THE EFFECTIVE MANAGEMENT OF PLANNED NETWORK INTERRUPTIONS

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1. Introduction

This paper deals with the case for managing Planned Network Interruptions based on a standardised approach using project management principles. The findings are related to the practical experiences of Eskom Distribution Division, Southern Region and have been validated for relevance and consistency with other Eskom Regions.

Eskom's Distribution Division embarked on a strategy of creating a standardised approach to customer facing business processes in 1998 with a view to ensuring a consistent image and service offering to customers. The key value chains identified are as follows.
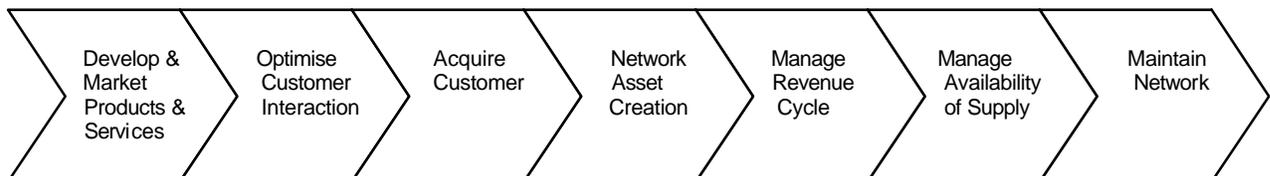
Within the Manage Availability of Supply Value Chain, numerous business processes were identified and mapped, including loss of supply, network management and the subject of this paper, the Management of Planned Network Interruptions.

The introduction of Value Chains represented a significant step change in the Distribution Groups approach to the Business Architecture and its customer facing processes. The leverage created by adopting such an approach enabled the creation of standardised business infrastructure and roles which enabled the potential for seamless service across Regional boundaries. On the Customer Interfacing part of the business, the creation of Contact Centres represented the most significant change, whilst on the Technical side, the concept of a Work Management Centre was introduced to manage field resources and outputs. The Work Management Centre deals with Dispatched work, which requires action within twenty four hours, and Scheduled work, which can be planned and executed outside the twenty four hour window. Planned Network Interruptions are catered for within the scheduling process at the Work Management Centre.

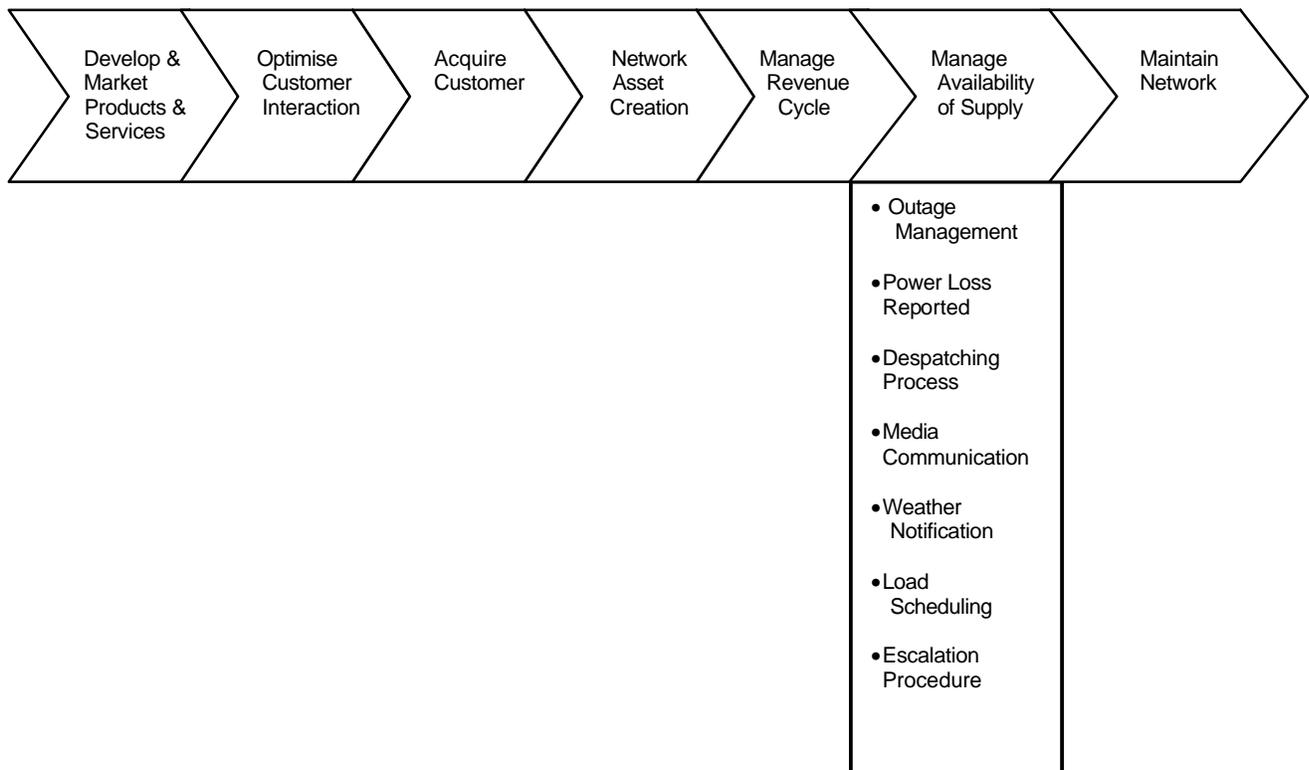## 2. Management of Planned Network Interruptions – a historical perspective.

