# scape

SA'S HOME OF DESIGN, BUILD AND MAINTENANCE

## COFFEE TABLE EDITION

# INNOVATION & COLLABORATION

## HPI D-SCHOOL AFRIKA

**Size:** 5500 m²
**Location:** Corner of Woolsack and Cross Campus Road, Rosebank, Cape Town, Western Cape

**If you've driven along the University of Cape Town's campus this past year, you would have seen the steady rise of the triangular-shaped HPI d-school Afrika with its futuristic design and large-span lattice shell roof. KMH Architects designed and co-created the innovative Hasso Plattner School of Design Thinking Afrika with many stakeholders, and the end result does not disappoint! Detailing the project's design all the way through to its delivery, including its 6-Star Green Star-rating sustainability targets, read along to discover the making of this exquisite architectural and academic icon.**

**Brief**
Joining its sibling schools at Stanford University and Postdam University, the Hasso Plattner d-school Afrika is the third Design Thinking school in the world and the only institute in Africa of its kind. Offering undergraduate, postgraduate, and organisation training programmes, the facility aims to equip bright minds in the practice and mindset of design thinking, furthering innovation within complex socio-political and economic contexts. The d-school was established in 2015, where it was temporarily located on the University of Cape Town (UCT) Graduate School of Business' V&A Waterfront campus. The Hasso Plattner Foundation recognised the need for expansion by funding a dedicated new facility on the Middle Campus of UCT. Progressive and visionary in nature, the design of the new d-school sought to establish the academic building as a destination synonymous with innovation, future-forward research, and design-led creative thinking. Therefore, it was an absolute must for the building to achieve a 6-Star Green Star from the Green Building Council of South Africa (GBCSA) for the category of public and education buildings.

In October 2018, exactly four years before the project's completion, the building was commissioned through an invited competition. Apart from the institute's overarching aspirations for the building and the fact that the site had already been selected, the brief was incredibly open. So much so, that the size of the building and what it should house inside weren't clearly stipulated. Rather than submit a design concept that would invariably miss the mark, KMH Architects proposed a collaborative design process to develop the brief and building design through co-creation and co-design with the d-school and UCT stakeholders. Almost immediately a four-year synergistic journey began, merging the disciplines of design thinking and architectural design to build the HPI d-school Afrika.

**Research**
The team first visited the Stanford and Potsdam d-schools to meet with the leadership, observe the teaching programmes, and see how the spaces in the respective facilities were being utilised. Upon their return to South Africa, a series of co-creation workshops took place to further define the approach and brief. Some of the key design objectives born out of these sessions include:

- The building should integrate with the university's contextual fabric while still externally reflecting its unique function and status as a teaching platform.
- The structure should communicate that it offers a different kind of learning experience giving students the feeling that it's an environment to test, fail, think, and act differently.
- Students should see collaboration and co-making happening in flexible and configurable teaching and learning spaces.
- The building should support communal working, co-creation, the use of vertical surfaces, outside teaching activities, and gatherings.


**Design concept**
The building itself is envisioned to be a learning experience for users by showcasing its sustainability features and telling its environmental story through informational signage and digital displays of its energy and water usage. The principle of 'teaching building' ensures that the d-school can be a vehicle to visualise sustainability, involve users in the performance of the building, draft new behavioural norms, and underline the profound story buildings tell about using the earth's resources and the ecosystems that sustain us.

Teaching design thinking is both collaborate and reflective, necessitating the need for 'me' and 'we' spaces. Above all, since the building forms part of a broader university community, the design needed to incorporate democratic open spaces to welcome the larger body of students. This 'us' space was realised through a centralised, roofed 'town square', where the roof structure both encloses an atrium and reaches out, providing shelter over an external courtyard located mid-away along the existing footpath across the site. The 'we' spaces make up the four teaching and learning studios, while the 'me' areas take the form of three reflection spaces at either end of the building.

"Teaching **design thinking** is both **collaborate** and **reflective, necessitating** the need for **'me'** and **'we'** spaces."

**Structural considerations**
As the d-school and its programmes evolve, the teaching and learning studios would need to evolve with them. Therefore, significant spatial flexibility was required to allow the school to easily re-purpose these spaces in the future. To achieve this, careful consideration was given to the location of permanent structural elements. The structural cores containing vertical circulation, bathrooms, kitchens, service risers, and shear elements form a spine along the southern edge of the building footprint, allowing large-span orthogonal space along the northern and western edges of the building kept free of any structural or building service constraints.

