





# Cartwright's Corner

The redevelopment of the existing iconic 22-storey office block into 110 loft apartments, with accompanying gym and retail components, has added to the revitalisation of the whole Cape Town CBD

## ARCHITECTS' COMMENT

A modernist icon (relic) on the corner of Adderley and Darling Streets, the Cartwright's Corner building was the second Old Mutual Properties office-to-apartment conversion in the south east precinct of the CBD. Unlike its 'sacred' art-deco neighbour, where façade preservation was paramount, Cartwright's Corner, with its unyieldingly repetitious façade, demanded a fresh and enlivened face-lift.

The brief from Old Mutual Properties was to provide both a range of apartment sizes, from bachelor flats to 2- and 3-bedroom apartments within the tower section (Floors 5 – 22) and, in addition to this, the brief required the redevelopment of the dated ground level retail component, and the provision of penthouse units at Level 23, which housed the majority of the air conditioning, fire services and water storage tanks.

The existing 2-level basement parking was to be supplemented with two new levels of parking on Levels 1 and 2 of the podium. Finally, a lifestyle centre / gym was to be created at Level 4, complete with new swimming pool.

From the outset, Project Architects, Dennis Fabian & Berman, working in association with Glen Loudon, adopted an approach to maintain, where possible, as much of the existing building's fabric and, to add to this, elements necessary both functionally and aesthetically, to create a new lease of life for this 30-year old building.

By using this approach, each particular aspect of the building was analysed, and, if it could be re-used, it was. This approach was multi-disciplinary and was not only evident in the architectural component, but electrical and plumbing components as well. A good example of this approach was the addition of balconies and sliding door units to each apartment.

The original building, with its hermetically sealed offices, needed 'opening'. Steel and timber balconies, with integral sliding door systems replaced precast panel / window components in every apartment. In doing so (a task in itself that required much planning), not only did each apartment receive its required natural ventilation, but the external façade began to undergo an interesting original transformation.

## PROJECTS



**CARTWRIGHT'S CORNER**  
Adderley Street, Cape Town

### Client

Old Mutual Properties

### Architects

Dennis Fabian Berman Architects in association with  
Glen Loudon Architect

### Quantity Surveyors

Bham Tayob Khan Matunda

### Consulting Engineers:

#### Structural

Bergstan South Africa (formerly  
Liebenberg & Stander)

#### Electrical & Fire

SolutionStation Consulting Engineers

#### Mechanical

Elslove & Pryce

#### Plumbing & Drainage

Benatar Consulting

#### Lifts

WAC Projects

#### Land Surveyors

Ken Hodge

#### Attorneys

Walkers

#### Main Contractors

NMC

#### Photography

Fiona Barclay Keating

**Steel and timber balconies, with integral sliding door systems replaced precast panel / window components in every apartment**



Such tasks were co-ordinated with intimate planning jointly with the main contractor, NMC, who was appointed after a negotiated contract was agreed. Through the project, NMC took a proactive role in searching for solutions to the myriad of questions asked when renovation of this nature is undertaken.

No better was this evident than in the eight new penthouses created at Level 23. This included demolition of massive RC fire tanks, relocation of much of the air conditioning and electrical plant and equipment, and the casting of a new RC slab at Level 23½, thus creating the Mezzanine Level for the eight 2-bedroom penthouses where entry and living is done on Level 23 and bedrooms occur at the new Level 23½. To add further volume at the bedroom levels, the existing roof structure was removed, modified and re-used with a revised wall plate height to allow for new sliding windows to the entire perimeter and thus allowing the spectacular uninterrupted views to all apartments.

## STRUCTURAL ENGINEERING VIEWPOINT

### Structural Modifications

Cartwright's Corner was constructed during the late 1960's for the then S. A. Mutual and comprised a two level parking basement, retail on ground floor, a two storey podium with concrete roof, 19 office floors, a plant room level with sloping lightweight roof structure and a lift motor room with a concrete roof slab. The podium footprint is 51 x 36 m (i.e. ±1,850m<sup>2</sup>) and tower section 27 x 27 m (±729m<sup>2</sup>).

First and second floors were changed from retail usage to parking, necessitating partial demolition to accommodate vehicular ramp structures and fire escape routes between Ground and first floors and between first and second floors.

The perimeter of the fourth floor hangs off the fifth floor and some innovative

structural solutions were required to convert this level from office to gymnasium usage, including an indoor swimming pool.

