RADISSON HOTEL

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OR Tambo International Airport

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CKR Consulting Engineers

WET SERVICES CONSULTANTS
Wet Consulting Services

FIRE CONSULTANTS
Specialised Fire Technology

TRAFFIC CONSULTANT
Tech IQ

ACOUSTIC ENGINEERS
Acoustic Design

HEALTH & SAFETY CONSULTANTS
Cairnmead Industrial Consultants

LIGHTING CONSULTANTS
DPA Lighting Consultants

KITCHEN CONSULTANT
KDH Catering Design Concepts

INTERIOR ARCHITECTS
LLP Design

LANDSCAPE ARCHITECTS
Landmark Studios

MAIN CONTRACTOR
Tri-Star Construction

PHOTOGRAPHY
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Situated a mere 13 kilometres from OR Tambo International Airport, and a stones throw away from the Kempton Park Central Business District, the Radisson Hotel and Convention Precinct in Bredell has become a highly recognised conferencing destination in the Ekurhuleni Metropole and Gauteng alike. The brainchild of visionary developer, Zamani Letjane, is the new 248-key 4-star hotel which is the latest addition to the existing conferencing precinct and has now firmly established itself as a premium contender in the South African hotel conferencing arena.

Design Concept

The original brief was to provide a hybrid mid-market to high-end hotel offering within the precinct to support the existing conference centre. The design intent took certain aesthetic cues from the existing conference centre with respect to colour and materiality. Due to the 7-storey height of the hotel, and the low density surrounding residential area, the intent was to design the hotel in a layered and longitudinal approach, thereby visually reducing the perceived height of the building.

The first experience of the hotel is via a 'grand' glazed porte cochère, which is the essential guest approach into the large hotel lobby, containing reception desks, lifts to the tower, group check-in and access to the external space beyond. The central-piece of the building has been accentuated on the façade with a vertical 'rib' feature, which contained a major signage opportunity for the hotel. The ground floor was designed as a public area 'street', opening out to the hotel gardens and pool terrace beyond. Along this 'street',

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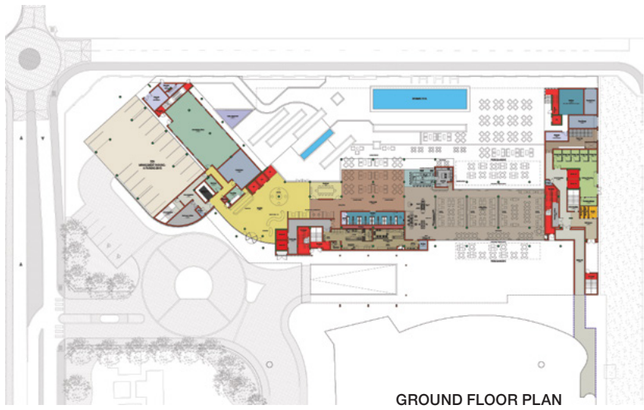
FIFTH FLOOR PLAN

FOURTH FLOOR PLAN

FIRST FLOOR PLAN



GROUND FLOOR PLAN

BASEMENT PLAN

provision has been made for lounge, dining, bar, boardroom and business cubicle offerings. Due to the proximity of the adjacent conference centre, further meeting provisions have been kept to a minimum. Orientation and siting on the property was an important consideration. The hotel is predominantly along a west-east axis, allowing for bedrooms to have north-south orientations. The public areas are all located on, and open out to, the northern aspect of the hotel ground floor. A sky bar has been included on the top of the building, allowing great views to the airport and beyond and providing a facility which complements the food and beverage offering available in the precinct.

Guestrooms are located across 5 floors, with King and Twin bedrooms, Deluxe Suites to the centre, and Junior Suites to the ends of the building. The first floor contains a hotel gym and the fifth floor is considered an 'Executive Floor' with dedicated Executive Lounge, and Diplomatic and Presidential Suites. Certain guestrooms have interleading doors and provisions for showers or baths. Standard bathrooms and Suites have 3- fitting and 4-fitting arrangements respectively.

Construction Innovation Technology

On completion of rezoning the 3 consolidated stands had 7 storeys and over 20,000m^2 of Floor Area (Bulk) available to the hotel development. In order to unlock this potential, and work within the perimeters of the site all 7 storeys were utilised, together with a single level of basement dedicated to hotel service spaces and parking.

