

Civic

AN ANTHOLOGY OF SACRED, HEALTHCARE, EDUCATION
AND COMMUNITY SPACES

Renewed Faith: *Al-Ansar Mosque*

Where The Heart Matters: *National Heart Centre*

Breaking Boundaries: *Bedok Integrated Complex*

A Green Beacon: *Gateway Theatre*

Blazing Ahead: *Tuas View Fire Station*



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AN ANTHOLOGY OF SACRED, HEALTHCARE, EDUCATION
AND COMMUNITY SPACES



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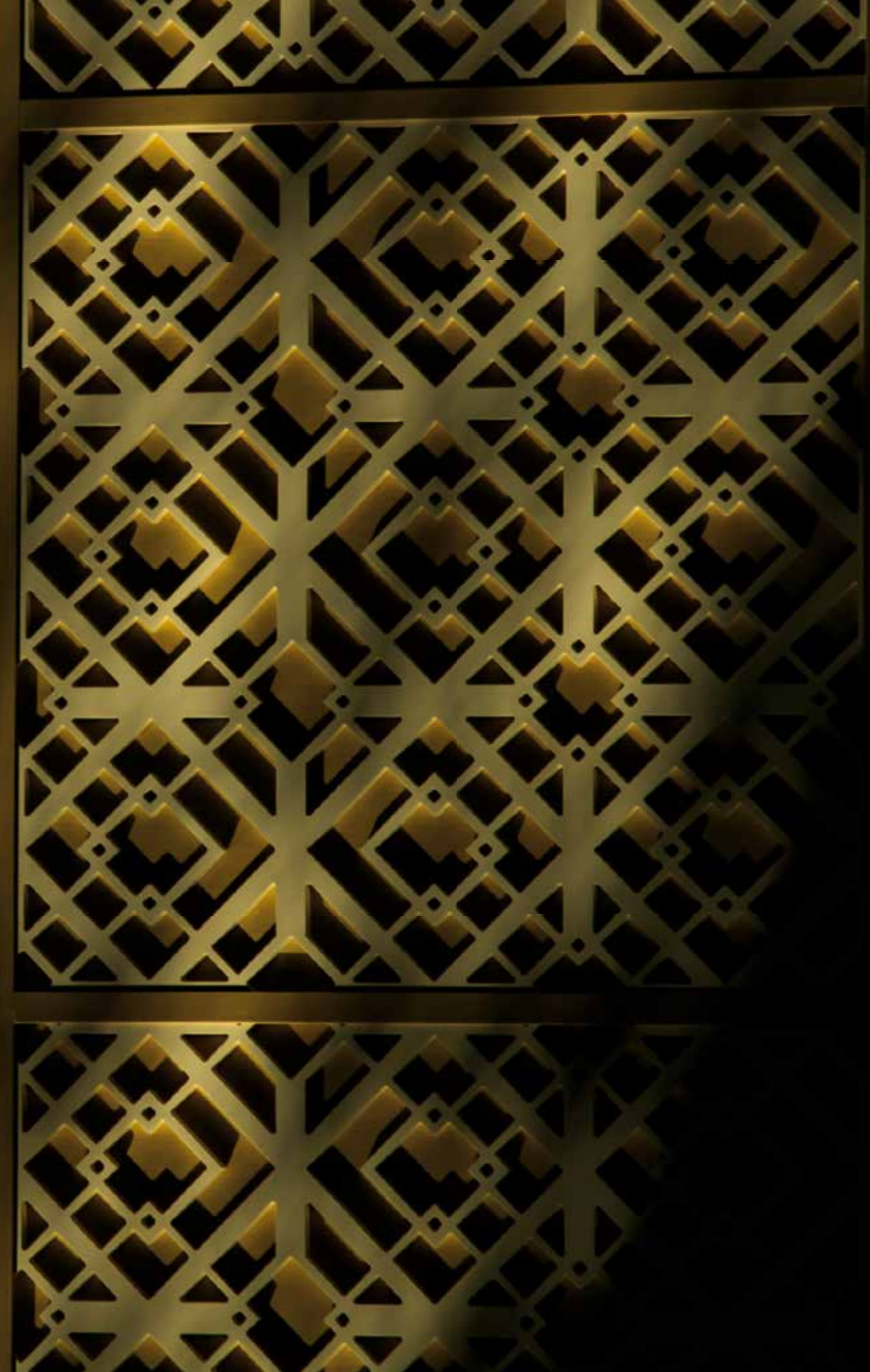
- 004 — SACRED PLACES
- 008 — RENEWED FAITH
Al-Ansar Mosque
- 016 — NEW TYPOLOGY
In conversation with Kurjanto Slamet
- 020 — COMMUNITY LIGHT
Trinity @ Paya Lebar
- 030 — PRAYER IN THE PARK
Eco-Park Musolla
- 040 — HEALTHCARE
- 044 — WHERE THE HEART MATTERS
National Heart Centre
- 052 — EXPERIENCE DESIGN STUDIO
- 056 — MARK & KEN
Mark Wee and Ken Yuktasevi,
directors of experience design
- 058 — THE GIFT OF LIFE
Bloodbank @ Woodlands
- 062 — HOME & FAMILY
HDB Punggol Branch Office
- 066 — EDUCATION
- 070 — INTEGRATION, OPTIMISATION AND
SUSTAINABILITY
MDIS Residences @ Stirling
- 078 — HEADING UP A SCHOOL
In conversation with Lim Weng Kien
- 090 — COMMUNITY
- 094 — BREAKING BOUNDARIES
Bedok Integrated Complex
- 104 — CIVIC CONCERNS
In conversation with Ashvinkumar
Kantilal and Andrew Lee
- 108 — A GREEN BEACON
Gateway Theatre
- 118 — BETTING ON SUCCESS
Singapore Turf Club Parade Ring
- 126 — SHADES OF GREEN
Singapore Turf Club Grandstand
- 136 — SPOTLIGHT: FIREPROOF ENGINEERING
In conversation with Elton Ng
- 140 — BLAZING AHEAD
Tuas View Fire Station
- 148 — RHYTHMS OF LIFE
Indian Heritage Centre
- 156 — LIVING LIBRARY
Singapore National Library