No major structural alterations were required to convert the typical office floors (fifth to twenty second) to residential but the conversion of the twenty third floor from plant room to penthouse residential units was more challenging. Existing reinforced concrete water tanks and plant room slabs were removed to make way for a new mezzanine floor slab over the full area of tower block to accommodate duplex and triplex type penthouse units.

The existing roof structure was significantly revamped by raising the eaves beam level to reduce the roof angle and achieve adequate headroom. Existing steel members were modified and re-used and structural steel sunscreens added

### Seismic Considerations

The building was designed and constructed prior to the Tulbagh earthquake, in 1969, and was therefore not specifically designed to resist seismic activity. However, the 1989 version of the Loading Code deemed Cape Town to be an active seismic zone. The result is that, when converting older buildings designed before the introduction of mandatory seismic requirements, structural engineers are legally obliged to ensure that the conversion process will not make the behaviour of the converted building under seismic loading any worse than if the building had not been altered.

A careful load-balancing analysis exercise was executed to ensure that this principle would not be compromised and that total vertical load would not be increased. Where possible, hollow clay masonry units (±33% lighter than solid clay units) were used for all new walls in order to minimise additional dead loads. Supplementary loads due to these walls were offset by removal of existing brick strong rooms on various levels, removal of some

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precast concrete façade units to accommodate new lightweight balcony structures and installation of glass foyer panels. At the upper levels, removal of the reinforced concrete water tanks and substitution of precast concrete façade panels with glazed aluminium curtain walls also contributed to the load balancing.

At completion, the calculated redeveloped total dead and live load components are respectively 9% more and 41% less than those catered for in the original design.

This meant that the redeveloped total vertical load was  $\pm 2\%$  less than original and that the redeveloped nominal sustained vertical (or “earthquake-generating”) load was  $\pm 5\%$  more than previously.

The footprint ( $\pm 13\text{m} \times 10\text{m}$ ) of the service shaft, which is the primary lateral load resisting element, is relatively large in comparison with overall tower plan dimensions. As a result, control calculations confirmed the adequacy of existing lateral load resisting elements to accommodate the 5% increase in potential seismic loading.



#### Tower crane supports

Clearly, on a project of this nature, material handling is a crucially important facet of the construction process. In discussion with the contractor, a potential position was identified for the erection of a tower crane. After check calculations confirmed the adequacy of the existing structural elements to support the crane, a structural steel transfer structure was erected on the podium deck and tied back to the tower structure.





The brief required the redevelopment of the dated ground level retail component, and the provision of penthouse units at Level 23

### ELECTRICAL & FIRE CONSULTANTS REPORT

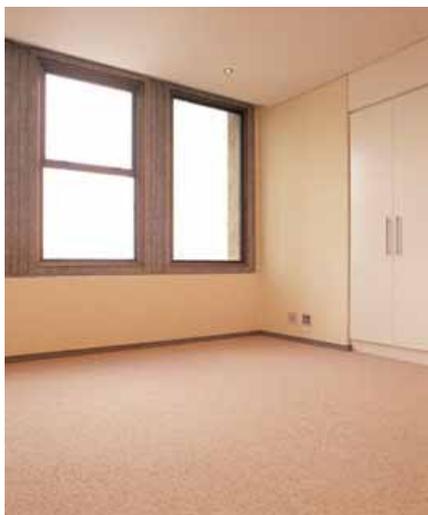
The electrical and electronic services design as well as the rational fire design and fire services design for this project were undertaken by SolutionStation Consulting Engineers.

The design philosophy employed was one which focused on energy efficiency whilst still complementing the aesthetic design of modern loft apartments. Public areas and escape routes are lit by energy efficient, long-life fluorescent and compact fluorescent lamps, whilst the apartments and access passages are lit with dimmable low voltage downlights, in satin chrome trim, to complement the brushed aluminium cover plates fitted to all plug sockets and switches.

This building was fully wired with broadband internet connectivity to each apartment and the gym/lifestyle centre. A managed broadband 24/7 internet connection is available to all tenants on a voluntary monthly subscription basis at a nominal fee, and has its own registered web domain ([cartwrightscorner.co.za](http://cartwrightscorner.co.za)).

