

Preparing public viewing facilities for mass events

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Investigating public safety matters at proposed public viewing sites intended for use during mass events such as the 2010 FIFA World Cup.

A project was recently conducted in Gauteng by SRK Consulting to identify public safety and disaster risks associated with the use of public viewing facilities during mass events. It included venues that could be used during major events, such as the FIFA Confederations Cup and the Soccer World Cup, to provide large-screen facilities and food/curio vendor areas where spectators lacking the ability or resources to attend actual matches, can watch soccer matches and enjoy the atmosphere generated by such events.

What is a public viewing facility?

It is important to note that a "Fan Park" as defined by FIFA standards and selection criteria is not the same as a "Public Viewing Facility". The latter has a more general description and may include services and sub-events on the site or in the area that was not necessarily envisaged or requested by FIFA. It focuses on a local provision of sporting viewing facilities that may include not only big screens, but also food vendors, music and concert areas, curios/stalls/market areas, recreation and relaxation areas, etc. Aspects that are involved in the operation of such a facility include for instance ablution facilities, waste management/collection/separation areas, the location and appropriateness of fire fighting equipment, access to open water bodies, electrical cabling and general public safety and issues concerning public liability.

Project objectives

The principal objectives of the study included among other aspects:

- An investigation into public safety matters at sites for use during mass events.
- GPS capturing and storing of site features in GIS format (including capturing attributes regarding the condition and safety aspects of the features).
- Conducting a disaster risk assessment for each venue as well as a resource needs analysis related to coping mechanisms in the case of a disaster event occurring (this aspect will not be addressed in detail in this article).

Stakeholder participation is crucial to such a project

Stakeholder participation was encouraged and interested and affected parties were included in the project to ensure complete and relevant input into the assessment was received. The stakeholder participation process followed during the project consisted of two levels of participation:



Fig. 1: Examples of situations that need to be rectified before sites should be opened to the public during mass events.

- Individual interviews and discussions with key stakeholders (e.g. emergency services, public transport planners, site caretakers, utilities such as electricity providers, land use planning and environmental development departments at the municipality involved, and landscape architects who did master plans/proposed layout plans for the sites).
- A stakeholder meeting to which all organisations, individuals, NGOs and companies that could be involved in the event management were invited.



Fig. 2: Examples of safety risks that may be present at public viewing facilities: open and broken electrical boxes and exposed wires.

Data capture

Information was collected that pertains to the use of the venues during mass events, as well as facilities around the venues which could either have an impact on events or could be utilised during events for event management or emergency purposes. This was done through the following means:

- Investigation of spatial data related to land use, utilities, road maps and related data.
- Site visits to the sites and surrounding areas.
- Stakeholder inputs, as mentioned earlier.

During the site visits Trimble "Juno" GPSs were used to capture pre-defined attribute fields using lookup lists where possible, to capture details regarding features on the facilities that relate to

safety and disaster risks. Post-processing was done on the data once it was downloaded from the unit onto the PC. An example of a typical lookup list can be seen in Table 1.

As can be seen from the example in Table 1 the features, their condition and safety aspects were logged in such detail that it is possible to extract detailed information and create queries to identify problem areas easily in the GIS database. This can easily be represented as general maps or hot-spot maps to

Security	- Open, can not be locked - Open, can be locked - Locked
Security guard	
Lock type	- N/a - No lock - Padlock - Padlock and chain - High strength padlock - High strength and chain - Code-lock
Door-key-type	- Chain type - N/a - Less than 1 cm width - More than 1 cm width
Height of gate top (free text)	- Beam above gate - Yes - No - N/a - Height of beam
Gate open direction	- Inwards - Outwards - In and outwards - N/a
Width of entrance (free text)	
Condition of gate	- Good - Fair - Poor - Broken
Entrance safe	- Yes - No
Surface material (the entrance surface)	- Wood - Concrete - Brick - Cement - Soil/dirt - Stones/rock - Stepping stones - Tar
Condition of surface	- Good - Fair - Poor - Broken
Surface safe	- Yes - No
Wheelchair access	- Yes - No
Gate paint needed	- Yes - No
Road curb angle (to determine whether it is possible to access the entrance easily with a vehicle)	- 45 to 90° - 0 to 10° - 10 to 45° - N/a

Table 1: An example of a lookup list focusing on one feature namely entrance/gates to the site.

address areas where special attention may be needed before or during an event, or in the event of a disaster taking place.

Where relevant, photographs of features on and around the site were taken, especially at points on or around the feature where safety, hazards, vulnerabilities or manageability is of particular importance. Some of the photographs that were taken are provided. See Figs 1 to 4.

