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A summary of the George
building collapse incident
and rescue operation





Victoria Street Building Collapse – Fire and rescue when the unimaginable happens



It is just over a year since the town of George in South Africa's Western Cape was rocked by a devastating tragedy when a multi-storey apartment block under construction collapsed. Santa Sternsdorf, Station Commander from the George Fire and Rescue Department, summarises the incident and the rescue operation.

No textbook in the world can prepare you for the unknown when disaster strikes.

Rescue workers experienced this truth first-hand when a five-storey building under construction collapsed in the city centre of George, South Africa, on 6 May 2024, killing 39 people and injuring 28.

The incident, which became known as the Victoria Street Building Collapse, attracted worldwide media attention and redefined emergency services' approach to search and rescue of collapsed buildings in urban environments.

It also set a new standard for interdepartmental co-operation within a municipality as well as for collaboration between municipalities and other emergency response and humanitarian services.

George Fire and Rescue Chief Fire Officer Neels Barnard, who was the incident commander for the building collapse, said complete implosion of a multi-storey building with multiple deaths, was exceptionally rare in South Africa and responders would seldom be exposed to the full implications of such an incident. "Victoria Street demanded every grain of skill, experience and initiative to address the wide range of unique challenges. We were privileged to be supported by experienced rescuers from across the country, some of whom had worked on rescue and recovery following natural disasters in other parts of the world," said Barnard.

The incident scene

The structure, once completed, was going to be a five-storey, 42-apartment building including an underground basement for parking vehicles, which stood on pillars in the basement supported by weightbearing walls.

The building collapsed in pancake fashion with very little debris beyond the two-metres perimeter. The adjacent buildings, an apartment building on the eastern side and a residence on the western side, were nearly unaffected with only a cracked window and three broken roof tiles.

There were two asbestos-roofed parking structures, at the back of the collapsed building's property, being used by occupants of the neighbouring apartments. A section of the asbestos roof had been damaged in the collapse and immediately raised hazardous material concerns.

The George Municipality main building is situated directly across the road from the collapsed building site.

Situated in the centre of town, the collapsed building site is less than a block from the city's main road, known as York Street.

Initial reports indicated about 82 people were working construction-related jobs on the site at the time of the collapse. Demographics of workers included students from a local trade school, male and female, and foreigners from countries such as Mozambique, Zimbabwe, Botswana and Lesotho.

Initial response

The first report was made within seconds from the collapse at 14:09, by a civilian, directly to the mobile phone of the George Municipality Fire Chief, Neels Barnard.

The George Fire Department responded with its full on-duty operational staff complement and four senior officers. All other relevant emergency and municipal services were informed and dispatched immediately thereafter.

Every Emergency Worker will confirm that when a call is received regarding a building collapse, the image in one's mind is mostly that of partial collapse, section of floor or wall, a roof segment or support. No one could have imagined the scale of the collapse and people involved. Even Engineers who witnessed the aftermath stated that buildings are meant to be designed to fail in section or parts, not all at once.

Upon arrival, initial objectives were to take control of the scene, close it off, triage patients and distinguish people on the scene between bystanders, workers and patients. Fire and rescue services also assessed the general stability of the scene, the building rubble pile and surroundings. Finding direction in the chaos to implement some structure was a very big and difficult task. There were a thousand things to consider and arrange, to give all a sense of direction to know what to do.

George Municipality Fire and Rescue took incident command (IC) with triage being set up by private ambulance services until the state's Metro EMS ambulance service arrived and took over the management thereof.

Twenty-two (22) patients, mostly tagged green/walking wounded, and two (2) patients tagged blue/deceased, were rescued and recovered within the first four hours of the collapse.

Construction supervisors initially estimated 59 or 62 people on site, but a figure of 82 had come from the Multi Agency Centre (MAC).

Responders quickly realised that the scale of the incident required specialised equipment and more assistance and



Scaffolding on site posing risk to rescue workers



contacted the Western Cape Disaster Management Centre (WCDMC) at 14:30 to request provincial rescue support.