**Site and shape**
The d-school is built on a small triangular site, with a radiused hypotenuse shaped by an existing road lined with an avenue of beautiful cork oaks. The triangular building's service spine tracks this radius, forming the southern side of the school. Large-span orthogonal studios make up the north and west sides of the triangular, pushing all the geometrical complexity of the site into the centre of the triangle. This was architecturally and structurally resolved through a singular, free-form lattice shell glass and steel roof. The form of the room was derived by abstracting the site's geometry and topography and encompassing the existing footpath. This translates into a seamless experience of landscape and building along the southern boundary where the site opens onto campus.

**Unpacking the design**
The building design went through a number of iterations to ensure that, when viewed from Rhodes Drive, the d-school would appear as a modest two-storey structure above ground, remaining in keeping with the adjacent Woolsack Residence and existing avenues of mature trees. However, since the building was developed to make maximum use of the site's significant eight-and-a-half-metre fall, it actually provides four storeys, all entered off grade from the southern circulation spine.

**Level One**
The lowest floor, Level One, is a naturally ventilated semi-basement accessed by vehicular traffic off Cork Oak Road. This floor provides parking for 22 cars, five motorcycles, and ten bicycles. Six of the car parking bays are prioritised for electric or hybrid vehicles and are provided with charging stations. In addition to parking, the rainwater tank farm, plant rooms, and refuse room are accommodated here too.

**Level Two**
While being partially retained below ground on two sides, Level Two is elevated above ground along its northern façade. This floor offers shared 'us' space for the benefit of the broader university community. The floor is accessed from the east and opens up onto an open-plan space containing a café serving food

## MEET THE TEAM

**Client:** Hasso Plattner School of Design Thinking Afrika and the University of Cape Town
**Architect:** KMH Architects
**Landscape architect:** Tarna Klitzner Landscape Architects
**Project manager and principal agent:** Fluid Projects
**Roof specialist engineer and contractor:** Leaf Structures
**Civil engineer:** Welby-Solomon Consulting Engineers
**Acoustic engineer:** SRL South Africa
**Electrical engineer:** Ifindo Consulting Electrical and Mechanical Engineers
**Mechanical and wet services engineer:** WSP Group Africa
**Fire engineer:** De Villiers & Moore
**Green building consultant:** PJ Carew
**Occupational health and safety consultant:** Safetycon
**Transport consultant:** ITS Global
**Interior designer:** Design Lab
**Quantity surveyor:** RLB Pentad Quantity Surveyors
**Main contractor:** Haw & Inglis

KMH ARCHITECTS
www.kmh.co.za
@kmh_architects

## SUPPLIERS

**Photovoltaic solar panels**
Solareff
021 550 0907

**Aluminium**
Aluplan
021 701 2002

**Sandstone cladding**
Marble Classic
021 555 1592

**ACM and sunscreens**
First Africa Holdings
021 851 8500

**Polished concrete**
180 Degrees Concrete
Floor Services
021 981 9832

**Partitions and ceilings**
CeilWall
021 386 2552

**Lighting**
Bellco Electrical
021 440 7100

**Sectional overhead façade doors**
TightFit Garage Doors
& Automation
082 875 3354

**WC partitions and whiteboard**
Façade Projects
021 905 4474

**Balustrades**
Abelia Metal
021 905 4993

**Roofing**
Leaf Structures
011 462 5701

**Steel**
Mazor
021 556 1555

**Paint**
Midas
021 461 8324
Marmoran
011 887 0536

and coffee with a generous seating area that spills outside onto a north-facing terrace. Beyond the café are two large multi-purpose rooms, bathrooms, cyclist showers and changing facilities, and the remainder of the building plant rooms.

**Levels Three and Four**
Levels Three and Four accommodate the core functions of the d-school. Both floors are arranged around the central 'us' space comprising the atrium and roofed courtyard. The southern façade of the atrium incorporates three large glazed sectional-overhead doors, allowing the atrium and courtyard to connect seamlessly in one larger space when the doors are opened. The main entrance into the school is on Level Three off Cross Campus Way. Two learning and teaching studios have been placed along the northern side of the atrium which can be joined into one large space by opening a demountable acoustic wall.

There are no cellular offices. The staff space is located alongside the main entrance route with a 'flattened' spatial hierarchy that encourages innovation and collaboration. The fit-out combines sitting and standing desks with purpose-made agile furniture and break-away alcoves. A Huddle Room separates the staff space from the atrium and functions as a semi-permeable boundary that can be accessed from either side as needed. On the eastern corner of the floor, an open-plan 'chill space' gives students a place away from the bustle to reflect. Level Four accommodates two additional studios and the HPI Lab, a postgraduate facility funded by the Hasso Plattner Institute. The second floor also accommodates the main reflection space with views of Upper Campus and Devil's Peak. Small break-away balconies are provided on both levels, allowing students to take short breaks from the fast-paced studio sessions.

