PROVISION OF BULK MUNICIPAL INFRASTRUCTURE BY DEVELOPERS

A MODEL THAT WORKS

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1. Introduction

This paper proposes three funding models for the provision of mainly primary infrastructure by developers. These models are based on the experience gained and lessons learnt with several privately funded municipal primary infrastructure projects.

The provision of bulk municipal infrastructure by a developer, on behalf of a municipality, normally takes place when it is practical for the municipality to incorporate the scope of the shared external service with the installation of the developer's internal service, or when the municipality lacks the financial and or personnel resources to undertake the external works. In the majority of instances when a developer expedites the provision of an external service for a development, it is limited to the external secondary cable network. The typical capital expenditure related to an external secondary cable network required to supply a development is usually less or equal to the applicable service contribution, enabling such expenditure to be either partially or fully offset against the contribution.

The foregoing scenario changes somewhat when the scope of a shared external service includes a secondary switching station and its associated main feeder cables. The capacity of a switching station, in nine out of ten cases, will substantially exceed the capacity allocation of the development, under which service agreement it is to be provided by the developer. The capital expenditure incurred in providing a secondary switching station ordinarily exceeds the service contribution, and most municipalities have devised refunding mechanisms for compensating the developer for the additional expense.

The past five years have witnessed an increase in the phenomenon whereby "larger" cash-strong developers are compelled to fund and construct primary infrastructure in order to expedite the desired capacity and electricity supply network to their developments. Primary (high-voltage) infrastructure is considerably more expensive and poses greater construction and safety risks than its secondary (medium–voltage) counterpart.

Whilst the development of municipal primary networks should remain the responsibility of a municipality, there will continue to be instances when a private developer is confronted with the need to provide primary networks in order to facilitate and create an electricity supply with sufficient capacity for a specific development. It is conceivable that there needs to be a benefit for a developer to accept the additional financial liability, in excess of the service contribution and the associated risks of constructing high-voltage primary infrastructure, besides the assurance of capacity for a development.

2. Bulk municipal infrastructure

For the purpose of this paper, bulk municipal infrastructure is defined as the external shared primary and secondary electricity networks, which service numerous developments and customers. Bulk municipal electricity infrastructure therefore comprises of the primary (high-voltage) source in-feed stations, primary distribution lines and primary distribution

substations as well as the secondary (medium-voltage) main feeder cables and switching stations.

Electricity infrastructure components are manufactured mainly from copper, steel and aluminium and price fluctuations in these materials invariably influence the cost of bulk service infrastructure and service contribution tariffs alike. The cost of electricity infrastructure has soared over the past decade mainly due to the increase in the price of steel and copper. Figure 1 shows the trend in the increase in the copper price as provided by the London Metals Exchange for the past decade. The cost of a firm 40MVA and 120MVA primary 132/11kV substation, based on a conventional outdoor, double bus configuration, is in the order of R48m and R78m respectively, excluding land cost. The approximate cost of a double 300MVA circuit 132kV power-line is currently in the region of R3m per kilometre, assuming the right of way servitude is available.

Figure 1 : Trend in copper price

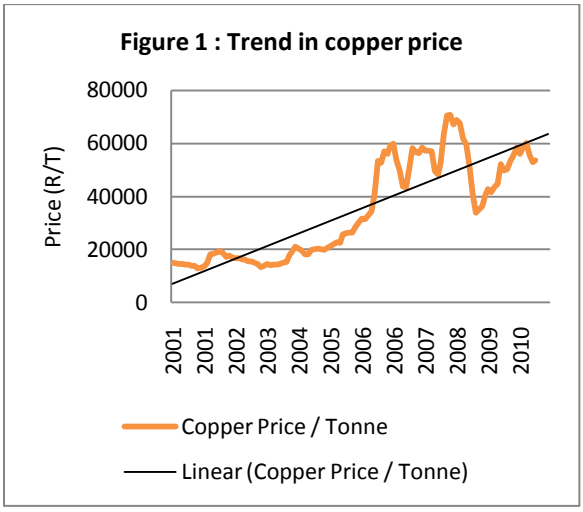


Figure 1 illustrates the upward growth trend and fluctuations in the copper price over the past decade. It is evident that the copper price has increased by R40,000/T since the turn of the century which is a staggering 200%. The price of a 40MVA, 132/11kV power transformer in 2005 was R2,6m as compared to R7,8m in 2008.