The following resources were dispatched or activated in response to the request:

- ◆ Western Cape Department of Health and Wellness
- ◆ Search and Rescue capabilities from Cape Town including:
- ◆ Western Cape Provincial Search and Rescue cache Breede Valley Municipality Search and Rescue
- ◆ City of Cape Town Fire and Rescue team together with heavy-duty equipment
- ◆ SARZA Search and Rescue (highly specialised and trained volunteers owning 4x4 vehicles) South African Police Search and Rescue including K9 search dogs

Initially all bystanders and workers were called off the rubble to allow for the site to be assessed and teams to be organised. Rescue teams were then formed by combining Fire Service, ambulance rescue technicians, other rescuers and volunteers.

Safety officers were appointed for each rescue team that went into the rubble. Later the area was divided into six sectors with a safety officer overseeing three sectors each.

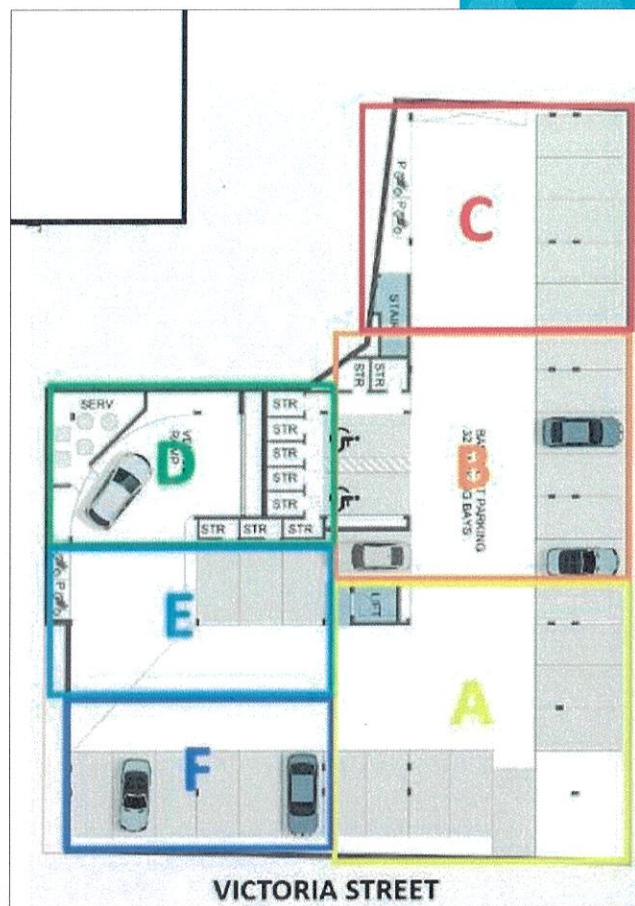
Initial challenges on the scene included determining the location of live victims and determining which types of resources were required to rescue them. Scaffolding was hanging precariously over the front (north) and western side of the collapsed building, which was considered dangerous.

The action plan for the first 24 hours was:

Establishing the incident command, site sectorisation (6 sectors were demarcated from Alpha to Foxtrot), structural stabilisation, access victims whose position was known, patient removal and emergency care (live victims were prioritised), identification of possible voids and further void exploration, and using intelligence plans to identify location of possible victims

With operations going into darkness on Day 1 the George Municipality Electrotechnical department set up spotlights around the scene to ensure 360-degree illumination. The block on which the site was situated had lost electricity when the building collapsed. The electrical source to the site was isolated and the rest of the block's power restored.

The municipality's Civil Engineering department provided yellow plant and tipper trucks for the removal of debris for ease of movement around the site.



Layout sketch of sectors

“Safety officers were appointed for each rescue team that went into the rubble. Later the area was divided into six sectors with a safety officer overseeing three sectors each.”

Ongoing operations

Twelve hours into operations, with most of the rescue teams having arrived on site, the scope of the extended operation was estimated to be about 14 to 28 days' work.

Shift systems were implemented to manage human resources, tool staging areas were established, and an area was created for rescue workers' care.

The senior management team of the Municipality under the leadership of the Municipal Manager, gave the Chief Fire Officer full authority to execute the operations. Their presence during the incident assisted in quick and decisive consultation and decision making to ensure optimal resources were available to the rescue teams' disposal.