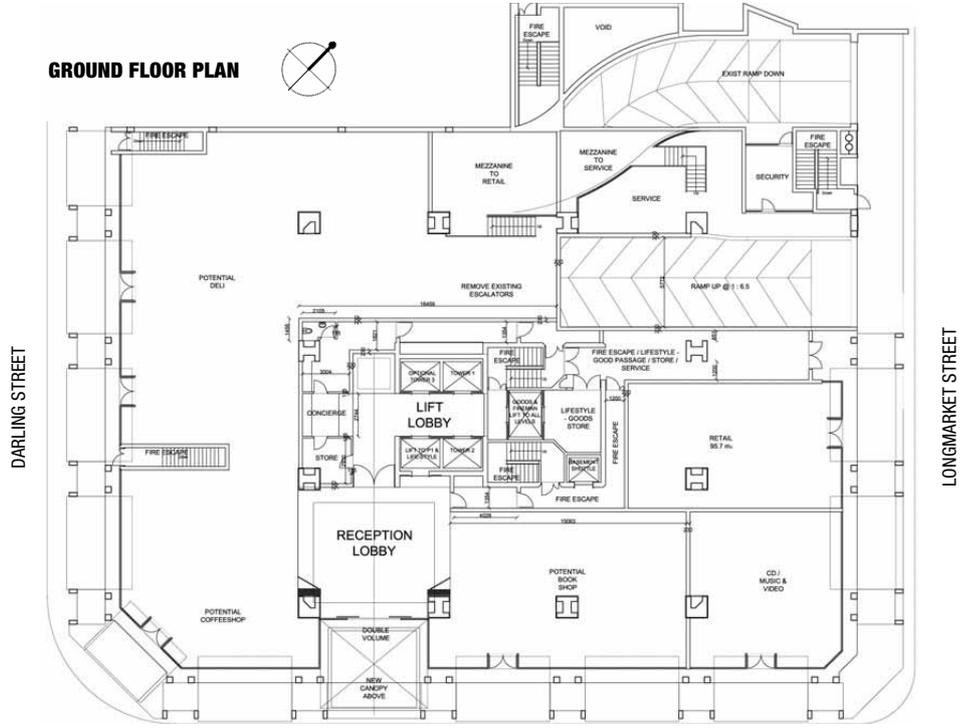
Amplified Satellite TV and radio signals are also hardwired to two outlet points in each apartment.

Access control into the building and parking areas is achieved by means of personal ID smartcards and all visitors are obliged to register with the 24hr concierge to be recorded and issued with their visitor's card which can be programmed to restrict access to specific parts of the building, for specified times and expiry dates if required. An intercom system at the