The supply capacity of a primary substation is determined by the size and number of its power transformers, ie. its transformation capacity. The majority of larger municipalities have standardised on power transformers rated above 30MVA, with 40MVA being the norm. Whilst 20MVA units were common in the past, experience during the foregoing development boom, which ended abruptly in 2008 has shown that the firm supply of primary substations with 20MVA transformers, especially in areas displaying high growth potential, are impractical as the firm station capacity is prematurely exceeded. The former Johannesburg City Council and City Power today have standardised on primary substations with 45MVA units. The former Pretoria City Council opted for 35MVA units whilst Centurion standardised on 20MVA units. The City of Tshwane has subsequently standardised on primary substations with 40MVA units. Ekurhurleni Metropolitan Municipality prefers 30MVA units for its primary substations. Tlokwe City Council have recently standardised on 40MVA units for their new 132/11kV primary substations as opposed to the 20MVA units on the existing 66kV system.

3. Development of bulk municipal infrastructure

The development of bulk municipal electricity infrastructure by a municipality is normally undertaken in accordance with the guidelines of a master infrastructure development plan. The master plan is normally included in the IDP and the capital funds for the construction of the infrastructure is budgeted annually in accordance with the approved IDP. Municipalities tend to apply emphasis on creating infrastructure in so called priority areas and “zones of choice”. The development priorities of a municipality and that of private developers are not always in harmony.

The provision of secondary bulk electricity infrastructure, including 11kV main feeder cables and switching stations, by developers is reasonably common and is often included in the

scope of works for a shared external network to be provided by a developer.

The provision on the other hand of primary bulk electricity infrastructure by a developer is neither unique nor ideal for various reasons addressed in this paper. The development of capital intense primary electricity infrastructure, by a developer providing the initial capital expenditure can only take place on the basis of a *"willing developer, willing municipality"*. This is because the capital expenditure for a primary substation is required well in advance of the legal obligation for the payment of the ensuing service contributions for the developments yet to be established and proclaimed by the developer.

A ten year expiry period for the allocation of capacity to a developer who wishes to expedite the provision of a primary substation is advisable The securing of the capacity allocation, assigned to a developer, within the ten year restriction period could however pose a risk of under-utilisation. Experience during the past development boom-period has shown that typically seven years is required for a relatively "large" developer to take up and utilize a 40MVA capacity.

The provision of primary infrastructure by developers can become complicated and problematic if the capacity created in a primary substation is exclusively allocated to the developer who expedited the provision thereof. The notion by some developers that *"they own the capacity"* of the primary substation which they have provided is incorrect as once the infrastructure is energized it automatically becomes the assets of the municipality. There is an old adage that states *"He who owns the gold makes the rules".* There are some opportunistic developers who given the chance will interpret this adage as *"He who owns the power (MVA's) makes the rules"*.

The provision of bulk municipal infrastructure by developers must be undertaken in strict accordance with the standards and technical specifications of the municipality. The procurement procedures should be adopted were possible.

Primary bulk municipal electricity infrastructure should therefore ideally be developed and paid for by a municipality and the capacity created in turn allocated to developments against the levying of a service contribution.

Examples of primary infrastructure provided by developers

One of the first privately developed primary substations in Pretoria was the Kosmosdal A (20MVA) substation in 1996. Other substations which were developed by real estate developers in Pretoria include the Raslouw (40MVA) in 2006, Kosmosdal B (120MVA) in 2010 and currently the Cornwall Hill (40MVA) substation. The Highlands substation is in the process of been reconfigured by a developer in order to create an additional 35MVA station capacity, thereby freeing up capacity for the developer's development. The reason for the success of these privately funded projects was due to the appointment of a competent team and through intimate involvement in the design and execution phases by representatives of the City of Tshwane.