S A C R E D



S P A C E S





ARCHITECTS AND DESIGNERS PLAY A MAJOR ROLE IN HELPING DEFINE AND CREATE THE AMBIENCE OF THE SACRED SPACES OF DIFFERENT FAITHS

In Singapore's multi-cultural, multi-religious society, every community has its own places of worship. Often the sacred spaces of different faiths sit side by side – a reflection of the religious harmony and cooperation that helps build the nation's identity. Architects and designers play a major role in helping define and create the ambience of these spaces. The four different spaces discussed here reflect the complex and unusual challenges faced by ONG&ONG.

Al-Ansar mosque in Bedok serves a growing and increasingly elderly Muslim community that was emotionally attached to the old mosque. The architects had to find a way of preserving the old elements while adding space to accommodate contemporary needs. They came up with a highly original way of enclosing the original structures of the dome and minaret within a steel girder frame, which creates an unusual pattern and texture on the façade. The Eco-Park Musolla in Setia Alam, in contrast, was designed to meet the needs of a new community, and the architects were able to persuade them to accept a relatively unorthodox design that also retains the necessary features of a traditional musolla.

Trinity Church in Paya Lebar presented the ONG&ONG lighting design team with a unique challenge, which was to create a light display that connects the building with the community, while also inspiring feelings and emotions. They developed an animated light show that enables the church to communicate their messages with colours and words. Touch Community has been reaching out to help people for over two decades, and their Gateway Theatre is a novel way to engage the community. The architects designed a nine-storey arts centre interspaced with sky terraces and performing spaces that are welcome to all.

RENEWED FAITH

A MOSQUE THAT
CONNECTS TO
THE PAST WHILE
LOOKING FORWARD
AND CONTRIBUTING
TO COMMUNITY.





The Al-Ansar Mosque has long served the Malay community in Bedok. It was among one of the first mosques to be built under phase one of the Mosque Building Fund Programme and, following its completion in 1981, could accommodate up to 3,500 people. The tall minaret and distinctive blue onion-shaped dome have been a familiar icon to the residents of Chai Chee and Bedok Estate. It was announced by the Mosque Chairman in October 2011 that the mosque would undergo major renovation from July 2012. The growing Muslim community needed a larger mosque that could accommodate up to 4,500 people, with improved access for the elderly.

A national competition was organised by the Islamic Religious Council of Singapore via the Singapore Institute of Architects to decide who would rejuvenate the aging building. KD Architects, now part of the ONG&ONG Group, was declared the winner, with their design that retained features linking architecture with past traditions, while also serving contemporary, future needs and its community.

The challenge of the existing site's topography had to be taken into account, as the mosque sits on the junction of two roads on a sloping site. The design also had to serve the spiritual, social and physical needs of the local Muslim community. Contemporary mosques in Singapore have to respond to a diversity of activities that include Mosque-Islamic

learning, social development, family and youth development as well as religious services and referrals.

A mosque also has to embody particular symbolic elements that represent the core beliefs and values of the Muslim community, while at the same time taking account of the multi-cultural environment in which it exists. The mosque had to be designed so that it appeared open and inclusive, in order to reach out to the community at large. Although there was a clear desire to have a mosque that represented the contemporary, forward-looking aspects of Islam, there was also a desire to retain the traditional minaret and domed prayer hall as a link with the past.

The main design feature devised by the architects was a large covered community plaza at the front of the site, created by a podium consisting of a multi-purpose hall. It embraces the prayer hall and minaret and appears to float above the plaza, that serves multiple functions: for informal gatherings, extended worship, and social events. The new volume floats above the plaza and houses new programmes. Its facilities include a new 300-seat auditorium and function rooms that may also be used as an extended prayer space for up to 460 people.

The steel frame façade is articulated into an intricate pattern inspired by the arabesque. By taking the geometry of the rotated square and layering it upon secondary structures and external screening, a delicate pattern is created. The façade has been designed to allow natural



THE NEW STRUCTURE OPENS UP THE AREA AND PROVIDES AN IMPROVED VISUAL CONNECTIVITY, AS WELL AS PHYSICAL ACCESSIBILITY, TO THE SURROUNDING COMMUNITY: IT IS DESIGNED TO BE INVITING AND TO ENCOURAGE PEOPLE TO ENTER AND UNDERSTAND THE ISLAMIC RELIGION.





daylight to filter into the inner spaces, while also enabling air flow to naturally ventilate the building like a porous, open volume.

Recognising the community's attachment to the minaret and blue-domed prayer hall, the two structures are retained by reconstructing and integrating them into the overall design. The existing minaret is celebrated as a focal point, and the blue dome is given aesthetic of lines on the exterior, while the ceiling was modified to express the eight-cornered star generated by the juxtaposition of two geometries.

