# DEEP ROOTS FOR A HIGH RISE

A “city in the sky” takes shape as Cape Town’s first skyscraper since the dawn of democracy reaches full height - and aims even higher as a sustainable poster child for Africa’s tall-building rush.

**WORDS** RASHIQ FATAAR AND BRETT PETZER **IMAGES** DHK ARCHITECTS

Portside is Cape Town's first skyscraper since the dawn of democracy. As its rises towards its full height of 139 m, and with its recent 5 Star Green Star SA rating, the city awaits its completion with anticipation. At a cost of R 1.6 billion, the "city in the sky" - as coined by DHK and Louis Karol Architects - comprises 32 floors and is strategically located in the financial district of Cape Town's Foreshore. The project is a collaborative achievement led by a joint initiative between Old Mutual and FirstRand Bank.

## NUTSHELL

**Location** • Corner of Bree, Mechau, Buitengracht and Hans Strydom
**Start date** • November 2011
**Completion date** • First quarter 2014
**Configuration** • 32 floors, of which 20 floors are for 52 000 m² of prime AAA office space, 7 parking levels and 1 200 m² of retail and banking space.
**Overall cost** • R 1.6 billion

## GREAT EXPECTATIONS

Its owners expect it to become the address of reference in the Foreshore. It is expected to quell the threat of suburban flight among Cape Town's largest firms and cement itself as preeminent in the city-region for big business. The Bree Street society expects the building to shore up the bright green shoots of innovative retail spilling up side streets from Long Street.

It is hoped that the 260 bicycle spaces work well enough to become standard in new buildings and that the electric car charging posts prove themselves through frequent use.

Coincidental or not, its construction at a time when the City of Cape Town was in the process of drafting and consulting on the now approved Tall Building Policy may see Portside become a case study for future tall buildings.

01. Even before completion, Portside has become a landmark in navigating the city centre.

## HYDRAULIC CLIMBING FORMWORK SYSTEM

The site has the first hydraulic climbing formwork system in Africa to deal with the challenge of excessively high winds of up to 110 km/h. Silverton based Pre-Form developed the innovative external hydraulically powered self-climbing vertical protection system, which slides upwards as the building progresses. The system acts as a protection to the slab edge as well as a wind shield to three floors at time, improving safety during construction. Once installed, the system operates independently, allowing cranes to be used for other activities.

### A 5 STAR BUILDING

Portside is the only tall building to achieve a 5 Star Green Star SA Office Design rating to date. However, the journey to a sustainably built and managed building entailed far more than plugging in PV panels and rainwater harvesting to a conventional office tower.

In the words of Mike Munnik of AGAMA, sustainability consultant to the project, the complexity of attaining Green Star SA standards necessitated intensive teamwork rather than each profession working in parallel. Input from experts and workers on site was required throughout the design phase, but also throughout the actual construction process according to the Environmental Management Plan (EMP) to ensure that the Green Star SA categories were met at every step of the process. A Waste Management Plan (WMP) binds the contractor to reuse or recycle 70% of the waste generated on site.

### A MODULAR, RECYCLABLE FACADE

Portside's 26 000 $m^2$ glazed facade has been designed for total disassembly, a major achievement and understood to be the first for any tall building in South Africa. A disassembly plan has been drawn up identifying the sequence of removing each panel for later reuse on another building or recycling. According to Munnik, a unitised facade design is a cost effective solution with enhanced quality characteristics as the elements are fabricated under factory conditions and simply installed on site.

The facade elements were designed to be modular and thus it was appropriate to consider disassembly from the outset of the design process. The disassembly plan outlines the approach to start from the top of the building and lift and remove each unitised element at a time, then lower them back into the building. These could then be transported off site either using a tower crane or electric winches mounted on outriggers and monorails, and continuing this dismantling process in a circular downward motion.