The development of primary substations is more complex and intricate than that of medium voltage reticulation projects and necessitates expert and professional contracting crews and the dedication and commitment of the

representatives of the electricity division of the municipality.

4. Service contributions

Service contributions originated from section 121 of the ordinance on town planning, and comprise the once-off, pro-rata engineering contribution made by a developer towards the capital costs of a shared bulk engineering network to meet the needs of a development. The municipal policy pertaining to the service contribution for the provision of an electricity service must, in addition, be consistent with the directives and requirements of NRS 069 : 2004. The contribution for electricity is to be calculated in accordance with the tariff policy of the municipality in terms of the Local Government: Municipal Systems Act 2000 (Act 32 of 2000) and NRS 069 : 2004.

Service contributions and the ordinance on town planning

The ordinance on town planning, 1986 (Ordinance 15 of 1986) distinguishes between township establishment on the one hand and sub-divisions, re-land use change and consent use on the other. The ordinance defines the following responsibilities and statutory requirements:

- The scope of the works for the engineering service to be provided;
- The classification of the service as an external and an internal service respectively;
- The responsibility of the municipality and the developer for the provision of each service; and
- The mutual capital contribution to the service by both the municipality and the developer towards the cost of the service.

Type of service: In terms of section 117 of the ordinance, the classification of a service as external or internal is to be by agreement between the municipality and the developer. This is normally endorsed in the service agreement. In the event that an agreement cannot be reached, the parties may refer such matter to the Services Appeal Board.

Responsibility for the provision of the service: In terms of section 118 of the ordinance the developer is responsible for the provision of the internal engineering service, and the municipality is responsible for the provision of the external engineering service. Notwithstanding the foregoing, with agreement any of these services may be provided by either party.

Contribution towards the cost of the service: In terms of sections 120 and 121 respectively of the ordinance, the municipality has the responsibility to contribute towards the provision of a part of the internal service and the developer has the responsibility to contribute towards the provision of the external service, ie service contribution.

Sub-divisions, consent use and land-use change: The ordinance makes provision that the principles which prescribe township developments apply equally to sub-divisions and change in land-use.

Service contributions and NRS 069:2004

NRS 069 refers to service contributions as capital contributions. This code of practice includes the network standard for determining the kilovolt-ampere capacity of the network to be adopted by municipalities. Deviations from the network capacity standard should be motivated to developers and NERSA. SANS 204-1:2008 must be considered with any amendment to the network capacity standard.

External service

An external service includes the entire electricity system external to the boundary of the development, required to service the development with a reliable and continuous electricity supply, against the capacity limit agreed in the service agreement. The external service therefore encompasses the Eskom-municipal point of supply interface (HV in-feed

station); the primary distribution line network, the respective primary distribution substation and the secondary network. In the majority of instances the external service is not dedicated to any one development but comprises a shared service which supplies several townships and developments with electricity.

It is therefore necessary that the service contribution includes a part contribution towards the cost of each element of the primary & secondary systems from which systems the capacity for the development are derived. The part contribution should be calculated on a pro-rata basis of capacity allocated to a development/township versus the total supply capacity of the specific element of the external system.

Policy for levying of service contributions

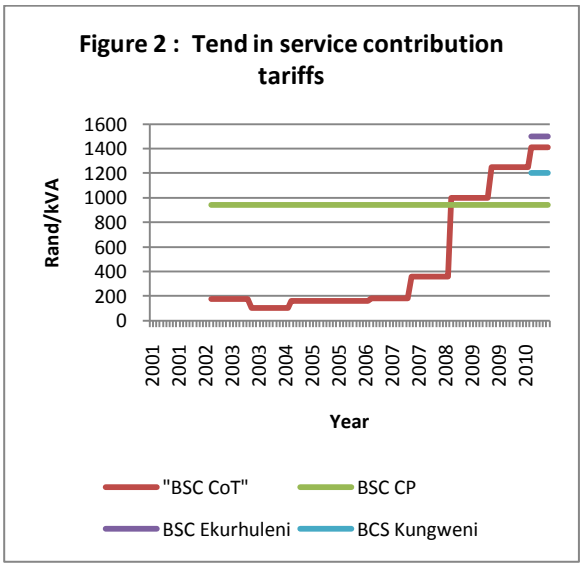
Municipalities are to ensure that their policy for the levying of electricity service (capital) contributions is consistent with the code of practice for the recovery of capital costs for distribution network assets, NRS 069:2004. The policy of most municipalities does not make allowance for the provision of primary networks by developers. A limited few municipalities have recently amended their respective policies to include the provision of primary distribution networks.