The new structure is designed to be inviting and to encourage people to enter

and join in the activities taking place there. The covered plaza will serve a multitude of functions that offer possibilities for interactions, as it constitutes an 'urban room' where the Muslim community can come together. A roof terrace was also created at the top of the new enclosure.

A series of skylights mediate the interfaces between the two states and a visitor will constantly experience the presence of both – akin to a continuous dialogue between tradition and modernity. The subtle use of pastel blue and yellow to highlight certain components of the

building, such as the façade, whilst the internal courtyards maintain the mosque's original colour schemes.

With its new design, the completed mosque will surely come to represent an oasis that draws all into its embrace!

— AL-ANSAR MOSQUE, SINGAPORE
DIRECTOR Kurjanto Slamet | FAÇADE DESIGNER
FARM | CIVIL & STRUCTURAL Web Structures
Ptd Ltd | MECHANICAL & ELECTRICAL Cesma
International Pte Ltd | QUANTITY SURVEYOR
Barton Bruce Shaw Pte Ltd | PROJECT
MANAGEMENT SIPM Consultants Pte Ltd |
MAIN CONTRACTOR Khian Heng Construction
Pte Ltd



What do you consider the greatest challenges when asked to design a sacred building: church, mosque or temple?

Kurjanto: Concerning the Al-Ansar Mosque, the project was an open competition. Thus, the main challenge was that there was no precise design brief except to provide the space and numbers. Being a sacred institution, we had to consider what we could change? We then began to consider how we could use this as an opportunity to make people more aware of the Islamic religion within a multi-cultural society.

In tackling the upgrading and re-designing of the Al-Ansar mosque, what did you initially see as the strongest challenge?

Kurjanto: We saw this as especially important in that most of the population are non-Muslims; the design should help them understand the Islamic culture and religion. Hence, we wanted an open and gateless mosque. Convincing the client that the plaza should be a semi-public space was challenging.

Given that there are features that are fundamental to any mosque, how do you as an architect begin to factor in individuality and identity to the particular mosque?

Kurjanto: It is a myth that the mosque has many features fundamental to its architecture. The only element that must be



present in a mosque is the mihrab that the congregation must face when praying.

What design feature defines and distinguishes the new Al-Ansar mosque?

Kurjanto: The community plaza that has been included to create an open urban room is probably only found in the Al-Ansar mosque. Besides that, the facade with its arabesque pattern was uniquely designed for Al-Ansar.

What other kinds of civic projects have you been responsible for, and which did you find the most challenging and why?

Kurjanto: Al-Ansar mosque is probably the only civic project I have done so far. It is most enriching doing a civic project of this nature, knowing that the result could impact the community by influencing the way people perceive the mosque and also how the community is able to use the space connected to the structure.

What makes you most proud of about it and why?

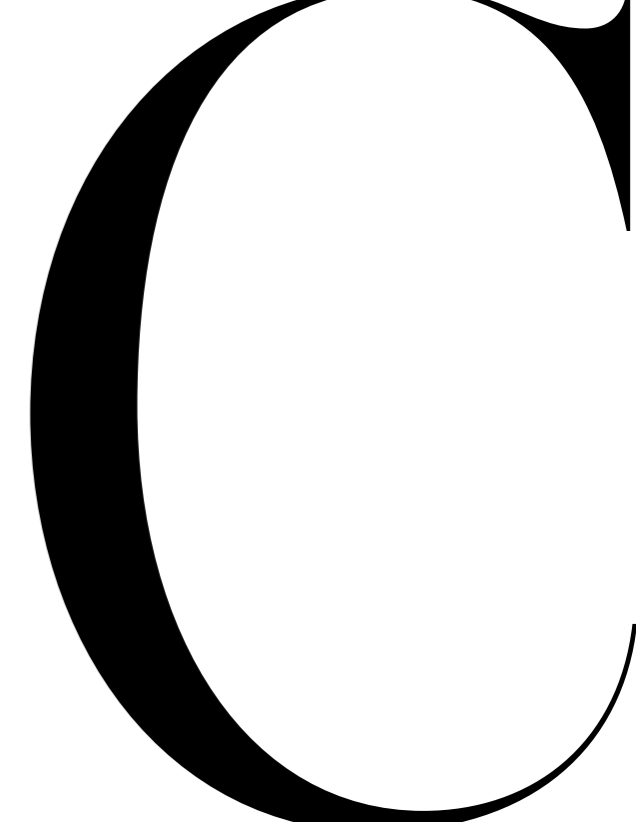
Kurjanto: Al-Ansar mosque stands out with its new typology for the mosque by having an open plaza. The project hopes to change the perception of people towards the Muslim community. When architecture changes lives and community behaviour, it can become a powerful tool in shaping the city.

NEW TYPOLOGY:
KURJANTO TALKS ABOUT
THE CHALLENGES AND
TRIUMPHS OF DESIGNING
THE AL-ANSAR MOSQUE
REDEVELOPMENT



❁
THE DESIGN
SHOULD
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COMMUNITY
LIGHT
A SYMBOLIC REPRESENTATION
OF THE CHURCH'S MESSAGE



When Paya Lebar's Trinity Church was unveiled for the first time, the lighting display caused much excitement. Light, as a symbol illuminating the word of God to the faithful, has been used as an integral part of art and architecture for centuries. The lighting design team from ONG&ONG has managed to seamlessly blend both art and architecture through the palette of colours used to illuminate Trinity Church.