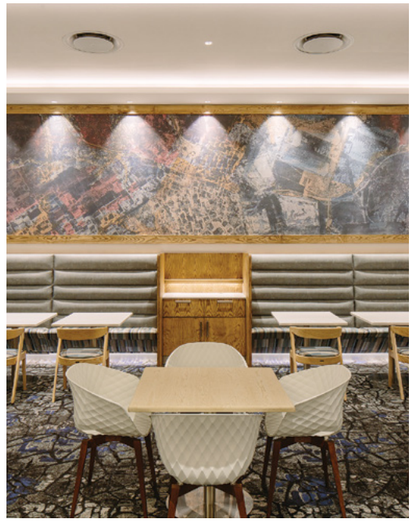
Geotechnical investigations revealed that expanses of the property are underlain by

shallow dolomite and has a perched water table. This presented a challenge in terms of founding conditions considering the height of the building. As a result the foundation design was first on the agenda and an end bearing piled support system was chosen early on to support the entire structure including the cellular raft foundations on various levels. A herring-bone sub-soil drainage system was installed under the approximate 5,800m^2 of basement to prevent the perched water table from reaching the underside of the cellular raft.

The superstructure was the next design element to be tackled, the length of the building from end to end was not conducive to the buildings structural longevity, so the decision was taken to split the single structure into 4 individual, free standing concrete frame structures that function independently, separated only by a 10mm construction joint. Cast in-situ slabs were chosen as the main floor design at 300mm thick, which allowed the removal of column caps and relative easing of the internal construction difficulties.

Design Innovation

The structural steel porte cochère proved to be the most challenging structural design element on this project. The challenge set by the initial architectural design was to provide a long spanning, aesthetically seamless and very thin element that covered the drop off zone at the hotel entrance. The initial structural concepts included casting the entire frame in concrete. This was scrapped very soon after due to the poor long-term performance and undesirable weight of the structure. Structural steel elements that included I-beams rolled into curves on two different planes were also explored, this too provided too many challenges including technical fabrication limitations and general installation issues on site. After a complex design and detailing saga between the Architect, Structural Engineer and Steel Detailer, latticed and faceted steel plates were chosen as the superior design option with the inclusion of tensile steel cables connected to the hotel concrete frame as additional support. Each of the 264 plates and their unique connections were analysed, designed, fabricated and installed in their unique position to create the low profile complex multi-curve porte cochère that stands today.



Environmental Impact Consideration

The client expressed a keen interest in understanding the topographical profile of the land he envisioned the hotel being developed upon. As a result, a series of tests and investigations were carried out as a precursor to the design. These studies formed an intrinsic part of the design process.

The site falls within the Sterkfontein upper groundwater compartment, and with the presence of Karoo sediment suggested perched groundwater conditions, which had a direct impact on the structural design and architectural footprint of the building. The presence of Black Reef Formation quartzite and dolomite immediately called for the implementation of a site specific Dolomite Risk Management Plan. These conditions set the pace for a design and build of a formidable structure which had a sensitive response to the site conditions and larger context "designed into its DNA". A Stormwater Management Plan further guided the design from the onset with the inclusion of two stormwater attenuation dams to manage surface runoff thereby protecting the local fauna and flora. This consideration was of particular importance due to the neighbourhood largely comprising of agricultural holdings, and to not overburden the limitations on the existing infrastructure.

Health and Safety

Health and safety on the hotel building site was an aspect of the job where all professionals, contractors and sub-contractors played their part in ensuring a safe and equitable working environment for all. In terms of the seriousness ratings, there were no incidences greater than a seriousness rating of 2 out of rating spectrum of 1 to 6.

COVID-19 presented a set a unique of challenges during the tail end of the construction programme. To the benefit of the project the on-site staff contingent had drastically reduced in the weeks leading up to lockdown level 5. On recommencing building work at the start of lockdown level 3 a COVID-19 Construction Site Management Procedure was immediately implemented.

Conclusion

The new hotel provided employment opportunities for a notable number of people and has boosted investment interest in what was once a peripheral part of Ekurhuleni. Further, this particular hotel offering from the Radisson Hotel Group is the first of its kind in South Africa. As part of the road upgrades for the new hotel, the parking and drop-off area for the high school was improved and made safer. A dedicated drop-off lane was constructed, and 2 traffic circles were introduced for traffic calming along the street frontage of the school. The road has also been paved to improve the entrance experience for all road users.

In conclusion, it would be amiss to not reference the vision of the Developer and Property Owner, Mr Zamani Letjane. Mr. Letjane used to live on the property where the convention centre and new hotel now stand. The house he lived in is still on the property, and if you were to ask him, he can direct you to what was once his room, with a view out to the then vacant land where these facilities have now been built. His story is an inspiration to many South Africans, and is an example of what one can achieve if they set their mind to it.