It is prudent to conduct a public participation process with developers and engineers to explain and invite comments on the proposed amendments to a service contribution levying policy. Any significant deviation from the code of practice needs to be motivated to all relevant parties including NERSA.

Service contribution tariffs for electricity

The network capacity standard rate is the R/kVA tariff at which a municipality by virtue of its officially promulgated electricity contribution tariff policy in terms of the Local Government Municipal Systems Act 2000 (Act 32 of 2000) from time to time charge service contribution charges in respect of kVA/MVA external electricity service to developers within its licensed area of electricity supply and distribution.

At the turn of the century, the bulk contribution tariffs of several municipalities, were not in line with the cost of electricity infrastructure. Service contribution tariffs have since increased significantly to counter act the effect of the increase in the copper and steel prices.



In the case of the City of Johannesburg, the service contribution has remained constant at R942/kVA, irrespective of the level of connection. The service contribution of the City of Tshwane for a connection directly from a primary substation has increased from R106/kVA in 2003 to R1,428/kVA in 2010. The typical trends in the service contribution tariffs of municipalities in Gauteng are approaching values of R1,500/kVA as depicted in Figure 2.

Payment of service contributions

Service contributions are the main component of a developer's financial obligation towards a municipality. Service contributions are normally payable prior to the proclamation of a township but at least prior to the energisation of the external and internal services.

The City of Tshwane for instance is only prepared to issue a section 101 certificate for

township proclamation once the service contribution is paid or alternatively if the external service, which was agreed to be provided in lieu of payment of a service contribution, has been installed. The City of Johannesburg on the other hand enable the early proclamation of a township prior to the payment of the service contribution, but withhold the section 82 certificate until the external and internal services have been installed and any service contribution has been paid. This arrangement is in line with the ordinance and is considered by many developers as the preferred process.

When a developer agrees to provide external infrastructure in lieu of partial/full payment of a service contribution it becomes necessary for the developer to finance and incur costs in respect of the infrastructure in advance of the specific municipality's legal obligation for the payment of the service contribution. The advance payment of capital costs in lieu of offsetting future service contributions, is to be treated as legal service contributions from the onset as such amounts should be determined in a binding agreement. Interest on such amounts prior to the date upon which the payment of a service contribution is enforceable must be considered. This is especially the case when a developer provides a primary substation as in most instances the developer will only conclude the subsequent service agreements for all the developments to be supplied from the substation after at least a 5 year period. This time period is dictated by the market and other factors.

Service contribution tariffs versus actual costs for primary electricity infrastructure

Service contribution tariffs for new townships should be based on the kilovolt-ampere zoning ADMD standard for urban areas at the transformer LV bus and not at the MV bus of the primary substation. The proposed network standards are provided in Annex B of NRS 069:2004 although each municipality is required to compile its own standards according to its particular circumstances. The provisions of SANS 204-1:2008 must also be considered.

The approximate cost of the initial stage of a conventional 40MVA firm primary substation is R50m. The average cost per kVA for the initial stage of the primary substation based on the foregoing values is R1,250/kVA. The incremental cost for provision of an additional 40MVA stage is R15m. The average cost per kVA for the extension of a primary substation, in the case where the earth works is completed is substantially lower at R375/kVA. The reason for the difference in the average costs for the initial and subsequent extension of a primary substation is due to the fact that a firm capacity is required from the onset which necessitates the provision of two 40MVA transformers for one effective 40MVA stage. The entire earthworks, incoming line bays, bus coupler/section and the control building is normally essential to the initial stage. The average cost for the construction of a 120MVA firm primary substation is R666/kVA.