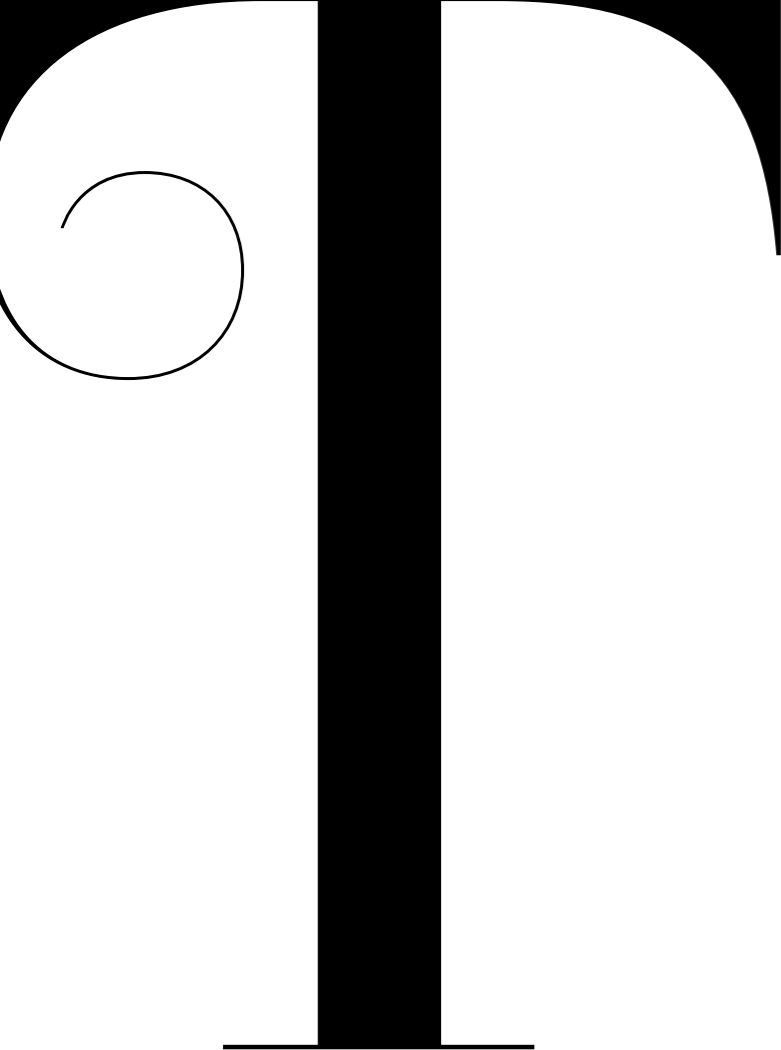
The designers wanted to use light to create a metaphor for the bond between the church and the surrounding community that it serves – the radiating light needed to encompass the spaces beyond. They also wanted the light to be capable of inspiring emotions and inciting curiosity, so that people would feel compelled to come closer to look at the building and perhaps contemplate its meaning.

The church building's façade is designed to imitate a series of folding or concertinaed surfaces, a look that was inspired by the desert canyons of the Holy Land. With the lighting system completely integrated into this façade, the subtle interplay of colours appear to undulate across the surface, carrying through the narrative of nature and the wilderness.

Designed to be animated and life-like, the light system mimics light as it is in nature, and the use of vibrant colours intensifies this illusion. It mirrors the dynamic nature of the sky, which also changes throughout the day with the light. The surface of the façade becomes a moving Impressionist painting, capturing light and reflecting its beauty back to the eye. Colourful animated patterns projected onto the surface create a strong







THE DESIGNERS WANTED TO USE LIGHT TO CREATE A METAPHOR FOR THE BOND BETWEEN THE CHURCH AND THE SURROUNDING COMMUNITY THAT IT SERVES – THE RADIATING LIGHT NEEDED TO ENCOMPASS THE SPACES BEYOND.



sense of dimension, accentuating the 'folds' of the façade, such that darker panels seem to recede as intense colours are projected onto the beige walls.

The church courtyard serves as a place of respite from daily stress and the hard cityscape beyond its walls. Indeed, by using light to create a very different experience, the space has also been likened to the Garden of Eden. Instead of employing strong colours, soft illumination has been applied to show contrast between soft and hard surfaces. The lightscape highlights the greenery and the water feature, which is an oasis of tranquillity.

The lighting on the façade communicates to others through the symbolic play of light and colour, and by broadcasting pre-programmed messages of faith and joy, making it a landmark beacon for the neighbourhood.

