MEDIA FACT SHEET:

THE RIDGE

Professionals	Company
Landlord	V&A Waterfront
Tenant	Deloitte
Architects	Studio MAS
Engineering Team	Arup
Project Managers	Mace
Quantity Surveyors	Smith & Co
Interior Architects	Paragon Interface
Main Contractor	GVK Siya Zama
Geo-tech engineers	Core Geothech
Landscape Architects	Planning Partners
Acoustics	SRL
Eco-bricks	V&A Waterfront

PROJECT MILESTONES

Date	Description
5 April 2019	Bulk earthworks
3 September 2019	Basement structure complete
31 January 2020	Superstructure complete
13 April 2020	Façades complete
15 August 2020	Beneficial Occupation
1 October 2020	Tenant 100% operational

SUMMARY

The Ridge is a landmark commercial office development currently under construction at the V&A Waterfront.

Located at the hub of a new commercial precinct called the Portswood District, the Ridge is adjacent to Merchant House, the first green office development at the Waterfront lying in between Portswood and Dock Roads.

The Ridge and the adjacent emerging district development realises the V&A Waterfront's development vision of creating sustainable buildings. The vision, termed "***Our Normal"***, will raise the bar on new office block developments not only in the V&A Waterfront, but countrywide.

The new building is designed to meet and exceed the accommodation requirements of global consulting giant, Deloitte, which has commissioned the building as its Cape Town regional office.

This landmark new building will consist of progressive design elements customised to house its occupants in a productive, sustainable and energy efficient manner.

Design ethos

The Ridge is designed to meet the climate and other environmental challenges of the future and reduce building energy and water consumption costs on an ongoing basis. It achieves this by incorporating features such as natural ventilation, thermally activated building structure (TABS) and displacement ventilation (see below).

In short, the Ridge has been designed as a world-class living, breathing building that will enhance the reputation of both the V&A Waterfront and Deloitte as market leaders.

The Ridge offers a GLA of over 8 500 m2 and will consist of four stories of office accommodation and three basement levels for parking. To facilitate and encourage staff movement, the building has an internal atrium that is conceptualised as a street, which runs through the centre of each floor.

The V&A Waterfront is targeting a high Green Star Design and As Built rating under the Green Building Council of South Africa's (GBCSA) Green Star Awards system. At present, this rating represents the highest rating that a South African building can achieve during these stages.

STANDOUT FEATURES – THE RIDGE

Prestige, people-centric and sustainable

In line with the requirements of the client, the Ridge will be a prestigious and elevated high profile building located in a new precinct, which will be conducive to productivity and sustainability.

As a point of departure, energy performance is fully integrated into its design, which maximises natural light, ventilation and manages water and waste resources efficiently. These sustainability measures could result in savings on utility bills of between R12–R18/m2 GLA per month (present value), equating to an equivalent value of between 5-10% of the rental.

In addition to the above features, great emphasis is placed on urban mobility aspects, where employees and visitors will be encouraged to abandon motorised transport in favour of rapid public transport or more sustainable non-motorised modes, including pedestrian and bike.

People-centricity at the core

In line with the philosophy of both the developer and the client, the building has a strong focus on the comfort, safety and productivity of its occupants and the public. This includes:

- **Internal Environmental Quality**
  Significant investment has been undertaken into ensuring the internal environmental quality is as high as possible. See 'Design and Engineering' paragraph below for further detail on this aspect. The quality of the environment is key to wellness and improved productivity in the workplace. Global organisation, the WELL Institute has mapped a set of premier goals to support and advance human health and fitness within a building. The Ridge acknowledges these goals and seeks to emulate many of their outcomes.

- **Universal access**
  The Ridge caters for people with special needs, and has also planned plentiful drop-off facilities and access to walkways and MyCiti bus stops. There will be plentiful parking in the building for staff and visitors.

- **Building safety**
  A culture of human safety is a core value of the V&A Waterfront and the Ridge will manifest in the passive and active aspects of building safety. (See detail below). Passive elements will be informed by rational design and active systems will report to the overall building management system (BMS).

- **Focus on greening, the worker and the visitor**

    - The open ground floor street will make the most of light from the atrium to create a green space in which staff and visitors can feel at ease. Interior plantscaping is being planned for this area. This part of the building will house reception, meeting rooms, a staff canteen and a public coffee kiosk.