From the foregoing it is evident that the average cost of the construction of the primary substation diminishes as the installed firm capacity is increased. The capital cost however increases with the provision of additional capacity. The average cost of a primary substation compares favorably to the service contribution tariffs, especially considering that in most cases the developer will need to establish the initial stage of the substation.

5. Conventional compensation for the provision of an external service

In terms of the ordinance a developer is responsible to contribute towards the external service, which under ideal circumstances should be provided by the municipality, unless the development is classified as a 'leap-frog' development. A leap frog development is defined as a development outside the urban edge. In the case of a leap frog development the developer is obliged to pay for the full cost of providing the external service to such a development even if the cost exceeds the normal service contribution calculated in accordance with the capacity required for the development.

Off-setting capital against bulk contributions

The electricity tariff policy of most municipalities makes provision for the off-setting of service contributions against the cost of providing the external service or any part thereof. In most instances the service contributions are offset against the cost of the secondary network which is considerably more affordable than its primary counterpart. A developer is normally refunded by the municipality if the capital expenditure exceeds the applicable service contribution. It should however be noted that it is becoming increasingly difficult for a municipality to refund a developer, and such refunds are normally budgeted for payment in subsequent municipal financial years.

The conventional financial mechanism of providing "copper" in lieu of the payment of service contributions is possible if the external service is limited to the secondary network. It is furthermore usually possible to install a secondary external service with just the required capacity to supply the development. This flexibility however does not apply in the case of a primary infrastructure due the standard power transformer capacity ratings and relatively high cost of primary infrastructure.

Secondary versus primary infrastructure

The typical external secondary service provided by a developer comprises of the supply and installation of cabling between a substation and the boundary of the development. The cost of such infrastructure is dependent on the location of the closest substation to the development and the availability of spare capacity on the existing secondary network. In most instances the cost of the external secondary service is less than the applicable service contribution and the cost is easily offset against the service contribution payable to the municipality. The balance is then paid directly to the municipality.

In limited cases the municipality will require of a developer to establish a switching station and the associated secondary main feeder cables. The municipality will normally only burden a developer with such a requirement if the capacity of the development necessitates the creation of a switching station. The municipality will normally refund a developer for the excess cost incurred in the provision of a switching station, unless it is dedicated to the development.

As previously stated the provision of primary infrastructure by a developer is rare. However there are instances when a developer is required to provide primary infrastructure which will be limited to providing the initial or a subsequent stage of a primary substation. The cost of the initial stage of a 40MVA substation is in the order of R48m. Due to the magnitude of the capital contribution, It is not always possible to apply the conventional method of financial compensation to the provision of primary infrastructure and an alternative compensation model is required.

6. When is it viable for a developer to construct a primary substation

In short it boils down to a business decision for a developer to decide to fund the construction of a primary substation to create capacity for a development.

Whist many developers may initially indicate their willingness to provide primary infrastructure in order to facilitate the creation of capacity to supply their developments, experience over the past ten years has revealed that only a handful of developers have in actual fact contracted with municipalities for the construction of primary substations and primary line networks. The typical cost of a conventional 40MVA firm primary substation is in the region of R50m. An initial capital investment of R50m, even if the service contributions for the entire ultimate development equate to R50m is excessive and will negatively impact on the feasibility of the development.

A R50m investment for 40MVA equates to an average cost of R1250/kVA which is in line with some typical service contribution tariffs as illustrated in Figure 2. The R50m is based on

the existence of an existing power-line to connect the substation and excludes the cost of land for the substation. Despite the fact that the cost/capacity may equate to the current service contribution tariffs, the need for the total capacity created will not be current and will probably take some five to ten years to realise. Unless the compensation model successfully addresses the *'capital investment for future service contributions'* it will usually not be feasible for a developer to provide a primary substation.

