

MITIGATION OF OPERATIONAL RISKS FOR THE 2010 FIFA SOCCER WORLD CUP

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1. Introduction

The first match of the FIFA 2010 Soccer World Cup (SWC) is scheduled to take place on 11 June 2010 [1]. That is a little more than two and a half years from now when millions of television viewers will be focused on, not only the football matches, but also on the ability of South Africa to organise and stage one of the biggest events in the world. Considerable media attention has to date focussed on our ability to complete the construction of the required stadiums, improve security, manage transport for teams and visitors, and many other issues related to 'out of stadium' activities for which guarantees have been made to FIFA. Relatively little media and organiser attention has to date been given to the provision of secure and reliable electrical supplies to the key areas affected by the tournament. Interruptions to these supplies that disrupt preparations for the event, matches or broadcasts or inconvenience visitors during the window period of the tournament [one month before the start to one month after it ends] will reflect poorly on the entire Electrical Supply Industry (ESI), South Africa and Africa. This paper seeks to identify some of the operational risks associated with the provision of adequate and reliable supplies and suggest some possible mitigation strategies.

2. Background

Carter-Brown's paper [2] has comprehensively identified the key electrical loads associated with the tournament which include:

- The 10 stadiums in 9 Host Cities at which the matches will be played.
- Base camps for each of the 32 teams taking part.
- Training venues at both Base Camps and in the Host Cities.
- Fan parks.
- FIFA hotels accommodating their local offices and command centre.
- Media centres.
- The accommodation, tourism and transport needs of visitors.

He further observes that the magnitude of the additional electrical load is expected to be relatively small in relation to the South African peak demand, but that complexity and risk arise due to the uncertain nature of this load, including its location.

The inter-connected nature of the South African electricity network is highlighted by Carter-Brown in his Figure 1[2] to stress that problems in any link in the electricity supply chain can disrupt supply to critical loads. It was this interdependency that resulted in Eskom and the AMEU establishing a 2010 ESI Forum that held its first meeting in August 2006 with the objective of raising awareness of issues related to the provision of adequate electricity supplies during the tournament.

The forum has been relatively successful in bringing a number of the major stakeholders together to discuss a wide range of issues related to the electricity supplies prior to and during the tournament and has compiled:

- A document titled "Recommendations for the 2010 soccer world cup stadium supplies" [3] which provides guidelines for the electrical supply to, and reticulation within, the stadiums in which world cup games will be hosted.
- A template to assist Host Cities submit business plans to the Department of Minerals and Energy [DME] in support of applications for funding of electrical infrastructure projects deemed necessary to support their 2010 effort.
- A 2010 ESI project summary report [4] that summarises the projects identified to ensure adequate supply to and within the Host Cities and includes the Eskom Distribution and Transmission projects deemed necessary for Host City supply strengthening required for 2010.
- A position paper [5] has been drafted on the facilities required at, and possible risks associated with the service to, 2010 base camps.