**Sustainability**
A collaborative and inclusive co-design process had to be adopted from the start to achieve the sustainability target of a 6-Star Green Star New Build rating. One of the building's more innovative design features is the use of Thermo-Active Building Systems (TABS). This solution employs heated or cooled water which is run through pipes cast into the concrete slabs to harness the power of the building's thermal mass and radiant temperatures to achieve user thermal comfort.

There is a delicate balance between having enough natural lighting and external views, which assist in occupants' comfort and reduce the need for artificial lighting, and creating too much heat gain and glare in a building. The atrium uses fritted glass in the lattice shell roof to reduce the solar heat and glare while still allowing comfortable daylight levels. The façade utilises solar performance glass in conjunction with carefully positioned external passive shading elements.

The d-school is one of the first buildings on the UCT campus to implement a PV system on its roof. While this does not make the building self-sufficient, it greatly reduces its reliance on grid power. The building's base electrical energy usage has also been targeted through efficient light fittings combined with daylight and occupancy sensors. As the flexibility of space is so important, the lighting and corresponding sensors are digitally addressable which allows the building to adapt as needed to meet the changing demands of its users and climate over time.

Harvested rainwater, water-saving devices, and electronic flushing all help to reduce the demand for municipal water. Energy and water metering is also provided on all major systems to assist the building managers with tracking and optimising operational efficiency. Indoor environmental quality is maintained through a mechanical solution that provides a combination of natural and mechanical ventilation with 100% fresh air, carbon dioxide monitoring, adequate daylighting, glare reduction, generous external views, low volatile organic compounds for all internal finishes, and suitable acoustic quality.

**Materials**
The character and materiality of Middle Campus, where prominent buildings like the Kramer Law Building and the Woolsack Residences were built in the early 1980s, differ significantly from Upper Campus. Wheaten face brick, brutalist concrete, and Lutyens plaster make up the predominant material palette. But in recent years two new notable buildings, the School of Economics and Masingene have softened this palette, introducing structural steel elements and flat roofs into the campus character. The d-school takes its cue from these two fine buildings, making use of a similar colour palette and materials, with the exception of face brick and Lutyens

## SUPPLIERS

**Timber flooring**
Oggie Hardwood Flooring
021 510 2846

**Acoustic baffles**
Ecophon
012 657 2800

**Furniture**
Cecil Nurse
0861 633 423
Angel Shack
021 462 6752
Ergoform
021 461 2251
Chair Crazy
021 465 9991

**Custom furniture**
Coney Timbers
083 259 6220

**Custom furniture and joinery**
RMS Shopfitting
021 510 2133

**Cork wall**
I Am Green
021 5101 567

**Wallpaper**
Cara Saven Wall Design
082 953 6246

**Signage**
Ultrasigns
021 510 3200

**Custom mobile whiteboards**
Façade Projects
021 905 4474

**Lighting**
Wireworld
021 950 6960

**Rugs**
Hertex
021 948 4764

plaster which have been replaced with locally sourced sandstone cladding, providing a similar but elevated finish. The external finishes, comprising structural steel, aluminium sun shading, sandstone cladding, and glass and planted screens result in a building that integrates into the campus's evolving character.

**Interior**
From the outset, interior architecture was understood to be one of the key design means to encourage creativity among students. The interior detailing consistently and deliberately exposes and celebrates building services, junctions, connections, and materials. I.e., what things are made of, how they are made and connected to each other, extending the theme of a 'teaching building'. The building's concrete mass must be exposed in order for the TABS design to work and provide radiant cooling. Thus, the off-shutter concrete soffits have been exposed and the vast majority of the floors are made of fine polished concrete. This, combined with off-shutter columns and an exposed steel secondary structure, forms the foundation of the interior aesthetic. All studio walls are painted white and many faced with vitreous enamel white boards. These elements create an artist's studio look, where finishes are resilient, not overly refined, and tacitly give permission to be creative.

The d-school 'red' is an iconic part of all three HPI d-schools' character. This vibrant colour has been threaded throughout the building in various tertiary elements offset against the raw off-shutter and polished concrete finishes. Finally, light timber and a range of secondary colours are introduced through circulation spaces, bespoke furniture items, and graphics.