Factors that improve the feasibility

- Availability of a high-voltage primary line, ie. not necessary to construct a power-line to connect the substation to the system;
- Developer owns the land for the substation and does not need to purchase it;
- A relatively high initial capacity requirement;
- An ultimate capacity requirement for the development that exceeds or equals the initial substation capacity;
- Relatively short development horizon; and
- Willingness by the municipality to provide the power transformers as free issue items;
- The purchase price of the land for the development was below market price and the full/partial cost of the substation can be factored into the land cost; and
- It is essential for the developer to proceed with the development, irrespective of cost to make capacity available.

7. Financial models for compensating a developer for the cost of providing primary infrastructure

This paper proposes the following three models for the provision of municipal primary electricity infrastructure by a developer:

- Capital contribution rebate model
- Capital contribution offset model
- Capital contribution loan model

The first model applies equally to the provision of secondary infrastructure, whilst the second model is the preferred and dedicated model for the provision of a primary substation. The second model has been utilised successfully for the construction of three municipal primary substations, with a firm capacity rating of between 40MVA and 120MVA.

Whilst the developer is actively involved with the construction and project management responsibilities in accordance with the first two models, the third model makes provision for a developer to instead loan the required capital funds to the municipality, without becoming actively involved in the construction and project management of the project which in turn is undertaken directly by the municipality.

The advantages and disadvantages are listed for each model.

Capital Contribution Rebate Model

This model is based on the conventional method utilised by municipalities to refund developers for the provision of shared networks. In the case of the provision of primary infrastructure the magnitude of the refund is substantially larger than that of secondary networks and normally takes place over an extracted period. This model is rarely applied to the provision of primary infrastructure due to the magnitude of the capital investment and hence the municipal refund.

Capacity allocation: The capacity allocation is based on the sum of the kVA zoning ADMD's of the erven of the development at transformer LV bus level, in accordance with those specified in the municipal policy document which should be consistent with SANS 204-1:2008 and NRS 069: 2004.

Service contribution: The service contribution for the developer's developments included in the service agreement for the provision of the infrastructure is to be calculated as the product of the capacity allocation for a specific development and the service contribution tariffs

applicable at the time of signing of the individual service agreement for the specific service agreement for each ensuing development.

Scope of primary works: Determined by the municipality in order meet at least the overall capacity requirement of the relevant developer's development/s.

Capital expenditure by developer: The capital expenditure is equal to the cost of the primary works as defined by the scope of works, excluding any land cost, but including interest and all professional fees.

Capital expenditure by municipality: Normally no initial capital expenditure, besides future capital refunds.

Source of initial capital: The developer who agrees to expedite the installation of the primary infrastructure, and who accepts the responsibility for the capital expenditure.

Service contribution tariffs: The service contribution tariffs are to be the applicable tariffs at the time of signing the individual service agreements for each ensuing development of the developer providing the capital expenditure. The service contribution tariffs ruling at the time of signing the agreement for the provision of the municipal primary infrastructure must not be fixed as the developer is entitled to a refund plus interest.

Rebate: The rebate is determined as the difference between the capital expenditure by the developer and the sum of the relevant service contributions for the developer's developments, which is to be calculated using the applicable service contribution tariffs at the time of signing the individual service agreements.

Source of refund: The municipality's own funds or from new customers/developers when they share the networks.

Interest: The municipality must contract to repay such funds including interest, in accordance with clause 6.6.10 of the special circumstances in SANS 069:2004.

Capital Contribution Offset Model

This model is based on offsetting the cost of the primary works against the future service contributions payable to the municipality for the shared external service by the developer who has agreed to expedite the installation of the networks.

Capacity allocation: A fixed capacity allocation determined by the sum of the zoning ADMD's of the erven of the townships/developments, but not exceeding two thirds of the new/additional firm transformation capacity of the primary substation in order to reserve capacity for other developers/customers.

Scope of primary works: Determined in conjunction with the municipality, but restricted to the capital expenditure which is a function of the fixed capacity allocation.

Capital expenditure by developer: The capital expenditure is to be limited to the product of the fixed capacity allocation and the contribution tariff at the time of signing the contract.

Capital expenditure by municipality: The municipality must provide the power transformers as free issue items, and must purchase or expropriate the land for the primary facility.