      Balconies are planned to encourage employees to be outdoors, sit less at their desks while also providing an attractive cultivated habitat. Planted blaconies will also serve as shaded breakout areas that enhance air quality and general employee wellness.
    - Smaller tea and coffee hubs have been interspersed throughout the building as spaces where staff can decompress and interact with each other.

    - Small pause areas have also been included in the working zones to give staff the freedom to work from where it is most suitable, rather to being tied down to a formal desk. The client requires that the concept of agile working applies and be manifested in the building interior design.

World class interior fitout

The people-centric design philosophy extends to the interior fitout of the building, where an award-winning design company has been appointed by the client to produce interior architecture which will maximise productivity and employee wellness.

The overall design has been influenced by best-practice examples of world-class commercial office buildings such as those constructed for Google and BskyB in London and Co-Op in Tokyo. In addition, one of the most highly regarded 'green' building in the world, currently the Edge in Amsterdam, is home to Deloitte that and raises the bar on new building performance expectations for that client worldwide.

DESIGN AND ENGINEERING

Design and engineering features incorporated into the new building will include such elements as:

- **Ventilation and climate control – pushing new frontiers**

The Ridge is conceptualised as a living, breathing organism, explicitly configured to support health, productivity and worker well-being.

In general, the heating and cooling for the building shall be provided through a combination of passive ventilation technologies that are supported by mechanical air conditioning equipment that is used when required by outside temperatures.

The building can **operate in two modes**-either as a conventional sealed air condition building or alternatively in a passive naturally ventilated mode in favourable weather conditions.

- According to the engineers, natural ventilation is a highly advantageous way of climate conditioning the building, when considering the benefits to health and well-being. It optimises the connection to outside, high quality air and minimises fossil-fuel based energy consumption by avoiding the need to run the building's ventilation and cooling systems.

- Indeed, the building will be naturally ventilated by way of openable windows. A warning green/red light system controlled by the BMS will advise employees whenever possible to open the windows to allow in the outside air.

- The building will also have a *thermally activated building system* (TABS) installed in the floor slabs that regulates temperature by heating and cooling the actual building mass using water pipes imbedded in the concrete slabs.

In general, a central internal 'street' open internal space allows for natural cross ventilation and allows informal connections between people and is described by the designers as a 'natural lung'. A 16-metre high atrium provides a chimney effect from the first floor, drawing air through openable roof vents enabling temperature control inside the building much like the central column of a termite's nest. The top floor is isolated thermally and acoustically from the atrium.

- **HVAC**

Conditioned air for the building is distributed by displacement ventilation which uses the void beneath the raised access floor to circulate the air before it trickles upwards at low volumes before being extracted at soffit level. This system requires less energy to distribute the cool air through the building than air which is distributed at high level as the cool air is distributed in the zone where it is needed and not at a higher point that then has to drop down through the stratified air .

- **Controlling the sun**

The facade wraps around the occupied floor plates and is very exposed to the sun. In order to optimise available natural daylight penetration and views, while minimising direct solar incoming radiation, a bespoke solution was proposed

A sawtooth cross laminated timber (CLT) timber and glass façade incorporates the manually operable windows. The sawtooth shape 'corrects' the orientation of most of the building's

double- glazing so that it faces either north- or southward. This allows for the omission of external shading, and enables occupants to enjoy maximum natural light while minimising heat gain. The opening windows in this façade let in fresh air to circulate across each floor in most locations. Air will move across the office floors, through the open central street, then be ventilated upwards through the air vents in the pods above the atrium, which serve the dual purpose of also supplying incoming natural light.

Consequently, extensive thermal modelling was undertaken by the engineers to determine the exact angle of the 'saw tooth' design for the façade and the most favourable glazing solution.

In addition, soft coated high performance glass will be also be used to minimise the heat of the sun entering the building, while not filtering out light. This is achieved by a speciality coating inside the double-glazed glass panels. This soft-coated glass will only be used in zones as required and defined by the performance modelling.

- **Benefits**

With TABS operational, the building has the potential to naturally ventilate for between 75-85% of the year. This results in a direct saving in HVAC operating energy costs.