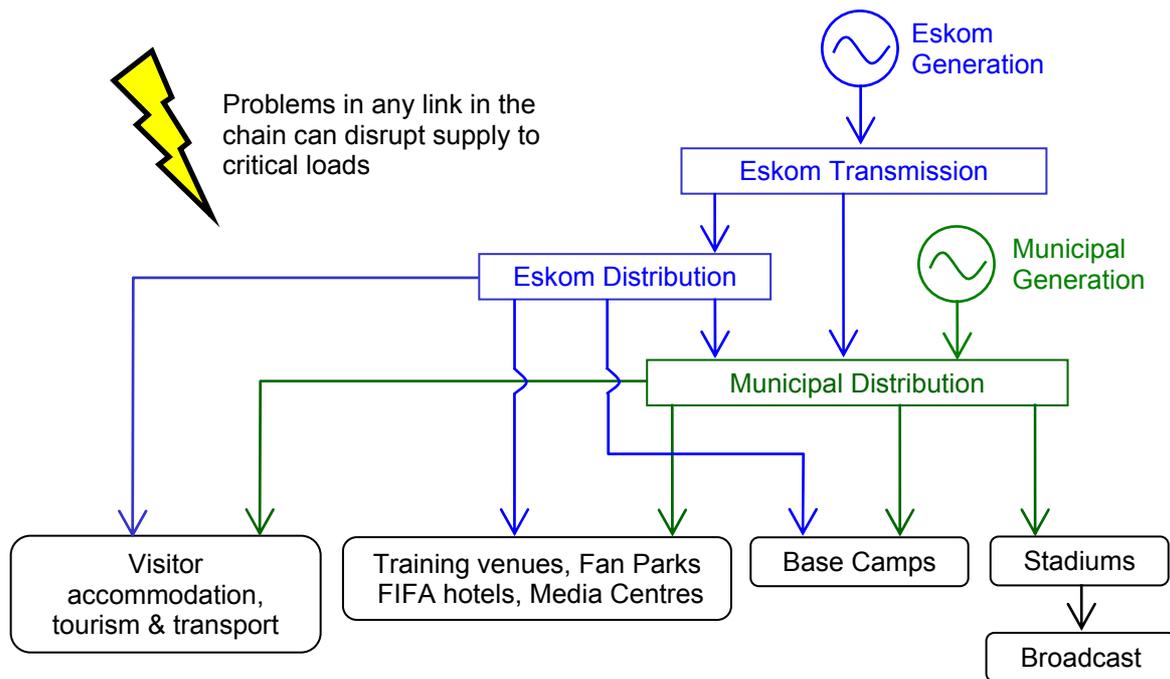


Figure 1: Electrical supply chain [2]

3. Key electrical risks

Carter-Brown has identified [2] the following 2010 related electrical supply risks:

- General load growth until 2010 will place further stress on generation, transmission and distribution.
- Power quality and security of supply for stadiums and other FIFA loads.
- The decision on the location of base camps is likely to only be made by teams after their group and match venues in the knockout stages of the tournament are known. As the qualifying process will only be completed at the end of 2009, the final 32 teams will probably only make this decision early in 2010.
- The possible huge impact on the electricity network supplying smaller towns/cities/resort areas close to base camps where teams supporters are expected to stay. This additional load may represent a very significant increase to the normal demand profile and exceed the capacity of the network.
- Increased load associated with an expected 300 000 to 500 000 visitors, the movement patterns of which are not yet known.
- The possible lack of adequate funding for projects deemed necessary for the security and reliability of supply.
- Long lead times for equipment and materials necessary for the identified projects, even if the

requisite funding is provided in the near future, is likely to mean that many of these projects will not be completed prior to the tournament.

4. Operational risks

In addition to the risks associated with the provision of networks that will provide adequate electrical capacity to the needed locations, a number of operational risks have been identified which, if addressed, could mitigate some of the earlier risks discussed:

4.1 Generation

The 2010 tournament coincides with the South African winter load peak. The situation of possible shortages of generation capacity will be exacerbated by the increasing level of capital work in the Eskom environment [generation, transmission and distribution] to cope with growth in South Africa's demand. This work will be continuing over the window period of the tournament. Further risks relate to:

- The possibility of unplanned or forced outages of generation.
- The influence of weather on demand as severe cold can result in a load increase of 2 000 MW compared to a moderate winter.
- Load growth exceeding industry forecasts.

- The management of primary energy supplies, specifically liquid fuel, due to national requirements as well as reliance on road transport.
- The possibilities of wet coal supplies and of drought affecting water cooled and peaking stations.
- DSM and voluntary load reduction [DMP] contracts may not be able to adequately curtail demand.

4.2 Transmission

Risks related to the transmission network are:

- Unplanned outages and the ability to respond to such events arising from movement of heavy equipment and availability of material and human resources should multiple vents occur simultaneously.
- Delays in the build programme [capital work].
- Environmental factors including the possibility of networks being exposed to snow loading and fires.
- Network capacity constraints and unplanned network contingencies.

4.3 Distribution

A number of factors are relevant in assessing risk in the distribution environment:

4.3.1 Network expansion

The incidence of capital work involving additions to or upgrading of any network that may influence supply to any of the key electrical loads during crucial periods of the tournament is regarded as a significant risk.

4.3.2 Planned maintenance

A significant portion of planned maintenance takes place during winter months due to the incidence of storm weather during the summer months. This maintenance on networks that could directly or indirectly influence the supply to any of the stadiums is seen as a significant risk.

4.3.3 Refurbishment or replacement of equipment

It is known that some distribution networks throughout South Africa include items of equipment that are obsolete or in need of refurbishment. Plans for the refurbishment or replacement of this equipment are often hindered by the lack of available funding or long lead times

for delivery of the relevant equipment. The risk to network operations is significant if the work on relevant networks is not carried out well before the tournament.

4.3.4 Network configuration

Local networks are frequently rearranged due to the incidents of faults that have not been attended to, to facilitate network additions or to cope with load changes. Abnormal network configurations during the tournament will complicate operations and possibly delay supply restoration.

4.3.5 Load shedding plans and agreements

The availability of adequate generation capacity within South Africa over the last eighteen months has highlighted the importance of shedding plans and contract agreements. It is possible that a number of the networks critical for world cup events are linked to load shedding schemes. In the event of system instability, the operation of some or these schemes could affect the events and hence are a risk.

4.3.6 Strategic spares

Recent catastrophic events on a number of networks have highlighted the need for strategic spares to be available for use by distributors in the event of such incident[s] during the world cup. Many municipal distributors do not have the financial and other resources to maintain a stock of such spares which poses a risk.