**Closing remarks**
The new d-school building will form a centre of excellence at UCT and provide an environment in which collaboration and new ideas can flourish. In keeping with the ethos of the d-school, the project was made possible through innovative and collaborative thinking and teamwork. This integrates well with UCT's goal of being a 'living laboratory', a campus where students and staff can interact with research and real-life examples in their fields – in this case, an innovative building, designed, fabricated, and built through collaboration, with environmental sustainability at its core.

IMPRESSIONS.
NOW.
agora 202
agora

**Size:** 1350 m²
**Location:** 202 Lower Main Road, Observatory, Cape Town, Western Cape

**First impressions count, and this bold beauty certainly manages to capture bystanders' attention. Honouring the colours and plastering techniques used in the vibrant suburb of Observatory, Agora Apartments is built to blend in while standing out from the crowd. Designed by André Krige and Theo Kruger of TwoFiveFive Architects this striking building incorporates ingenious design techniques on its façade to integrate into its natural and architectural environment in Cape Town.**

**Brief and background**
Located in the complex socio-economic suburb of Observatory with its rich history and cultural diversity, the Agora Apartments demanded a high level of community involvement and public participation during the design process. The expectation from the outset was a building that would be contextually relevant and financially viable. It was also important to deliver an offering that would transcend the market 'norm' for the area, not just to those who are familiar with Observatory, but to the broader city too.

As such, the brief was to design a future-focussed building created for the 'now' (Agora means 'now' in Portuguese). The building needed to provide as many residential apartments as feasible and at least one parking bay per unit. The apartment block was going to be rented out to a target market composed of 'young professionals', and therefore needed to meet that design objective.

**Design concept and execution**
During the development planning stages, the surrounding environment comprised predominantly single-storey structures. However, the suburb's context changed drastically over the past three years, and this played a vital role in the subsequent scheme. To maximise the feasibility of the design and remain within the statutory development controls of the stand, the proposed scheme required nearly six levels above ground, built to zero-metre building lines, on four boundaries.

**So, the following questions remained:**

- How can one remain sensitive to the scale of the buildings in the area?
- How does one relate to the context in a manner that is familiar but fresh at the same time?

Since it was evident that the apartment scheme could not be made smaller, the resulting design concept was simple: 'Let's hide it'. The architects used a drone to capture footage of the site's context and then extrapolated contextual data to create a form of architectural camouflage for the façade. These photographs were aggressively pixelated and reduced to a base colour scheme for the building envelope. One façade was designed to be contextually relevant in relation to the mountain backdrop, and the other to celebrate the harbour beyond. TwoFiveFive Architects went even further in their treatment of the façade, introducing a range of diverse plaster techniques found within a one-kilometre radius of the development, including everything from fish scales and scallops through to banana plaster. This variety of 'old' plaster techniques required the involvement of local plaster artisans to train the young team on-site.

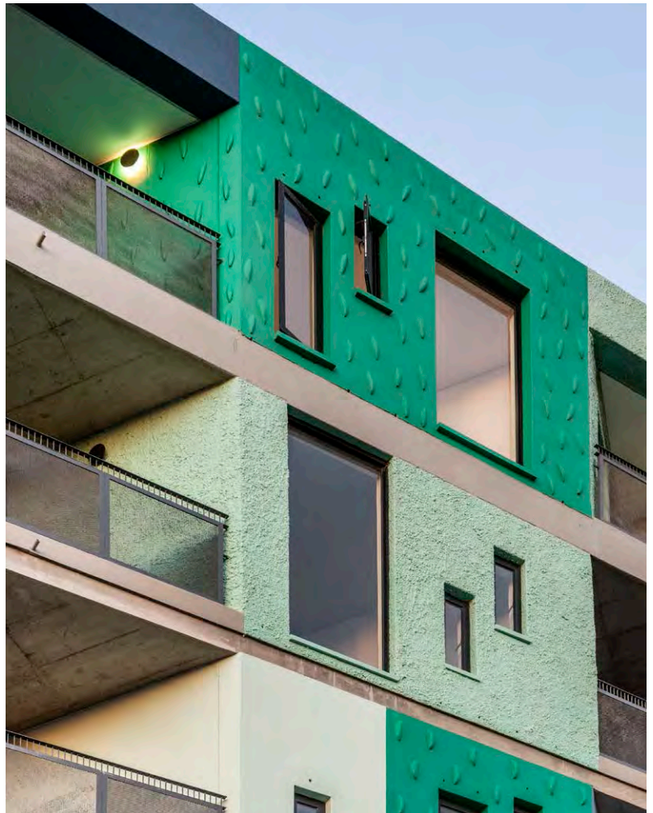
## MEET THE TEAM

**Architect and principal agent:** TwoFiveFive Architects
**Structural engineer:** MISC Engineering
**Fire consultant:** Frame
**Mechanical engineer:** De Villiers & Moore
**Electrical engineer:** Frame
**Quantity surveyor:** Peregrine Quantity Surveyors
**Main contractor:** HFO Construction
**Photographer:** Paris Brummer