Source of initial capital: The developer who agrees to expedite the installation of the primary substation, and who agrees to provide the full upfront payment thereof including professional fees.

Service contribution tariffs: The service contribution tariffs shall be those in force at the time of signing the agreement for the provision of the primary works.

Source of refund: No physical cash refund is applicable and the service contributions for the developer's future townships are waivered by the municipality until the capacity allocation is

depleted by means of individual signed service agreements.

Interest: Interest is not applicable to this financial model as the developer is guaranteed a specific capacity against zero service contribution which hedges against future increases in the standard tariffs for service contributions.

Capital Contribution Loan Model

This model is similar to the capital contribution rebate model, with the exception that the developer or customer loans the capital to the municipality for the funding of the works, without becoming directly involved in the execution of the works.

Capacity allocation: The capacity allocation is based on the sum of the kVA zoning ADMD's of the erven of the development at transformer LV bus level, in accordance with those specified in the municipal policy document which should be consistent with SANS 204-1 : 2008 and NRS 069 : 2004.

Scope of primary works: Determined by the municipality in order to meet at least the overall capacity requirement of the relevant developer's development/s.

Capital loaned by developer: The capital amount loaned to the municipality is to be by mutual agreement but typically will equal the cost of the primary works less the capital expenditure of the municipality. The inclusion of land cost and professional fees is subject to negotiation.

Capital expenditure by municipality: Determined by the availability of municipal funds.

Source of initial capital: The developer who agrees to expedite the installation of the primary infrastructure, and who agrees to loan the full/partial funds.

Service contribution tariffs: The service contribution tariffs are to be the applicable tariffs at the time of signing the individual service agreements for each ensuing development of the developer providing the capital expenditure. The service contribution tariffs ruling at the time of signing the agreement for the provision of the municipal primary infrastructure must not be fixed as the developer is entitled to the loan repayment plus interest.

Loan repayment: The loan amount is determined as the difference between the cost of the loan and the applicable service contribution, which is to be calculated using the applicable service contribution tariffs at the time of signing the individual service agreements.

Source of repayment: The municipality's own funds or from new customers/developers when they share the networks.

Interest: The municipality must contract to repay such loan including interest, in accordance with clause 6.6.10 of the special circumstances in SANS 069:2004.

8. Conclusions and recommendations

Municipalities need to ensure that they have a valid promulgated policy for the levying of service contributions for the provision of electricity services. The policy should be consistent with the requirements of NRS 069:2004 and SANS 204-1:2008. It is advisable to make allowance in such policy for a developer to provide primary (high-voltage) infrastructure on behalf of the municipality. It is prudent to follow a public participation process with developers and consultants in order to motivate significant amendments to any existing policy.

Municipalities should be familiar with the trends in the increase of the prices of copper, steel and aluminium when designing their service contribution tariffs. Service contributions tariffs need to be consistent with the actual cost of primary and secondary infrastructure.

Whilst a municipality should as far as possible be responsible for the supply and installation of primary infrastructure, there will continue to be

occasions where a developer is required to provide primary infrastructure on its behalf.

The success in the implementation of the process whereby a developer is tasked with the responsibility to construct a primary substation begins with a comprehensive but straight forward agreement. The agreement should be based on a feasible financial model. The capital contribution offset model has proven to be successful. It is essential to stipulate time periods for the expiry of the capacity allocation and refunds in the agreement, typically 10 and 5 years respectively.

Should a new primary substation need to be provided by a developer, it should be restricted to the initial stage, comprising one service and one backup transformer. The municipality should consider providing the power transformers as free-issue items, especially if the capital offset model is adopted.

The land cost for the substation erf must be excluded from the financial offset and the municipality should ideally purchase or expropriate the land. A developer does not have the advantage of expropriating private land.

The standard and technical specifications of the substation must be in accordance with the standard requirements of the municipality and the design of the infrastructure must be undertaken in conjunction with the municipality.

The normal procurement procedures should be followed as far as what is practically possible to do so and public tenders for the works should be advertised.