4.4 Human Resources

A number of human resource issues pose possible risks including:

- The possible shortage of skilled and experienced staff.
- The demand for leave over the window period of the tournament.
- Demanding standby rosters as well as personnel on site.
- Salary negotiations, with the attendant risk of industrial action, for the municipal, fuel and transport sectors.

5. Mitigation strategies

It is suggested that the following strategies be considered for implementation to reduce some of the risks.

5.1 Generation & Transmission

The mitigation of risks for these components is primarily an Eskom responsibility and will include:

- Ensuring adequate primary energy supply prior to the event.
- The management of plans for the taking of generation and transmission plant out of service for planned maintenance or refuelling [Koeberg] in order that the risk to the tournament is minimised.
- The identification and assessment of Infrastructure providing supply to municipal distributor areas, which could directly or indirectly influence the supply to any of the stadiums, for condition and maintenance or refurbishment plans.
- Detailed emergency planning and simulation of these plans prior to the event.
- Plans for obtaining and storing of strategic spares, as well as logistic constraints such as communications and transport should also be developed.
- Contractors to start the inspection of networks earlier than normal practice [March through to June] for those networks identified as critical for reliability and quality of supply.

5.2 Distribution

The municipal distributor of each Host City in particular, as well as distributors in all areas that may experience an increase of tourism activity over the period of the tournament, should carry out the following preparation work:

- Identify and assess the condition of the electrical infrastructure that could directly or indirectly influence the supply to the stadium[s], training venues and key loads in their area of responsibility.
- Replacement, refurbishment or maintenance of these networks to be scheduled to be completed well before the commencement of the tournament.
- Evaluate the requirement and availability of strategic spares for their network.
- Assess loads connected to load shedding relays and revise existing plans to ensure that there is no impact on identified tournament critical loads should the need for load shedding be required.
- Arrange networks so that no abnormal conditions are maintained during the period of the tournament.

- Prepare contingency plans for supplies to the critical loads and ensure all control and operations personnel are thoroughly familiar with switching requirements.
- Plan leave and standby rosters well in advance to ensure the availability of an adequate level of competent staff.

While the planning personnel in Eskom Regions and the Host City Municipal Distributors have been involved to date in discussion of many of these issues through the 2010 ESI Forum, it is now necessary to involve Municipal Distributors in other areas if we are going to be successful ensuring a reliable and secure electricity supply over the period of the world cup. In addition to activities described above, these distributors should:

- Identify the possibility of Base Camps being established in their area of supply.
- Meet with major accommodation and tourist establishments in their area of supply to discuss the expected impact of additional visitors and possible expansion plans on their demand.
- Discuss their own expected demand requirements with their Eskom Regional Planning Manager to enable Eskom to make plans to meet this demand.

6. Recommended action

The successful implementation of many of the mitigation strategies suggested is unlikely to be achieved without a considerable level of cooperation among the stakeholders involved. It is recommended that, in addition to the continuation of the 2010 ESI Forum activities, Regional 2010 Workgroups be established to focus on:

- Maintenance planning including the identification of key networks, strategic spares requirements and availability.
- Demand forecasts and associated capital projects planning.
- Operational plans including available resources, contingency planning and under frequency load shedding.
- The coordination of response to unplanned or emergency events including coordination between other bodies so that issues like road permits do not become issues during the tournament.

Suggested role players from Eskom and Municipal Distributors to serve on these workgroups are:

- Control personnel.

- Planning personnel for network optimisation, contingency plans and capital programme.
- Field services personnel for maintenance planning and essential spares.
- Regional transmission personnel.

Projects that may have an influence on any of the key electrical loads need to be tagged. These workgroups should be able to demonstrate, via some sort of check list, that all issues have been assessed and suitable plans put in place to address these issues.

7. Conclusions

The 2010 ESI Forum has been relatively successful in raising awareness of many of the issues and challenges associated in the provision of secure and reliable electricity supplies to facilities involved in the staging of the 2010 World Cup tournament in South Africa.

Several activities have been identified for further action via the 2010 ESI Forum but much more liaison is required at regional level among key stakeholders to ensure that operational risks are mitigated.

8. References

- [1] *FIFA World Cup 2010 State Of Readiness*, Media Briefing by Deputy Minister of Finance, 15 May 2007.
- [2] *ESI Preparedness for the 2010 FIFA Soccer World Cup*, CG Carter-Brown and PE Fowles, AMEU Convention, October 2007.
- [3] *Recommendations for the 2010 soccer world cup stadium supplies*, Draft 6a, 2010 ESI forum, August 2007.
- [4] *2010 ESI Project Summary rev3*, 2010 ESI forum, August 2007.
- [5] *World Cup 2010 Base Camps - revision 2*, 2010 ESI forum, March 2007.

9. Acknowledgements

The authors would like to acknowledge the contributions made by Raymond Kodi (Plant Manager, Eskom Distribution Eastern Region) and the members of the 2010 ESI forum.