— TRINITY @ PAYA LEBAR, SINGAPORE

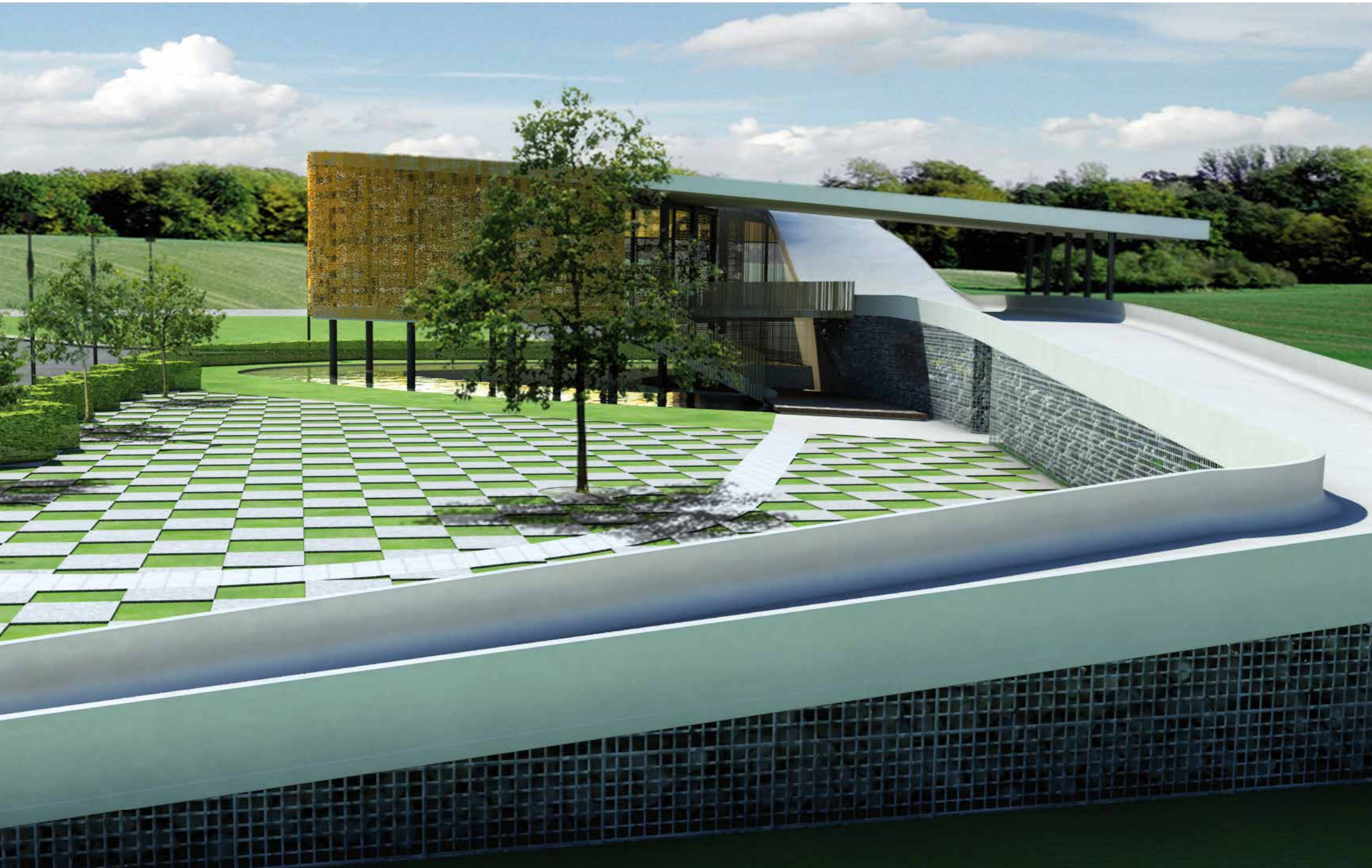
DIRECTOR Ong Swee Hong, *Lighting* |
MAIN CONTRACTOR Kurihara Kogyo Co Ltd |
PHOTOGRAPHY See Chee Kong





PRAYER IN THE PARK

A UNIQUE MUSOLLA THAT REDEFINES
THE IDEA OF RELIGIOUS SPACE



For the faithful, the musolla is an important component of Islamic sacred architecture, as a gathering place for prayer. ONG&ONG has designed a number of religious buildings, including mosques, churches, and columbariums, but the musolla in the Eco-Park in Setia Eco Park, Selangor, is the first religious building handled by their Kuala Lumpur office. The client, Bandar Eco-Setia Sdn Bhd, wanted a typical Malaysian mosque that would accommodate 60 people, because a musolla for the community is a requirement for every housing development there.

What the team came up with was a design that was so innovative, it won the 'Islamic Architectural Award' at the Cityscape Awards for Architecture in 2012. The architects described their design as being "part theistic symbolism, part modern typographic installation." The designer, Ahmad Syazli Bin Mat Husin, created a space that is reminiscent of the time when the musolla functioned as a community centre, as well as a place for prayer. This enables the musolla to be used in a more flexible way, by accommodating various gatherings rather than being solely used for prayer.

It was initially a challenge to convince the local Religious Department and residents to accept the architects' ideas. However, their responses eventually became more open and positive once the locals understood what was intended with the design. In place of a traditional dome, the architects created a pavilion-like structure that looks like an abstract sculpture. It nevertheless retains all the expected features of Islamic sacred architecture, expressing them in a way that is very contemporary.

The form of the building was inspired by Arabic Kufic calligraphy, specifically the letter *mim*, which is the first letter of the word *musolla*. Arabic calligraphy and symbolism are also the inspiration for the screen wall that surrounds the main prayer hall which accommodates up to 75 people. The design on the screen consists of three Arabic patterns arranged in the style of Kufic calligraphy to form the most honoured *surah* (chapter) of the Quran : *Surah Al-Ikhlās* (the purity of faith), a short declaration of *tawhid*, God's absolute oneness. The use of these forms creates an open structure



THE TEAM
BEHIND
ECO-PARK
MUSOLLA IN
SELANGOR,
THE FIRST
RELIGIOUS
BUILDING
HANDLED BY
THE KUALA
LUMPUR OFFICE.

From left: Ahmad Syazli Bin Mat Husin, Tan Kee Keat





that allows the flow of air as well as the filtering of light into the interior. The hall is cantilevered over a pool, as water is an integral part of Muslim ritual and symbolism. There is a gathering space beneath the main prayer area that may be used as an additional space for prayer, and the main lawn can accommodate even more people.