Rescue mode

Considering the first 72 hours as the most likely to find live victims, the operation remained in 'rescue mode' with the main objectives being:

- ◆ Location, access and releasing from the rubble victims whose positions were known Marking areas where victims known to be deceased were located
- ◆ Identifying two large voids inside Sectors Bravo and Echo.



Confined spaces rescuers worked

- ◆ Securing access points, first with rebar and later using wooden T-Spot shores. Confined space search operations
- ◆ Removal of destroyed scaffolding and moving all debris off-site.

Department of Labour (DOL)

Officials of the national Department of Labour arrived on Day 2 and insisted on access and jurisdiction based on the accident site's status as a worksite on which people were employed, injured and killed.

However, since it was still an active rescue site, legal jurisdiction remained with local rescue authority: George Fire and Rescue, supported by Western Cape Disaster Management.

Labour officials were given access to the site to observe. The department also insisted that building rubble that had been removed from the imploded site had to remain on the property until the necessary structural tests and investigations could be undertaken. The site's location and size, as well as health and safety concerns, did not allow for it.

The George Municipality Solid Waste department made an emergency decision to transport all incident rubble to a dedicated space on its refuse site, where it could be guarded by municipal law enforcement and a private security company until the labour department's investigation was complete. The trucks transporting the rubble was escorted by the George Traffic Department to prevent in-transit tampering.

Asbestos risk

The asbestos roof of the parking structure was damaged during the collapse, creating a potential health and safety risk to everyone on site. Incident commander, Fire Chief Neels Barnard, arranged for an accredited service provider to remove all asbestos from Delta Sector before work could recommence.

Extended rescue mode

While possibility of survival was diminishing, the team remained in extended rescue mode, treating the site with care in expectation of more live rescues. This approach paid off when a worker was found alive on Day 6 relatively unharmed.

Nonetheless, the removal of deceased victims' bodies from under the rubble was becoming priority because of health risks associated with decomposing bodies.



Damaged Asbestos roof in Delta Sector

At the same time information was being collected regarding the collapsed building's construction, layout, collapse patterns, risks and material behaviour of the rubble.

Structural delayering was becoming urgent for rescuers to reach deeper where victims may be trapped, but efforts were being hampered by substandard building materials that were not responding as was expected.

Transition to heavy demolition assistance

A specialised demolition company was brought in to assist with breakup and removal of building material. The company arrived on Day 5 and started delayering from Charlie Sector.

Void backfilling (stability)

Engineers were becoming concerned that the retaining wall for the basement was becoming unstable due to the pressures from the sides, as well as the failure of the ground floor that was supposed to counterweight from the sides. The cement slabs, which formed the 'floors' of the building, were laying on top of uneven rubble, causing it to start losing integrity.

The area against Victoria Street was suitable for backfilling with rubble from other sectors to help stabilise the retaining wall but was searched and cleared twice by K9 dogs to confirm that there weren't any people in the space, before backfilling started.

Rescue and recovery

Rescue operations were a combined rescue and recovery process, but priority was given to locations of known living patients.



Rescue operations prioritizing live victims

Operations were complicated by the poor quality of building materials which did not behave in the manner rescue workers were accustomed, such as concrete that would turn into powder instead of breaking into manageable pieces, causing concrete slabs to unexpectedly shift. These factors were of great concern to the safety of emergency personnel.

The rescue and recovery rate ran as follows over the eleven days of the incident, bearing in mind the original estimated number of people missing, according to the Multi Agency Centre (MAC), was 82.

First four hours: 22 rescued, 2 deceased (24)

Day 2 (7 May): 8 rescued, 3 DOA* (35)

Day 3 (8 May): 1 rescued, 1 DOA (37)

Day 4 (9 May): None (37)

Day 5 (10 May): 3 DOA (40)

Day 6 (11 May): 1 rescued, 2 DOA (43)

Day 7 (12 May): 7 DOA (50)

Day 8 (13 May): 11 DOA (61)

Day 9 (14 May): 1 DOA (62)

Day 10 (15 May): None

Day 11 (16 May): None. Site handed over to SAPS/DOL.