Prior to the introduction of the new business architecture, Planned Network Interruptions were managed in an ad hoc manner at Depot level. While such an approach was advantageous from an immediacy of planning and adaptation to changes perspective, the disadvantages outweighed this potential benefit. These included:

- The lack of co-ordination – key stakeholders including Primary Plant, Secondary Plant, Capital Programme and Construction each developed and implemented their own plan and schedule of activities.
- The lack of integration – above mentioned departments worked in isolation, leading to sub-optimal utilisation of resources and the time during which the network is dead.
- Uncertainty as to customer notification of the Planned Network Interruption – dependency on local methodology, resources and competencies.
- Focus on specific depot area and small customer base – created problems when bigger Planned Network Interruptions were required.
- Success of the majority of Planned Network Interruptions was based more on luck than planning. Depot Supervisors that were 'natural' project managers did well, but those that weren't, failed dismally.
- Uncertainty as to how successful the Planned Network Interruptions were – no effective measurement to assess start and end times, extent of work done and number of outages postponed / cancelled.

It was thus apparent that there were significant potential advantages in developing a standardised process and methodology to deal with Planned Network Interruptions.

3. The Process Approach Methodology

The Manage Availability of Supply Value Chain was developed to cater for all major business processes associated with restoration, reliability and continuity of supply. The process to effectively deal with Planned Network Interruptions is one of these processes.

Develop & Market Products & Services › Optimise Customer Interaction › Acquire Customer › Network Asset Creation › Manage Revenue Cycle › Manage Availability of Supply › Maintain Network

- Outage Management
- Power Loss Reported
- Despatching Process
- Media Communication
- Weather Notification
- Load Scheduling
- Escalation Procedure

All process development work is designed and developed at a Group level, using a standardised methodology and the ARIS process modelling tool. The Aris tool is internationally acknowledged as the best of breed and allows for the creation of a Meta model of integrated processes, modelling of individual processes, linking of resources to process activities, identification and monitoring of data control points, system integration and other detailed functionality. Regional representation in process development is provided for through Regional Value Chain Owners, who are typically senior line managers in the business discipline for which the process is mapped. Once the process is developed and approved, Region's are expected to implement and utilise such in a standardised manner. Institutionalization is the accountability of the Regional Value Chain Owners.