Designed by WSP Consulting Engineers, the double glazed facade consists of a series of single aluminium-framed curtain-wall panels comprising heat strengthened Sunergy Azur and clear toughened glass to the inner pane, both supplied by ACG flat glass. The unitised curtain wall consists of storey-high interlocking units supported off the reinforced concrete slab edge.

"Performance of the facade was always a key consideration, as the building aims to achieve a significant reduction in energy consumption, with savings which can be expected to be in the region of 45% less than a similar notional building," says Munnik. Spandrel panels were introduced on the elevations where the heat load build-up was critical. From an aesthetic viewpoint, the elevations are fully glazed - with the spandrel panels behind the glazed unit - thus giving the tall building a sleek appearance, adds Munnik.

## SUSTAINABILITY FEATURES

- Environmental management plan
- Waste management plan
- 70% of all construction waste is either reused or recycled.
- The building's ventilation will provide 150% more fresh air than stipulated in normal standards.
- Optimal vision glazing will provide natural day lighting.
- All four elevations feature adjustable roller blinds.
- Lighting system features light and movement sensors.
- 260 secure bicycle racks with accompanying showers and lockers.
- Grey water and rainwater for toilets.
- The facade is designed to be disassembled and re-erected on another site.
- The efficient energy innovations will reduce tenants' electricity bills by up to 30%.
- The cooler Bree and Mechau street elevations will be fitted with heat-increasing, view-optimising floor-to-ceiling windows.
- The warmer Buitengracht and Hans Strydom elevations will feature unobtrusive, view-optimising, desk-high 750 cm up-stands that significantly reduce heat-load.

## LOCATION, LOCATION, LOCATION

Old Mutual and FirstRand's decision to embrace (and bolster) the new Green Star SA rating will ultimately produce positive spin-offs for property developers. The mandatory provision of parking spaces in central Cape Town, for example, may well fall in future. According to Munnik, "the provision of generous cycling facilities within the building, together with the site location in relation to the MyCiti public transport network, has enabled the total number of vehicular parking bays to be significantly reduced. We see that as public transport becomes more attractive (in terms of network extent, reliability and comfort), the pressure on the provision of parking by building owners will reduce." Bulelwa Makalima Ngewana, CEO of the Cape Town Partnership, says, "We certainly hope that most will be using non-motorised transport as well as public transport.

"Cape Town Partnership is even more excited about the future corporate tenants as this brings people and life to a previously barren corner of the central city and strong support for the exciting retail that is already establishing itself on Bree Street," she adds.

## A BUILDING STORY

Old Mutual's site consolidation at the corner of Bree and Mechau streets began more than 20 years ago. After several false starts over the years, First Rand Bank's need for 25 000 m² of space for a new regional head office sharpened minds as two development teams and two development management agencies tackled the project together for a single client. Bulk earthworks and lateral support commenced in August 2011 by WBHO and Stefanutti Stocks. While these were underway, principal building started in November of the same year, with doors to open in early 2014.

Portside houses 52 000 m² of office space. The rest of the building comprises parking and 1 200 m² of retail and banking space. But if these figures are entirely foreseeable, given the appeal and potential of the site, the building's green achievements mark a real departure from business-as-usual in large building projects in Cape Town.

Landlords and property owners will benefit from energy bills about 30% less than the average for the building of this size. The lighting system will adjust the conditions in accordance to natural light and movement. While energy prices remain volatile,

this is a risk management strategy as well as simple bottom-line thinking.

Workers in the building will receive 150% more fresh air than standards demand, use greywater to flush toilets and have access to showers, among other benefits.

## A GREEN LEASE

The green construction, however, doesn't mean that the building will perform as designed. To this end, the green lease will keep cradle-to-cradle considerations at the heart of Portside's day-to-day management. Michelle du Toit of Old Mutual Property explains, "Green leasing is a huge win-win where you see both operational cost savings and huge productivity increases. [Both landlord and tenant] need to operate [Portside] as a green building and that's where the green lease assists."