* DOA = Dead upon rescuers reaching the victim

The final count of people rescued was 34 and 28 bodies recovered (total 62). Five of the rescued people succumbed to injuries in hospital, raising the final death count to 39.

The remaining persons unaccounted for were later verified by SAPS as not having been present at the time of the collapse.

The pinnacle of the rescue operations was when Mr. Gabriel Guambe was discovered alive on Day 6. With morale low and hope dwindling, the initial thought was that the sounds the rescuers were hearing under the rubble could not possibly be that of a survivor. It was too good to be true. Verifying every indication from the K9's to the camera and acoustics' the discovery of a survivor gave renewed vigour into all on site. His survival after 118 hours under the rubble was the miracle everybody prayed for. It was the embodiment of why we became rescuers.

Hospitals

Local hospitals activated mass casualty protocol with the George Hospital (state) and Mediclinic (private) excellently providing the required emergency care to victims. Patients were sent to emergency care centres based on the triage process and capacities of each hospital as the only selection factors.

Rescue equipment

Rescuers made use of a wide range of equipment, including power and hand tools, across a diverse rescue site.

Battery operated tools worked best and small power tools, such as angle grinders, were essential in breaking up rubble, cutting reinforcement rods and for working in confined spaces.

Some private companies sponsored hard-wearing parts such as drill bits and blades, which required administration functions to ensure that all sponsored and paid services were correctly processed before items were used.

Dedicated personnel were assigned to handle tool maintenance exclusively (cleaning, sharpening and battery charging), which was very effective. Tools were readily available at a moment's notice.

Non-emergency support and logistics

The George Community has handled its share of disasters, including the 2017 Knysna Fires and 2018 Outeniqua Mountain Fires, and local NGOs and community-based organisations were familiar with emergency services workers' needs. Well-connected networks of resources were very quickly activated,

“Operations were complicated by the poor quality of building materials which did not behave in the manner rescue workers were accustomed, such as concrete that would turn into powder instead of breaking into manageable pieces, causing concrete slabs to unexpectedly shift.”

and a full catering facility was set up on site. By Day 3 they were able to provide nearly three hot meals a day.

The George Fire Department implemented a colour tag system to identify authorised people on site. Emergency workers carried green, volunteers for search and rescue as well as outside construction workers were labelled orange and volunteers working the Food, Rest and Recovery area wore pink labels. The system was not perfect and small adjustments were made throughout the incident as required. According to sign-in sheets, approximately 1000 people volunteered on site on Tuesday (Day 2).

Construction volunteers were reduced after Day 3 and completely stopped on Day 4.

A major logistical challenge was the personal protective equipment (PPE) required for volunteers as they were not allowed onto the rubble pile without a helmet, safety shoes, gloves and a reflective bib. It was also difficult to ensure the safety of volunteers. Donations from companies and NPOs helped tremendously to address this challenge.

The logistics of food and water became an operation almost on its own. Small shipping containers were donated to help with storage. The Garden Route Health department monitored food preparations and storage as well as health and hygiene on site. Wash basins and sanitising stations were set up with a very strict individual ensuring everybody washed their hands before entering the food area.

K9 response (trained dogs)

The K9 response consisted of K9 Search and Rescue Organisation (volunteers organisation), the SAPS K9 unit and, later, joined by dogs from the Gift of the Givers humanitarian

organisation. Five dogs and their handlers worked the incident with the assistance of another two when required.

The dogs initially helped finding live patients. Each positive indication from a dog was verified by a second dog before efforts at a specific place would commence.

Later the dogs were used to find possible deceased patients (cadaver search).

Interpretation of the dogs' finds, and information provided by their handlers, informed decisions that Incident Command made about action plans.

As mentioned before, dogs were used to confirm that there were no people in an area where backfilling was required to stabilise a retaining wall.

The extended period of operations took its toll on the dogs, and lessons learnt included the establishment of shifts and 'off duty'-dogs to be taken off site completely to reduce noise stress and overstimulation.

People working on site were asked to refrain from eating on the site and rubble pile where dogs were required to work, as the food scents could interfere with the smells required to locate people under the rubble. The site had to be kept as 'sterile' as possible in order to give the dogs the best opportunity to give accurate indications.