TwoFiveFive Architects
**www.twofivefive.co.za**
@255architects








## SUPPLIERS

**Paint**
Plascon
021 505 2400

**Tiling**
Mazista
021 511 6640

**Lighting**
Spazio
011 555 5555

**Aluminium windows and doors**
Glassmen West Coast
021 552 4862

**Steel kitchens and cupboards**
Kink Design
083 463 8649

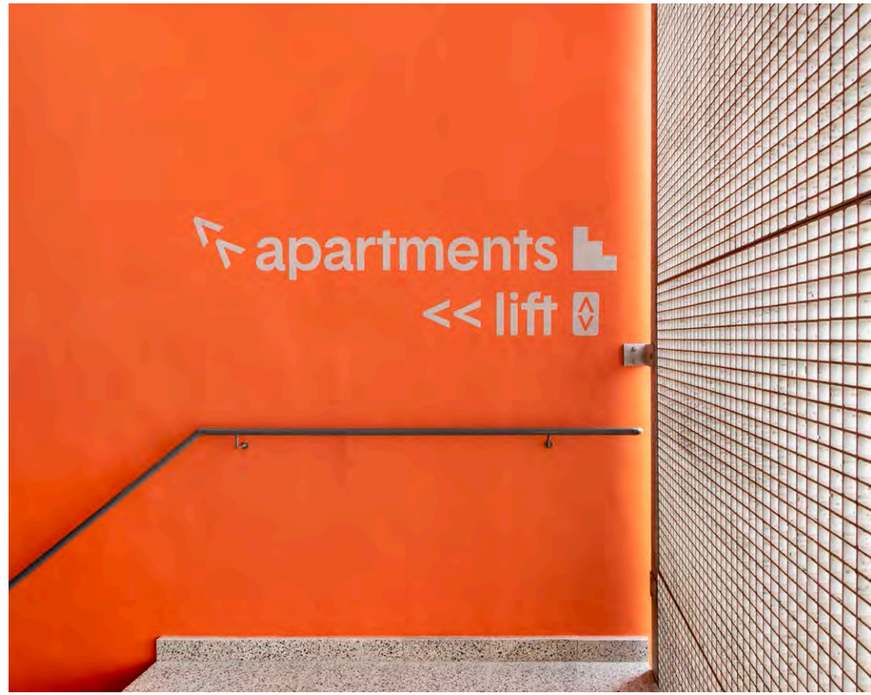
**Custom counters**
Notation Design
079 772 9340

**Sanware**
Geberit
011 444 5070

**Taps and mixers**
Hansgrohe
086 1111 941

**Ironmongery**
QS Products
011 792 3334

"TO FURTHER ENFORCE THE **CONTEXTUAL RECOGNITION,** EVERY **PLASTER TECHNIQUE** FOUND WITHIN A 1KM RADIUS OF THE DEVELOPMENT WAS **INTRODUCED** INTO THE **FAÇADE."**

A retail space was introduced alongside the public entrance to the apartments to activate the pedestrian edge on Lower Main Road. This, combined with new trees on the Nansen Road sidewalk, served to soften the public engagement of the scheme. Lastly, setbacks were created (some over kitchens and others recessed into the façade) for natural light and ventilation on the zero-metre building lines, further enhancing the quality of life within the apartments.

**Interior design**
For the interiors, the team wanted to support local design as far as possible. Custom light fittings were commissioned by designers like Joe Paine, custom terrazzo tops in a playful green colour were manufactured by Notation Design, and custom-made steel kitchens and lighting were commissioned from Kink Design. The apartment block's brand identity was designed by Carina Comrie from Büro Comrie which, in turn, was introduced into the wayfinding and signage elements.

Furthermore, the architects introduced purpose-made door handles with cheeky yet positive messages throughout the building. A few noteworthy examples include, 'Go Get Them!' and 'Hello, Good Looking'. Agora Apartments has become an icon in Observatory and is not only incredibly well received by the community but also its new tenant.