## DEALING WITH AN URBAN LANDSCAPE

Tasked with the challenge of the landscape architecture for a tall building like Portside, Clare Burgess of Landscape Architecture, Environmental and Permaculture Design stresses the importance of the ground level interface with people and the urban fabric.

"At street level, the height of the building facade is often not fully comprehended, but from a distance the scale can become overbearing and therefore the detailed design of the landscape needs to address this by providing an intervention to interface with the pedestrian streetscape at ground level," says Burgess. She adds that the impact of a tall building on the urban fabric and surrounding streetscape is greater than with smaller buildings, both in terms of visual and environmental impact due to increased shadow and wind effects, and loss of human scale.

The harsh environmental climate of Cape Town is a challenge for all planting design in the urban context. The planting choices for street trees in Cape Town are extremely limited and there are very few local indigenous tree species that can be used to produce a strong growing, large shade tree. At Portside there was an opportunity to provide large areas of shrub beds in the public realm under the shade of the existing Natal Fig (*Ficus natalensis*) trees on Hans Strydom Avenue. The perfect choice for this area is Natal lily (*Clivia miniata*) , an evergreen, "waterwise" bulb which flowers in spring and produces a magnificent orange flower.

## CONCLUSION

Portside's construction is set against the backdrop of a tough economy but also efforts to preserve the city's skyline by conservative voices in the urban landscape. However, the sustainable innovation and advanced design thinking, rather than its height, may well be what sets this skyscraper apart from other developments in the future.

## SOURCEBOOK

**Leasing** • Viv Delbridge • 082 550 1244 • vdelbridge@oldmutualproperty.com
**Client (joint)** • FirstRand Bank • 011 282 1808 • www.firstrand.co.za
Old Mutual • 021 530 4500 • www.oldmutual.co.za
**Developers (joint)** • Eris Property Group • 021 410 1160 • www.eris.co.za
Old Mutual Property • 021 530 4500 • www.oldmutual.co.za
**Project managers and principal agents (joint)** • SIP Project Managers • 021 511 3040 • www.sippm.co.za
Metrum Project Management • 011 025 5630 • www.metrum.co.za
Absolute Project Managers • 011 233 6880 • www.absolutepm.co.za
**Architects (joint)** • DHK Architects • 021 421 6803 www.dhk.co.za
Louis Karol Architects • 021 462 4500 • www.louiskarol.com
**Landscape architect** • Landscape Architecture, Environmental and Permaculture Design • Clare C A Burgess • 021 671 2532 • clarobel@telkomsa.net
**Quantity surveyors (joint)** • AECOM Davis Langdon • 011 666 2000 • www.davislangdon.com
De Leeuw Group • 021 423 8036 www.deleeuwgroup.com
**Structural, civil and facade engineers (joint)** • WSP Structures • 011 361 1300 • www.wspgroup.com
Nadeson • 021 418 4988 • www.nadeson.net
**Mechanical and HVAC engineers** • Spoormaker & Partners • 012 663 3125 • www.spoormaker.co.za
**Sustainability consultants** • AGAMA Energy • 021 701 3364 • www.agama.co.za
**Urban designers** •Blue Green • 021 685 0684 • www.bluegreenplanning.com
Tommy Brummer • 021 531 8435 • www.info@tommybrummer.co.za
**Contractors** • Murray and Roberts • 011 456 6200 • www.murrob.com


**RASHIQ FATAAR** is the founder and director of the think-tank, Future Cape Town and the CEO of Future Cities Consultants. A proud Capetonian, Fataar is interested in urban economic development, inspirational spaces and exploring the world - its people, landscapes and the next best urban ideas.

**BRETT PETZER** is a graduate of French, Politics and Architectural Studies who is interested in urbanism, journalism and how we talk about cities and space. He currently works in Cape Town for a London based newspaper and is planning to study further in urbanism in 2014.