Such an approach does not imply that Business Processes are cast in concrete. Mechanisms have been put in place to ensure ongoing refinement of all business processes through a standardised review methodology, which enables the identification of best practices and optimisation of business processes. In instances where fundamental shifts in business strategy and architecture occur, business processes are reviewed, adapted and in some cases, replaced, to ensure alignment.

4. The Planned Network Interruptions Process – An Overview

The Planned Network Interruption business process, whilst mapped in detail, can be summated as follows:
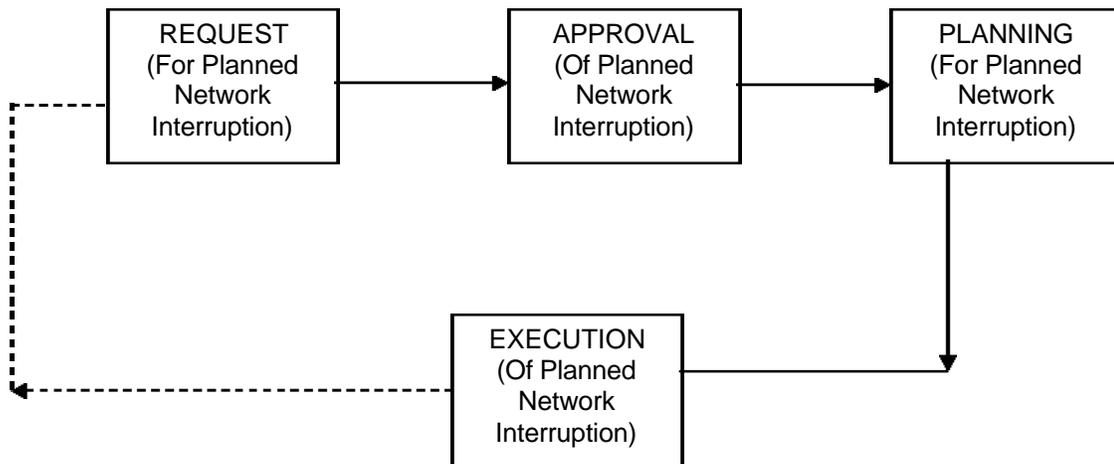
The Request is generally initiated by an end user who has a need for a portion of the network to be dead for a period of time in order to execute some work. Typically, activities for which such a request arises are planned maintenance, connection of new customers and commissioning of new plant. The Approval is authorised by key designated persons, as reflected on the process responsibility and accountability matrix (RACI).

Such persons have a broader perspective of the network than the requestor and also play the role of integrating the various requests into an annual outage schedule. At this point consideration is also given as to whether it would be possible to perform the required work live, thereby obviating the need for a Planned Network Interruption.

Planning is the key leverage area to ensure optimisation of resources, effective utilisation of the opportunity and integration of activities.
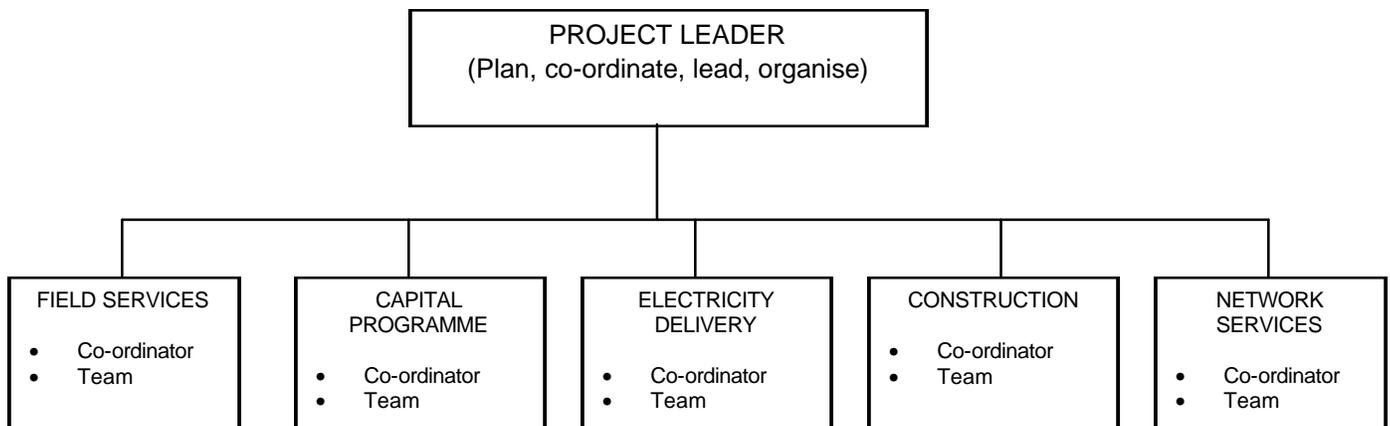
Execution deals with the effective project management of the Planned Network Interruption at the time of the interruption and includes control of start and end times, progress monitoring, contingency planning and troubleshooting.