The use of natural ventilation vs. conventional HVAC is controlled by the building occupants based on instructions from the overall building management system (BMS), which will tell occupants when the natural ventilation is available. When occupants choose to use the natural ventilation in their zone the BMS will shut off the associated HVAC. The BMS will actively monitor the environmental conditions inside and outside the building to provide this guidance to the occupants. When natural ventilation is not being used, active HVAC will be distributed within the access floor void with 'boosters' available along the building perimeter.

- **Natural Lighting**

Function dictates form. Accordingly, the site is comprehended as an office block located within a precinct of legacy commercial buildings. Hence designers have worked within the constraints of a large rectangular shape.

The architects faced the challenge of maximising natural lighting within in a 4-storey deep floor plate, which could become a dark space totally reliant on artificial lighting. The team hence specified innovative and additional sources of natural light.
These include:

- The central atrium, which direct light into the central street down to level 1. Sunlight is harvested via southerly-canted vent- pods which also serve the dual role as exhaust outlets for warm air when activated.

- Intelligent lighting, which not only incorporates the normal smart controls, but will emulate the circadian rhythm of the human body by changing tone and mimicking the effects of daylight throughout the phases of the day is being explored

- **Façade – new technology for South Africa**

  Another standout feature of The Ridge is the saw tooth 'Zigzag' exterior timber cladding. This will be the first instance of use of cross-laminated timber (CLT) in the façade of a commercial building in South Africa. Far from being simply a whimsical architectural design feature, the purpose of the timber Zigzag is to reduce the carbon footprint of the project described in the section above.

  The timber façade will be constructed using cross-laminated SA pine timber to ensure strength, stability and longevity. The CLT substrate will itself be clad with a sacrificial layer of timber that may be replaced at service intervals after weathering by the elements has occurred.

  Timber, including CLT, brings to the project a substantially lower embodied energy and carbon footprint than any of the other traditional cladding systems, including aluminium, glass, concrete and ROK.

GENERAL SUSTAINABILITY ASPECTS

- **Dematerialisation**

  A number of special technologies are incorporated and these will facilitate a high score under the relevant rating aspects of SA Green Star.

  Interestingly, these will include the use of an estimated 12 000 'ecobricks' – effectively plastic waste-filled PET bottles, specifically the 2 litre 'Coke' type bottle as void forming materials for non-load bearing concrete elements. Ecobricks were filled and compacted with plastic waste and supplied via an initiative undertaken by an environmentally conscious community in Cape Town's southern suburbs. The volume of concrete displaced by void forming is in the region of 24 000 litres (24m3), representing a significant level of dematerialisation and the removal from circulation of 9 000 tonnes of a non-biodegradable stream of plastic pollution by incorporating it into the

building. The downstream environmental and carbon-reduction considerations of this action are significant.

- **Mobility and non-motorised transport**

  Anyone wishing to cycle to work or to use the V&A Waterfront running trail during the day can avail themselves of the showers. There will be secure lock-up facilities for bicycles.

  Due to the location and design of the Portswood precinct, all common destinations required by building users, including shopping, transport nodes and the main Waterfront are a five minute walk away.

- **Resources harvesting, renewables and utilities**

  The Ridge includes rain water harvesting and grey water treatment facilities, that are co-located in the basement. The harvested water is treated to near potable standards, to be used for irrigation and WC flushing.

  The development will also include all the water saving latest technology as per City of Cape Town and national authority guidelines both inside the building and in the urban park aspect.

  The baseline potable water requirement for the building will be municipal with a 24 hour reserve supply located on site.

  The roof will harvest solar photovoltaic power via the placement of PV panels on the roof facing the optimum direction. The overall building plans are for a 750 kVA power requirement and the PV power will be grid tied, but not expected to feed back into the grid. The building is expected to generate around 25% of its own energy requirments.

  A backup generator in the basement will actively trigger and handle the cases of a national grid failure.

- **Reuse and recycling**

  Wherever possible, natural materials are being used in the construction to ensure that the Ridge is environmentally sensitive. Some of the rocks unearthed during the excavation stage will be reused in the sub-structure of the building, and others will be used in surrounding gardens.

  Recycling stations will be distributed throughout the building in line with the V&A Waterfront recycling policy.

- **Acoustics**

  As with other new buildings in the V&A Waterfront, an acoustics engineer has been involved from the beginning to ensure full consideration is given to building acoustics that take into account the need for consulting, meetings, general working, and the need for silence in some spaces.