As with other rescue data sources, it was realised that information provided by dogs could sometimes be limited or wrongly interpreted and should therefore not be interpreted as the sole indicator for rescue action.

Humanitarian assistance

Families of the victims arrived at the scene within hours and were initially accommodated at the edge of the site. By the next morning it was clear that a structure was required where families could wait for news, out of the elements yet close enough to be updated and cared for – they were relocated to the nearby town hall.

Their needs became a challenge to resolve, and the national Department of Social Development (DSD) was slow to assist and not really equipped to deal with the situation. The George Municipality Social Services section provided some assistance supported by NGOs and NPOs.

To try and address basic needs of family members, only spouses, parents and children were allowed inside the hall.



Dog handler and K9 conducting a search

However, it was difficult to confirm familial connections, which some opportunistic bystanders abused to try and obtain donations under false pretences.

Since many of the victims on the site were from foreign African countries, recording connections to victims was a great challenge due to language barriers, and the search for suitable interpreters took time. Some of the victims were known by more than one name. This made it difficult to match the list of names received from the Multi-Agency Centre to the names given by the families.

The families were eventually helped with mattresses and blankets to sleep in the hall while waiting for news, with food and food parcels also provided.

It was later realised that the proximities of families near the site was not ideal. Every time an "all quiet"- signal was called by blowing an air horn, the families would interpret it as someone having been found, setting off an emotional response to try and find out if family members were found dead or alive.

Media

Media coverage on the building collapse was almost unprecedented.

Managing the media became a balancing act between safe and fair access and protecting the privacy and dignity of victims and their families.

The media was initially kept on the periphery of the incident as part of safety measures, but by Day 3 (Wednesday) they were allowed to move to designated safe areas around the site. This concession was made to allow media better coverage but also to control their movements.

“More than 140 rescue workers and more than 1200 civilian volunteers were a part of the incident. George Municipality spent more than R8million on the incident.

The George Municipality Communications department reported 2302 newsclips for the month of May, information derived from contracted newsclip services. About 2.4 billion views of media material linked to George Municipality and the Victoria Street Building Collapse were reported. The equivalent advertising value for this media coverage would have cost R48.7 million.

Pathology and SAPS investigations

Pathology services became a part of the rescue teams as their staff are trained in most of the rescue principles, but also to provide the necessary guidance when a victim was found deceased.

SAPS dive unit officers were also included for legal proceedings of inquest documentation as they had to provide the statements for legal proceedings for the deceased.

On Day 3 (Wednesday) the undamaged part of the parking structure at the back of the site was converted into a temporary holding area where Pathology Services could complete the required processing before a victim was transported off site and to the mortuary.

The SAPS investigation continued throughout the rescue and recovery process. At times operations had to be adjusted to allow core samples to be taken from cement slabs. Engineers and investigators were assigned a safety officer to escort them on site while rescue operations continued.

Incident statistics

The live rescue success rate was 54% of victims found alive on site.



Site cleared before handing over to SAPS

More than 140 rescue workers and more than 1200 civilian volunteers were a part of the incident. George Municipality spent more than R8million on the incident.

The total cost of the incident, including expenses of other organisations but excluding hospital costs, is over R12million.

An estimated 6000 tons of rubble and building material was removed from the site in eleven (11) days and one (1) hour.

Western Cape Chief Director Disaster Management and Fire and Rescue Services, Colin Deiner, substituted incident commander duties with George Fire and Rescue Services Chief Neels Barnard.

Mr Deiner said the Victoria Building Collapse incident would be unforgettable for many reasons. “It was profoundly sad and shocking, but is also testimony to the brave rescuers, committed workers and a compassionate community.

“In the face of many challenges, a multi-agency team overcame differences and obstacles and managed to work together for the greater good.

“When it mattered, the experience and character of the people, and deep-seated relationships sustained us through eleven intense days,” said Deiner.

References and appreciation

Manager Fire and Disaster Management George Municipality CJJ (Neels) Barnard

Western Cape Chief Director Disaster Management and Fire and Rescue Services, Colin Deiner George Fire and Rescue Staff, DC Johan Brand and SO Johan Crouse.