5. The Project Management Approach to Planned Network Interruptions

As already highlighted, the key leverage area in this process is that of project management, in which planning is integral. The planning phase is initiated, in most instances, at least a year in advance of the actual interruption. The key input document for the process is the Planned Maintenance programme, which is used as a base for planning at the Annual Planned Outage meeting. At this meeting, other roleplayers are able to submit their requirements, including consideration of customer requests for dates that best suit their needs, "red letter" dates such as special events, major sports finals etc. More detailed planning is done at Quarterly and Monthly Planned Outage meetings, which are geographically more focused down to Area level.

Accountability for the Project Management of each Planned Network Interruption is allocated to an individual. The magnitude of the interruption determines which role is accountable to be the Project Leader. In instances where the interruption is limited to one Technical Service Centre area, the Technical Service Officer is usually the Project Leader, but where interruptions span Technical Service Centre or Technical Service Area boundaries, the role is generally assigned to a more senior person.

The project leader has full accountability for managing the interruption and uses the following project structure:

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                    ┌─────────────────────────────────┐
                    │         PROJECT LEADER          │
                    │  (Plan, co-ordinate, lead, organise)  │
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| FIELD SERVICES	CAPITAL PROGRAMME	ELECTRICITY DELIVERY	CONSTRUCTION	NETWORK SERVICES
• Co-ordinator • Team	• Co-ordinator • Team	• Co-ordinator • Team	• Co-ordinator • Team	• Co-ordinator • Team

The role of the Project Leader differs somewhat prior to the interruption as opposed to during the interruption. Prior to the interruption the Project Leader focuses on ensuring the optimal preparation and deployment of resources and planning of work to be done within the time allocated. This could include overseeing of prework that is not dependant on the network being isolated such as digging of holes, preparing foundations and delivery of material to site. Consideration would also be given to the allocation of specific resources to specific sites, travel arrangements, availability of mission critical equipment etc.

On the day of the interruption, the Project Leader manages resources to ensure completion of the scope of work within the specified times scheduled for the interruption. This would include the managing of progress milestones and the reviewing of the scope of work should delays occur or the unexpected arise as the critical objective would be to not overrun the advertised restoration of supply time.
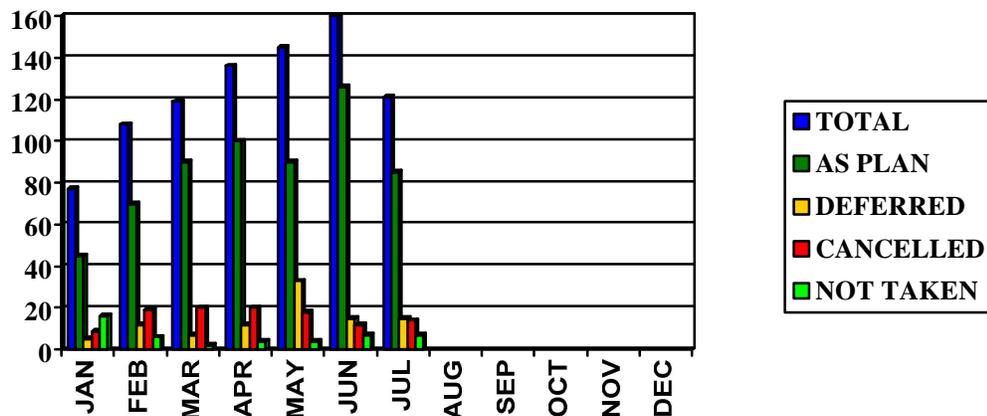
6. Measurement

