	50%	48%	52%	55%	58%	61%	61%	61%	60%	61.7%
TOTAL												
Total Amount	2 945 950 145	3 198 226 109	3 640 108 719	4 081 173 398	5 091 889 744	6 255 672 991	7 666 779 778	9 066 532 747	10 085 184 569	10 409 530 280	11 209 929 198	12 547 333 086
% Increase	6%	9%	14%	12%	25%	23%	23%	18%	11%	3%	8%	11.9%