Athane Scholtz *Editing*



New and upgraded members and registrants

Congratulations to the following members who were admitted to membership for the period up to 6 July, 2025

Fellow

Collins, Nicholas D United Kingdom

Morris, Dean Approved Fire Safety Ltd, United Kingdom

Member

Azad, Farrokh Calfordseaden LLP, United Kingdom

Benfield, Benjamin Forensic Fire Services LLC, USA

Brocklehurst, Lee Sassi Consultants Limited, United Kingdom

Caswell, Neil M MTVH, United Kingdom

Clayton, Mark Veteran Fire Safety Ltd, United Kingdom

De Silva, Shane Protec Fire Detection Plc, United Kingdom

Fowler, Joshua City of Beaumont, USA

Harper, Paul F Millennium Fire Protection Limited, United Kingdom

Harris, James T Innovation Fire Engineering, United Kingdom

Hathcock, Jason Garner Fire-Rescue, USA

Hennelly, Richard J Bellrock Group, United Kingdom

Holloman, Joshua Johnston County Emergency Services, USA

Ibrahim, Jaf origin housing, United Kingdom

Lawler, Aiden AL23 Safety, United Kingdom

Lyons, Timothy Thomasons Partnership Limited, United Kingdom

Madden, John Westmeath Fire & Rescue HQ, Republic Of Ireland

May, Paul Lawrence Webster Forrest, United Kingdom

Murillo, Eric Dyess AFB Fire & Emergency Services, USA

Pennington, David A City of Springfield, MO Fire Department, USA

Puvipalachandran, Ruthreswaran Thistlegorm Forensic MY SDN BHD, Malaysia

Simpson, Tony Northumberland Fire & Rescue Service, United Kingdom

Trott, Liam Fire Safety & Compliance Ltd, United Kingdom

Williams, Deborah Compass Skills Training Limited, United Kingdom

Wirkus, Patrick Elizabeth Fire Department, USA

Yarney, Philip A Sovereign Network Group, United Kingdom

Yin Tam, Wing BB7 Consulting Limited, United Kingdom

Zia, Usama Pakistan

Associate

A O'Donnell, James Stantec, Australia

Ajjawi, Abdulafo Atkins Realis, Canada

Akbarpoor, Sareh Stantec, United Kingdom

Alex, Zenith Thomas Bell-Wright International Consultants, United Arab Emirates

Ali, Asad Wintech Engineering Limited, United Kingdom

Alsharif, Mohammed Aman international engineering consultancy, Saudi Arabia

Ariz, Mohd SWECO India Pvt. Ltd., India

Ashok, Ashish DESIGN CONFIDENCE, United Kingdom

Atherton, Megan PartB, United Kingdom

Ballantine, James EDP health and safety consultants Ltd, United Kingdom

Barry, Abdur R Tenos Ltd, United Kingdom

Bonaparte-myers, Lamarr Trident Building Consultancy, United Kingdom

Bradshaw, Kyle RLB, United Kingdom

Brownlee, Laurence Warwick Estates, United Kingdom

Byrne, Odhran Ashton Fire, Republic Of Ireland

Cabaj, Kamil Peabody Trust, United Kingdom

Campbell, Aaron Bellrock Property and Facilities Management Ltd, United Kingdom

Campbell, Rebecca Tetra Consulting Limited, United Kingdom

Collinson, Jason Platform Housing Group, United Kingdom

Del Prete, Iolanda Design Fire Consultants, United Kingdom

Dubois, Marc AECOM, United Kingdom

Eaton, Michael OFR Consultants, United Kingdom

Ellis, Kyle Joule Group, United Kingdom

Fiore, Marco Cambs Fire Safe Ltd, United Kingdom

Garcia Borges, Nicole Brooker Diamond Chartered Fire Engineers, United Kingdom

Hanks, Calvin CJ Associates Training Ltd, United Kingdom

Hathaway, Sebastian Jensen Hughes, United Kingdom

Hole, Neil Devon & Somerset Fire & Rescue Service, United Kingdom