Key to the success of the management of Planned Network Interruptions is effective measurement. Monthly Key Performance Indicators are produced for all Four Areas, summated to a Regional level. Indicators are as follows:
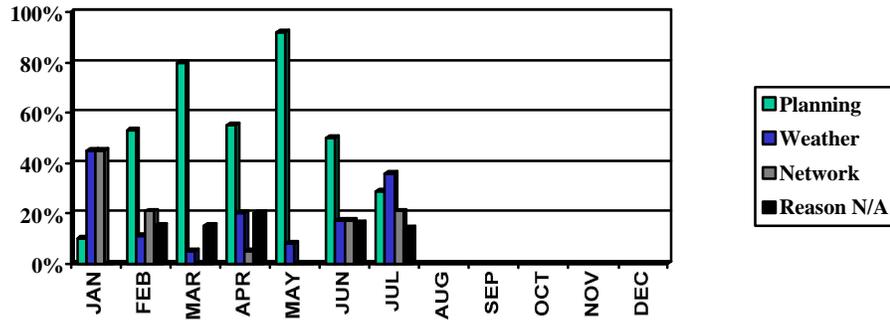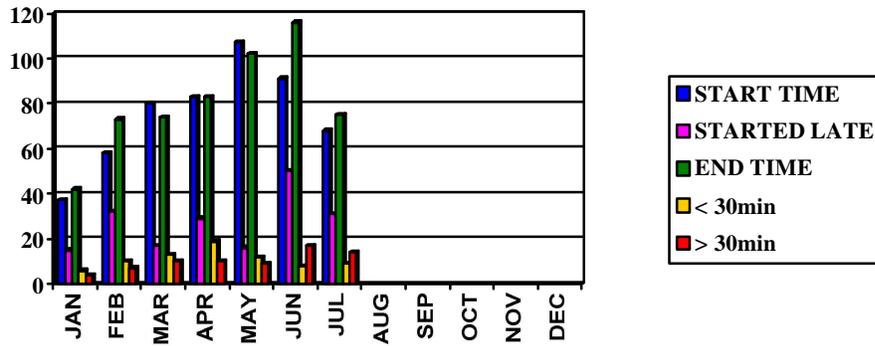
TOTAL PLANNED NETWORK INTERRUPTIONS
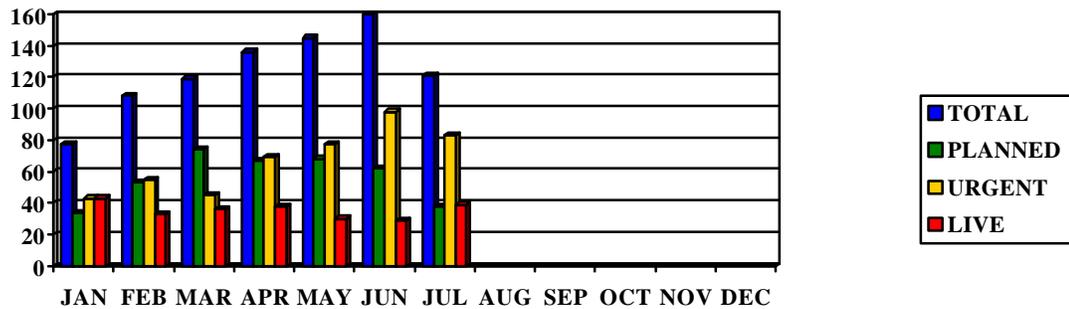
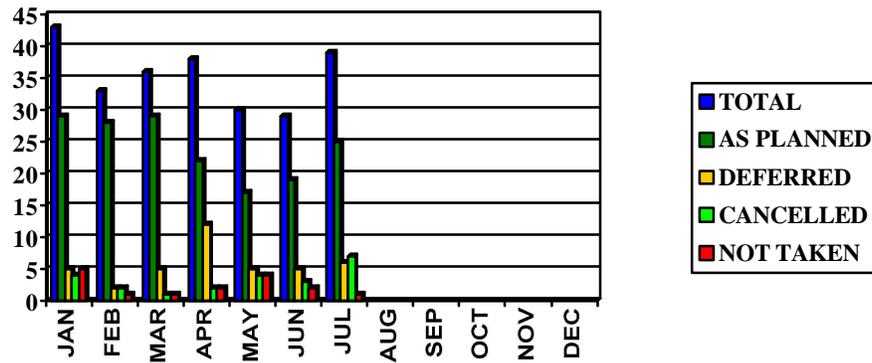PLANNED NETWORK INTERRUPTIONS DATE ADHERENCE