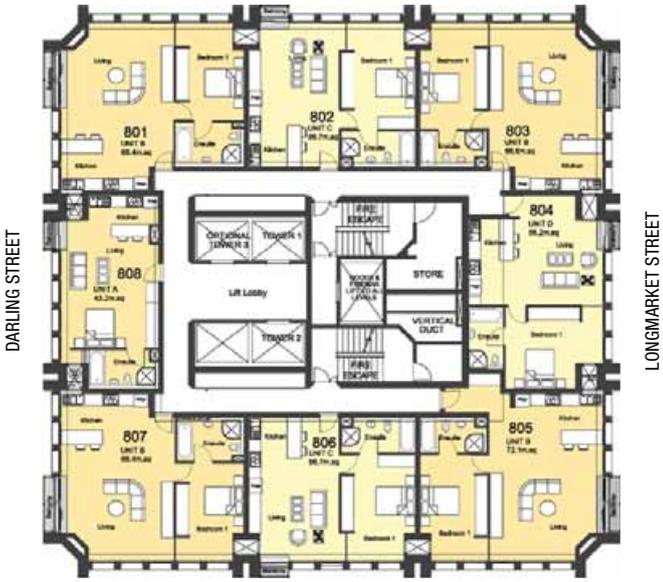




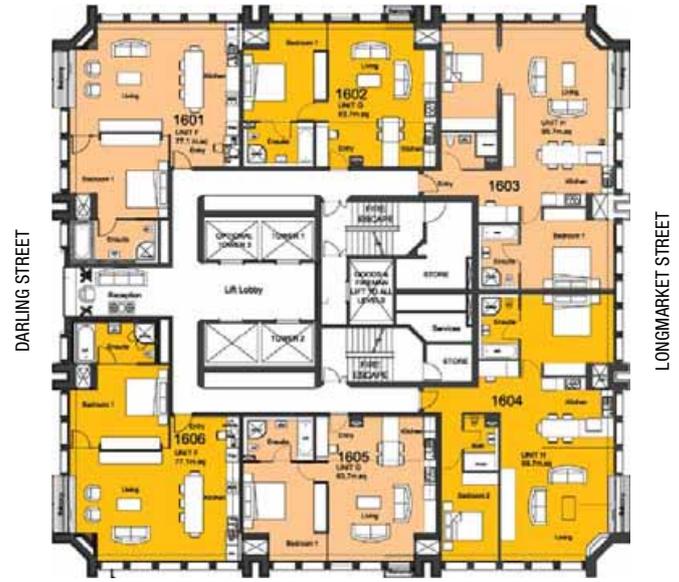
**GROUND FLOOR PLAN**



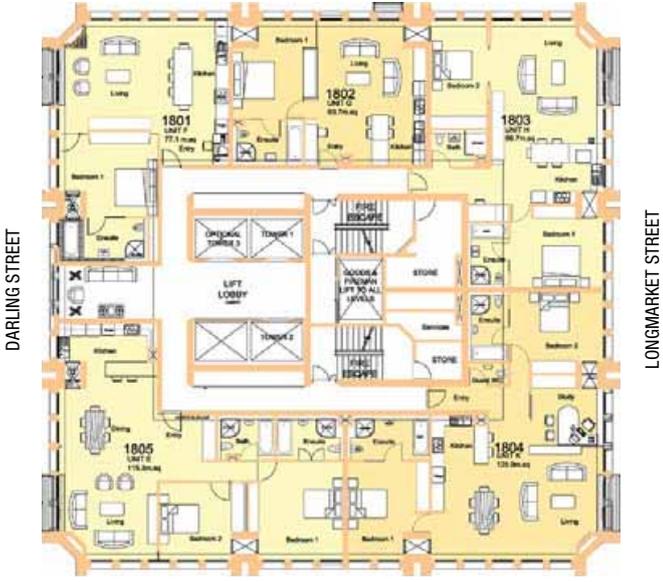
**8 UNITS / FLOOR - LEVEL 8**



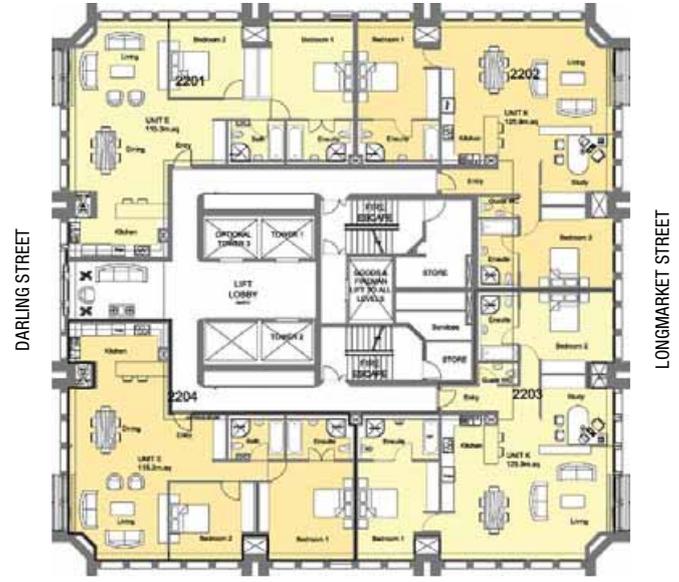
**6 UNITS / FLOOR - LEVEL 16**



**5 UNITS / FLOOR - LEVEL 18**



**4 UNITS / FLOOR - LEVEL 22**



front desk allows visitors to contact those in the building. All entrances and public escape passages, etc. are continuously monitored by CCTV cameras, which are recorded on digital video recorders with LCD flat screen monitors, situated at the reception desk. These images are also interfaced to the satellite TV system and can be viewed by any apartment via one of the channels on their private TV sets.

### Fire Safety

The fire safety of the occupants is monitored by an addressable fire detection system, which continuously monitors the presence of smoke/ excessive heat in all passages and public areas and, in the event of a fire, will: sound audible evacuation alarms throughout the building, home all the lifts to ground, start pressurisation and smoke extraction fans to keep all escape routes free of smoke to allow occupants to evacuate safely. All lighting in the escape routes is supplied by emergency power from a standby diesel generator to ensure adequate lighting even in the event of a total mains power failure. In addition, all parking areas, retail portions and lower floors, up to podium level, are protected by a sprinkler system which will extinguish local fires should they occur.