To reach the prayer hall, the worshipper must walk up a ramp leading from the ground level garden. This symbolises the path to enlightenment through prayer and faith. The social function of the musolla is supported by the provision of a *bilik mandi jenazah* (a place for washing the deceased), as well as kitchens and washrooms to accommodate *kenduri* (social gatherings). An ablution pond that gathers rainwater also forms part of the complex, and there is an office for the Imam. The whole structure is anchored at ground level by raw finished concrete gabion walls and timber, the simplicity of the texture conveying the symbolic notion of plain truthfulness.

With this new musolla at the Eco-Park, the architects have created a vision for forward looking design, by designing a symbolic space that reaches out to the community.



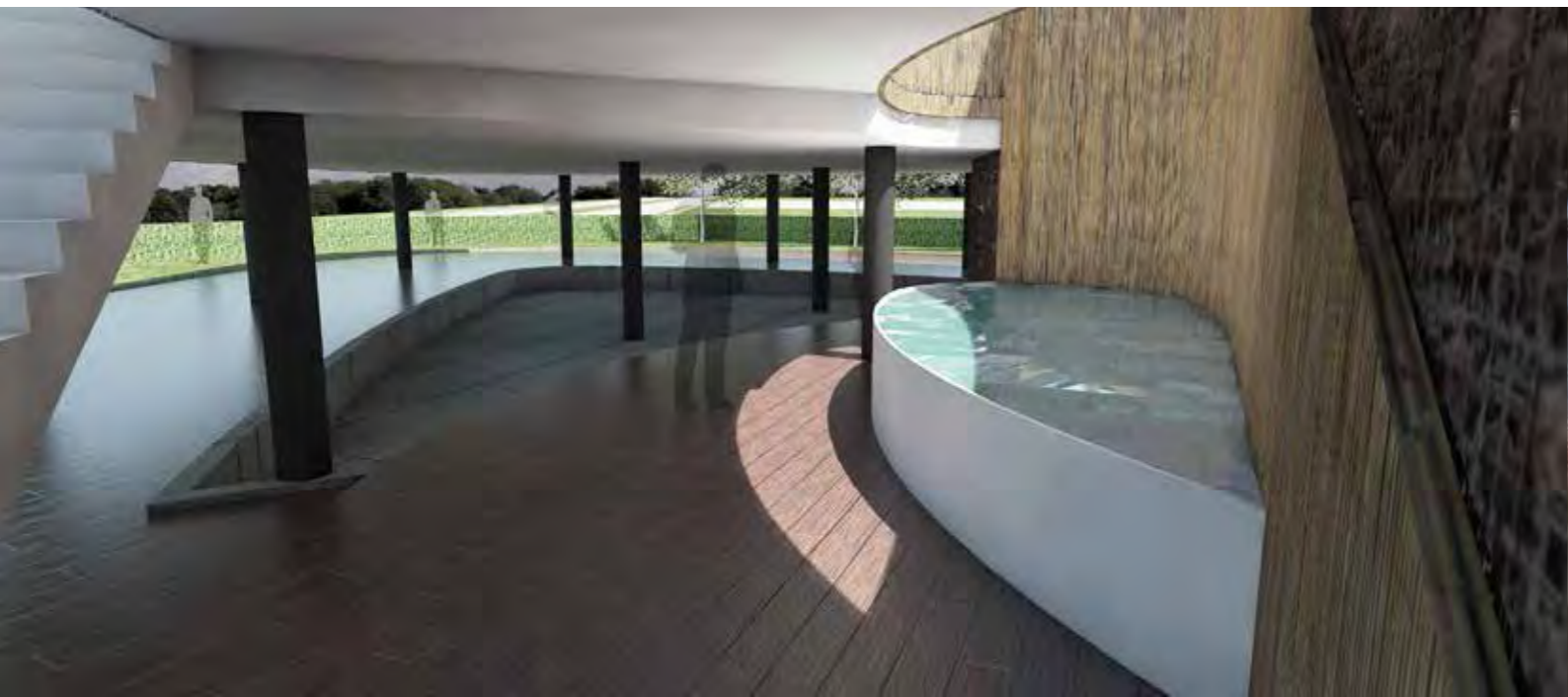
PART THEISTIC SYMBOLISM, PART MODERN TYPOGRAPHIC INSTALLATION

— ECO-PARK MUSOLLA, SETIA ECO PARK,
MALAYSIA
DIRECTOR Tan Kee Keat, *Architecture*



THE ARCHITECTS DECIDED TO CHALLENGE THE USUAL PRECONCEPTIONS CONCERNING ISLAMIC ARCHITECTURE. THE TRADITIONAL DOME FOR

EXAMPLE. IN ITS PLACE THEY PRESENTED A PAVILION-LIKE STRUCTURE THAT IS MORE LIKE A WORK OF ABSTRACT SCULPTURE.





HEALTH CARE



SINGAPORE HAS
SUCCESSFULLY
POSITIONED
ITSELF AS A
HEALTH HUB,
DRAWING IN
PEOPLE FROM
ALL OVER
THE REGION.

Aging populations all over the world need extended healthcare facilities that cater for changing health needs. Singapore has successfully positioned itself as a health hub, drawing in people from all over the region since standards and treatments here are among the most advanced in the world. At the same time, the Ministry of Health recognises the advantages of taking care of the community. Both these aspects of healthcare are reflected in two of ONG&ONG's civic projects.