PLANNED NETWORK INTERRUPTIONS CANCELLATION DETAILS
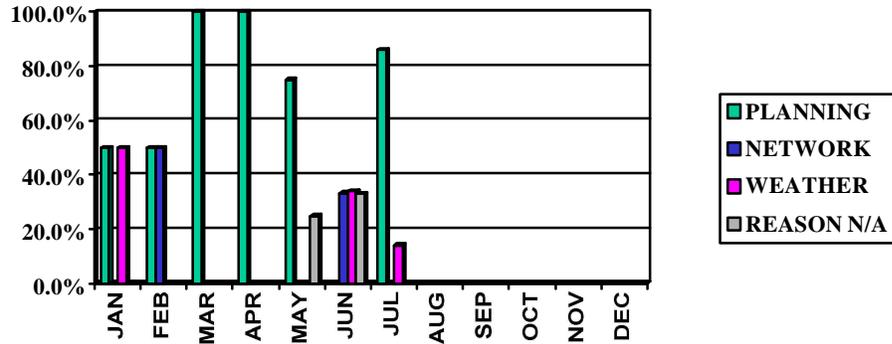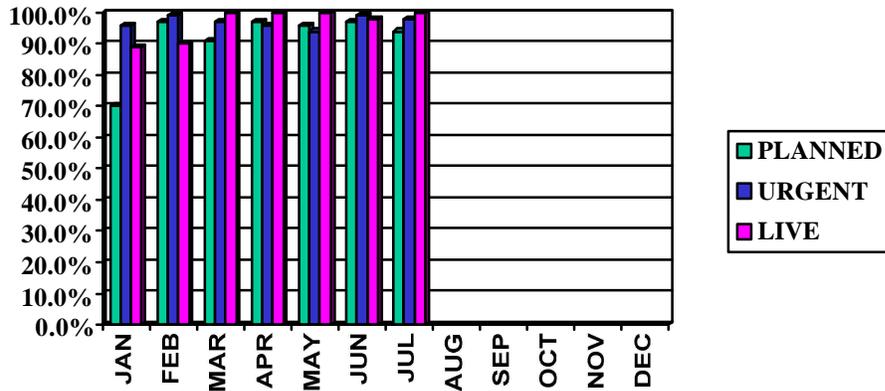

PLANNED NETWORK INTERRUPTIONS TIME ADHERENCE

PLANNED NETWORK INTERRUPTIONS LIVE WORK DATE ADHERENCE

PLANNED NETWORK INTERRUPTIONS LIVE WORK CANCELLATION DETAILS

PLANNED NETWORK INTERRUPTIONS SCOPE OF WORK COMPLETED

The indicators, as reflected above, provide a reasonably comprehensive view of the manner in which Planned Network Interruptions are managed. Numbers of interruptions, adherence to plans, utilisation of live work, extent of work completed and adherence to advertised times are covered. However, it is acknowledged that indicators will need to be refined over time, and the acquisition of appropriate software will aid in the refinement of such.