The building is fitted throughout with fire and escape signage to direct occupants to the nearest fire escape in the event of an emergency. Fire hose reels and portable fire extinguishers are situated on each floor to provide coverage for the entire area. Tenants are able to use this first aid fire fighting equipment. Hydrants are installed on every level, in the event that the fire department is required to extinguish a fire. To ensure that the fire fighting water supply is always available, tanks are provided for

both the sprinkler and hose reel/hydrant supplies with pumpsets on standby emergency generator supply. Fire proofing of the structure and fire sealing of the relevant escape routes and shafts ensure that fires are contained to compartments where they can be efficiently extinguished without affecting adjacent fire compartments. Escape from the building in the event of a fire is via two hour fire protected and pressurised stairways and passages to outside ensuring that the tenants are never in any danger.

### PLUMBING & DRAINAGE CONSULTANT'S COMMENT

As construction on the building commenced while it was still occupied by some of the tenants, several operations, including core drilling for drainage ducts, had to be done after hours. In order to achieve a quicker, cleaner and cheaper installation, a number of decisions were made and these included:

First, fix water and drainage piping designed in such a way to obviate chasing of the brickwork later on.

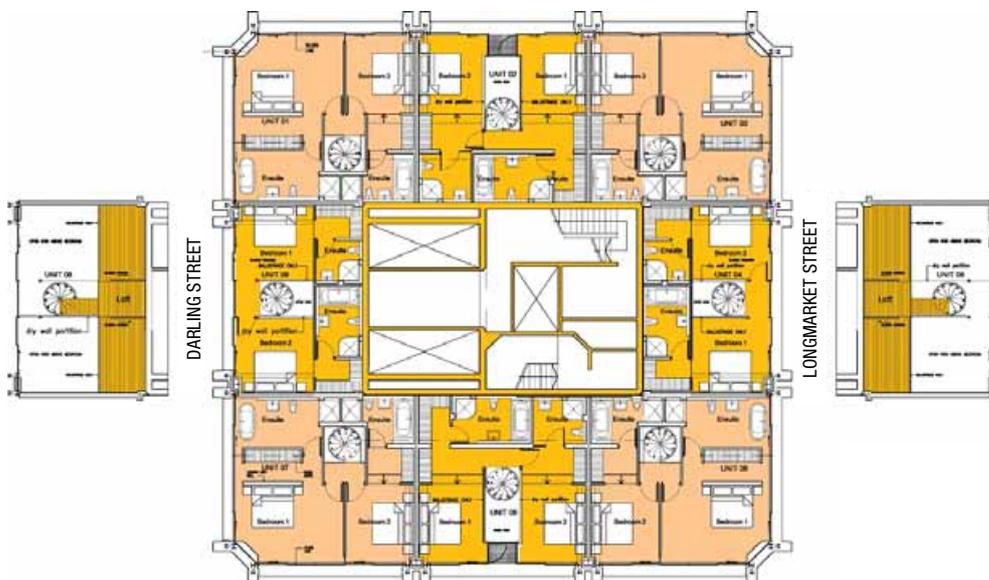
The use of HDPE piping enabled the drainage to be prefabricated in the workshops and brought to the site as required. A further advantage with this system lay in the fact that no duct access panels would be required.

The occupancy of the building had to be converted from office to residential and the existing water and sewage connections were able to be re-used.

### CONCLUSION

The project was completed within the prescribed time frame from inception to handover, but, as importantly, was completed within budget.

### 8 UNITS - PENTHOUSE / MEZZANINE LEVEL



### Advertisers on this Project

- Benatar Consulting**  
Plumbing and Drainage Consultants
- Bergstan South Africa (formerly Liebenberg & Stander)**  
Consulting Structural and Civil Engineers
- Bham Tayob Khan Matunda**  
Quantity Surveyors
- Dennis Fabian Berman Architects**  
Architects
- Elsrove & Pryce**  
Consulting Electrical & Mechanical Engineers
- Euro-Boen Flooring Systems**  
Suppliers and fitters of imported engineered timber flooring boards
- Flush Bathroom Interiors**  
Suppliers of superior imported and local sanitaryware
- Jakoet Tilers**  
Specialist tilers
- NMC**  
Main Contractor
- Skye Demolition & Earthworks**  
Specialists in Earthworks, Demolition and Clearance
- SolutionStation Consulting Engineers**  
Consulting Electrical, Electronic and Rational Fire Design Engineers
- Teck Flooring**  
Suppliers and installers of a range of floor coverings, installed by their own labour force