The new National Heart Centre at Singapore General Hospital is dedicated to treating one of the world's leading causes of death, and offers state-of-the-art facilities with cutting edge medical care. The architecture of this new centre, with its striking façade, stands out amongst the other hospital facilities. Remarkably, its environmentally-friendly, sustainable design features are continued throughout the interior architecture as well.

General health and well-being at a community level is represented by the Bedok Integrated Complex, which incorporates health in its wider context. The complex contains a Singhealth Polyclinic, which serves the general healthcare needs of the community, and extensive sports facilities, under the auspices of SportSG.

W H E R E

UPBEAT AND UP-TO-DATE:

T H E

SINGAPORE'S NEW HEART CENTRE

H E A R T

SETS A NEW STYLE FOR HEALTHCARE

M A T T E R S





This new National Heart Centre at the Singapore General Hospital is already being referred to as an iconic architectural statement. Given that heart disease accounts for an estimated one in three deaths in Singapore, this building can also serve a greater purpose by creating awareness. ONG&ONG served as the local consultants for the design, and the building, which opened in March 2014, is already garnering regional attention.

The main conceptual ideas underlying the architectural design and orientation of the National Heart Centre was twofold: firstly, to create a building that was sustainable and energy efficient, and secondly, to provide a positive and stress-free experience for patients and visitors. The building was awarded a Green Mark Platinum award, thus fulfilling the first of these goals and the interiors, with their cheerful, light and airy look, appear to be well on the way to fulfilling the second.

It is perhaps the striking undulating perforated powder-coated aluminium façade – a skin concealing the inner building – that draws most people’s attention. Dr Goh Chong Chia, studio director at ONG&ONG, explained that it serves a functional purpose by screening the interior spaces from the glare and heat of the sun, which reduces energy consumption. “The patterning on the façade also mimics the graph readout from a heart monitor,” he added. Goh draws attention to the other side of the building, which is more subdued, but nevertheless noteworthy. Its rippling columns of glass, topped by skeletal steel frames, jut out from the taller main block behind it.

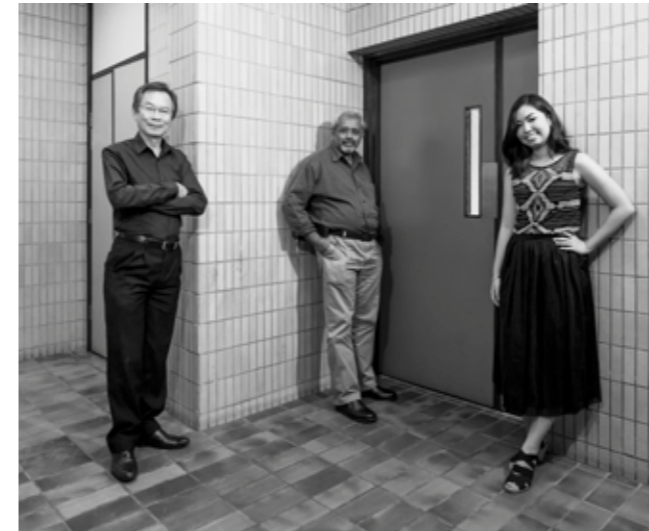
The design team for the project makes the point that this attention-grabbing building is also one of the most advanced and state-of-the-art medical and research institutions in



THE MAIN CONCEPTUAL IDEAS UNDERLYING THE DESIGN AND ORIENTATION OF THE ARCHITECTURE OF THE NATIONAL HEART CENTRE WERE TWOFOLD: FIRSTLY, TO CREATE A

BUILDING THAT WAS SUSTAINABLE AND ENERGY EFFICIENT, AND SECONDLY TO PROVIDE A POSITIVE AND STRESS-FREE EXPERIENCE FOR PATIENTS AND VISITORS TO THE CENTRE.





the region. These architects had to design 50,000 square metres of treatment, research and public space, with an underground link to the main hospital. As a facility offering cutting-edge medical treatment, the top three floors are reserved for staff and research, and in addition to three operating theatres, there is a lecture theatre for educational purposes.

At the centre of the building is a huge, airy atrium that allows natural light to filter in, creating a calm, welcoming space that is far removed from the more sombre – often frightening and claustrophobic – experiences typical of many older hospitals. “The design intention was to provide as positive an experience for patients who are already deeply concerned about what is happening to them,” reiterated Goh. From the ground floor drop-off point, patients and visitors make their way up to the second floor lobby where staff at the information desk can guide them. The lobby is kept cool by natural cross ventilation and a public waiting area is similarly kept cool and comfortable.

The circulation system within the building is also very transparent, with the escalators crossing the atrium so people can easily orientate themselves, and the different floors are colour-coded by function. Offices, consulting rooms and other enclosed spaces are arranged around the edge of the atrium with views over the outer spaces. The design team have also included a sky terrace, which in addition to helping the building achieve its green status, provides green vistas for exercising, relaxing and strolling.

With specialised health care becoming increasingly central to many developed nations, the importance of designing facilities that offer positive and encouraging experiences is coming to the fore. The National Heart Centre may well provide a prototype for the kind of quality facilities that will one day become the norm.