7. Lessons learnt from practical application

- While the project management principles have been effectively applied throughout, there has been a reluctance in some quarters to use project scheduling software such as MS Project. This does not appear to be a training issue, but rather a perception that managing through MS Project creates an additional workload. However, these Project Leaders that are effectively using MS Project are demonstrating the benefit and value added, which is positively influencing those that aren't.

- One of the fundamental differences between Planned Network Interruptions that work well and those that don't is the manner in which the Project Leader deals with Contingency Planning. This aspect needs to be dealt with prior to the day of the interruption with respect to aspects such as ensuring that key dependency equipment is reflected as part of the critical path for the interruption. During the interruption, effective contingency planning can make the difference between time and scope adherence and dismal failure. In essence, not every eventuality can be planned for and the Project Leader needs to react positively and appropriately as these eventualities arise. Typical problems that have arisen include key tools failing on site, resources being delayed, breakers not closing at the end of the interruption, CT exploding etc. The later in the course of the interruption that these events occur, the less the chance of getting the customer supply restored as per the advertised time. In such instances, a well prepared and effective Project Leader implements contingencies to minimise the impact of adverse and unexpected incidents when they occur, as they will from time to time.

The primary driver is restoration of supply at the advertised time in order to instill customer confidence in Eskom's ability to work within the advertised times. The Project Leader is empowered to ensure that any deviation from this objective is kept to an absolute minimum. Limiting the original scope of work, bringing in additional resources, where practical, moving resources to critical work and rescheduling are all seen as legitimate practices to ensure that the objective is met. However, in all instances, the Project Leader must be in a position to justify actions taken and as we have seen, measurement balances time adherence and scope of work completed.

8. Feedback from process participants

- Reactions have been varied, with a positive perspective usually a result of understanding of the process and its context within the broader business strategy with respect to network operations. Well informed process participants who understand their role add significant value to Planned Network Interruptions.
- The Project Leader role needs to be viewed as a positive one in order to attract the correct calibre of person to play the role. The role thus needs to be visibly supported by line management and the Project Leader must be empowered to lead the interruption to achieve its objective.
- Resistance to the role by front line junior management at the Technical Service Centres can be overcome through allocating the role to these managers where the bulk of the work to be performed in the interruption is of a maintenance nature. However, where the majority of the work planned for a particular interruption is more Capital Programme based, it is more appropriate to appoint an appropriate and competent person from this environment to play the Project Leader role.
- As our experience in managing Planned Network Interruptions in this manner grows, consideration will be given to appointing permanent Project Leaders. Such a decision will need to be based on appropriate workload to justify the appointment, value added in having permanent appointees and potential loss of flexibility and the opportunity to use this role as a development opportunity for a wider group.

9. Anticipated further development

While the concept of a well defined process for Planned Network Interruptions and the project management thereof is well entrenched in the business, opportunities still exist for further process and role refinements. In addition, the process is not adequately supported by appropriate software to allow for a greater automation. Unfortunately, off the shelf software is not readily available due to the fact that they concept of Planned Network Interruptions is relatively foreign in the international utility market, as network configuration limits the need to interrupt customer supply despite this. It is anticipated that significant automation of the process will be achieved by mid 2003.

10. Conclusion

This paper has highlighted the approach adopted by Eskom with respect to Planned Network Interruptions. The focus has been on developing and mapping a standardised process for application throughout the Distribution Group. The effective application of the process has been further aided by the utilisation of project management principles to both plan and manage Planned Network Interruptions. We have identified that the role of the Project Leader is the critical point of leverage and that meaningful measurement enables an improvement in efficiency and focus.

From a customer perspective the publication of details of annual Planned Network Interruptions on the Customer Service Online website enables a more proactive approach to customer interaction, negotiation and notification.

However, this paper has just scratched the surface of what is a relatively complex and detailed business process. Interested parties are thus invited to contact the authors for more comprehensive information, should this be a requirement.