The data that was collected during the site visits were downloaded from the GPSs into GIS format, and mapped. The site photos associated with these were hyperlinked where available. See Fig 5.

Disaster assessment

The following disaster management aspects were assessed and reported upon for every site that was investigated:

- Type/description of disasters that are likely to occur.
- Likelihood/probability of the disaster occurrence.
- Seasonal patterns of disaster occurrences.
- Predictability and early warning options.
- Location of specific disasters, should it take place (e.g. specific areas of fire/flooding).
- Spatial extent of primary and secondary effects of the identified disasters.
- Expected duration of disaster event.
- Speed of onset of disasters.
- Secondary hazards related to the primary hazards, and linkage between different disasters.
- Magnitude and intensity (including the impact of people, infrastructure/services, buildings and the environment).
- Media/spectator value.

Difficulties during the project

Difficulties experienced during the project related to a lack of digital information and statistics related to safety at previous events at the venues that were investigated, as well as hazardous situations and disasters that may have taken place in the past. There is a general lack of data collection in terms of the frequency and occurrence of events themselves as well (i.e. not all event organisers tend to register their events with the emergency services, making tracking of problem areas and potential problem situations difficult).

It was also not easy to get access to the available statistics that are related to capacities/resources that may improve the manageability should a disaster(s) occur at a mass event (e.g. capacity and type of capacity of hospitals in the vicinity of the venue).

This made the accurate mathematical calculation of hazard probability and related risks unattainable for this particular study.

Outcome

The outcome of the study included recommendations in terms of disaster-related aspects for the sites, such as the risk of flooding; regional impacts such as those involved with surrounding businesses; and day-to-day operational management requirements, such as those related to public safety.

The primary recommendations following the study included, among other things:

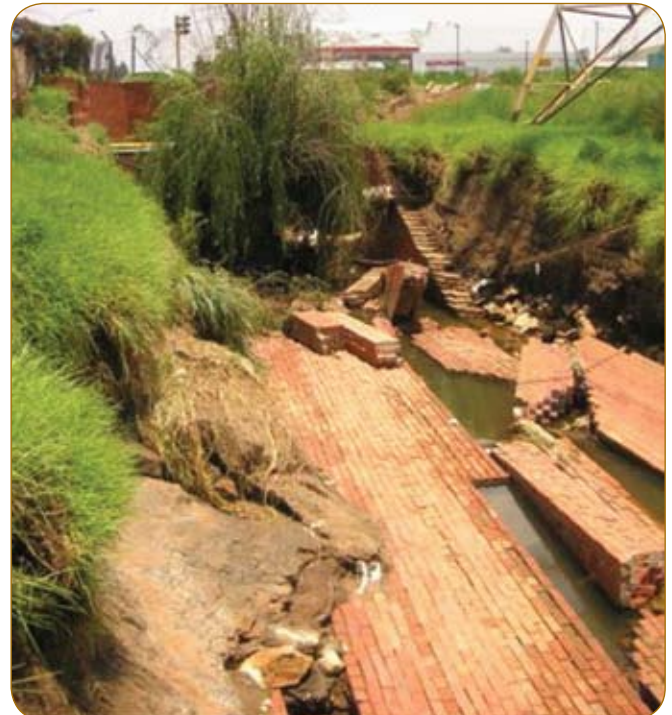


Fig. 3: Examples of situations that need to be rectified before sites can be open for public viewing during mass events.



Fig. 4: Although this scene may be nice to look at, there is an inherent danger to visitors at this site: the possibility of entering the water unhindered, thereby increasing the possibility of drownings.



Fig. 5: The data that was collected during the site visits were downloaded from the GPSs into GIS format and mapped. Where possible associated site photos were hyperlinked.

- Aspects related to site management and development for sites to be used as public viewing facilities need immediate attention before they may be suitable for usage during mass events.
- Identification and recommendations on the top rated/prioritised disaster hazards need attention at each individual site.

From this study it became clear that effective data capture and efficient data management is critical to assessing public safety and disaster risk during mass events. The proper management of a venue, the site layout, control of entrance, traffic management and other event management aspects are crucial, and can be made more effective and easier when there is a good database available for all of the features on the sites.

As part of the management process for sites that may in future be used as public viewing facilities, it is necessary to not only do an "overview" risk assessment or brief site analysis, but an in-depth, detailed site investigation that includes the capturing of GPS coordinates and related attributes for features on the site. This will assist the caretaker(s) of the site to ensure that hot-spots or problem areas are addressed in an integrated manner, saving time and costs when doing maintenance on the site. This will also assist event managers in familiarising themselves with detailed aspects of the sites, especially when the sites are large and where there are concerns regarding public safety and related liability.

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