— NATIONAL HEART CENTRE, SINGAPORE

DIRECTORS Goh Chong Chia, *Architecture* | Lena Quek, *Landscape*
 | HOSPITAL PLANNER Broadway Malyan | MECHANICAL & ELECTRICAL
 Squire Mech Pte Ltd | CIVIL & STRUCTURAL Beca Carter Hollings
 & Ferner (SEA) Pte Ltd | QUANTITY SURVEYOR Langdon & Seah
 Singapore Pte Ltd | PROJECT MANAGEMENT PM Link Pte Ltd | MAIN
 CONTRACTOR Shimizu Corporation | PHOTOGRAPHY Jaime Albert Marti



AN
INTRODUCTION
TO CIVIC
PROJECTS BY
ONG&ONG'S
EXPERIENCE
DESIGN STUDIO.



A WELL-DESIGNED
PHYSICAL SPACE IS
NOW A MINIMUM
REQUIREMENT
AND THERE IS AN
EXPECTATION TO
CONNECT WITH A
SPACE EMOTIONALLY
AND EXPERIENTIALLY.

Today more than ever, the public demands higher standards from the public sector, not just from its staff but also from its buildings. Service excellence is expected to be facilitated by quality spaces and more than merely serving its functional needs, these buildings also embody civic aspirations with a duty to engage the very people it serves, the public.

A well-designed physical space is now a minimum requirement and there is an expectation to connect with a space emotionally and experientially. Here, the experience design studio shines. The team tests assumptions and proposed solutions with prototypes that provide opportunities to refine and polish the design, and the following pages offer a glimpse into this process and the results of the journey.

For example, for the Bloodbank@Woodlands and HDB Branch Office project, the studio went deep in understanding the operational procedures and workflow of its staff and customers through a series of interviews and observational exercises. This process informed the selection of materials and colours at the blood donation centre which radically transformed its image and experience. Similarly, the extensive engagement and prototyping sessions with various HDB staff and its customers allowed the studio to identify common customer profiles and the most common transactions at the Branch Office. This led them to propose a spatial solution that went beyond aesthetic decisions and into service innovation and organisational transformation.

Projects such as these, which are targeted at the public, would indeed have been less rich and impactful without grounding it in the experience of its various stakeholders to create an engaging experience rather than just a good-looking space.

As Mark Wee, director of ONG&ONG's Experience Design studio shared, "Experience design must be considered in tandem with the architecture of a space. Ultimately, we help to bring organisations to life and we aim to enrich people's experiences and improve their well-being."





MARK WEE AND KEN YUKTASEVI, DIRECTORS OF THE
ONG&ONG'S EXPERIENCE DESIGN TEAM BEHIND BLOODBANK@
WOODLANDS AND PUNGGOL HDB BRANCH OFFICE



THE GIFT OF LIFE



One of the greatest gifts an individual can give is the gift of life, through the simple act of donating blood to save a person in need. The Blood Services Group (part of the Health Sciences Authority) and the Singapore Red Cross have been in partnership for many years to facilitate the steady supply of blood for medical use. The blood bank at Woodlands Civic Centre was set up as a new satellite blood centre, and ONG&ONG's Experience Design Studio was tasked with designing a space that would make visiting the centre and working there pleasant experiences.

The designers began by conducting in-depth interviews with blood bank staff and donors to find out what they expected from a blood bank, as well as what experiences they have had at blood banks in the past. A summary of responses enabled the designers to create a matrix of issues that needed to be addressed in follow-up workshop sessions with blood bank staff. The workshops led to a series of recommendations for the entire experience, starting with registration, medical screening and blood testing, then blood donation, and finally the post-donation experience.

Following the prototyping phase in which a series of ideas were tested out within a controlled space, the experience design team was able to realise a blood bank that had a relaxing and encouraging ambience.

To make the blood bank more accessible, the doors that represent both physical and psychological barriers were removed to make an open entrance. As soon as the donor enters the blood bank, informative graphic

visuals lead them to the registration area, while also explaining the donation process in a fun manner. A welcome counter staffed by Red Cross volunteers provides further reassurance for first-time donors who may be nervous and unsure. The reception area is designed to be flexible, so that the form-filling booths may be collapsed to make extra space during emergency blood drives. Even the experience of filling in forms is designed to give encouragement to donors by having affirmative messages pinned up to let people know how important their contribution is.

The waiting period in any medical facility is often the most nerve-racking. For the Woodlands Blood Bank, the designers made the waiting area more informal, almost casual, with a flexible layout, should the need arise to accommodate more people. By choosing blonde wood and muted colours with green highlights, the waiting area has a softened look that gives it a warm and inviting ambience.

The more intimate spaces used for screening donors and for blood testing, were also given careful consideration. These needed to be more private, so they are separated by frosted glass sliding doors that have a clear panel across them at chest height, which enables medical staff to see when donors are coming in. The interiors are designed to be functional, but the usual clinical rigidity of a consulting room is softened and made more appealing through the use of subtle lighting and wallpaper.

The area outside the actual blood donation section uses the same blonde wood and soft green tones. This space serves as both a refreshment area for



1



2



3



4



5



6



7

1 The form-filling booths can be made collapsible to provide extra space in times of emergency blood drives.

2 Special notes at the form-filling booths remind donors that their contribution is valued and encourage them to come back as repeated donors.

3 The old waiting area used to be made up of rows of chairs – the new waiting area is more informal and inviting, while able to accommodate more people.

4 A movable work counter helps with blood collection and pull-out trays provide easy access to equipment. Low cabinets behind the counters provide extra storage space.

5 The blood donation area is situated so that the space can be naturally lit, while blinds provide extra shade. The material palette was based on functionality and gives a clean, safe and comfortable feel.

6 The self-help refreshment station allows donors to grab a bite after their donation. These seats are modular and movable. The graphic wall explains what happens to their blood and lets them know their contributions are appreciated.

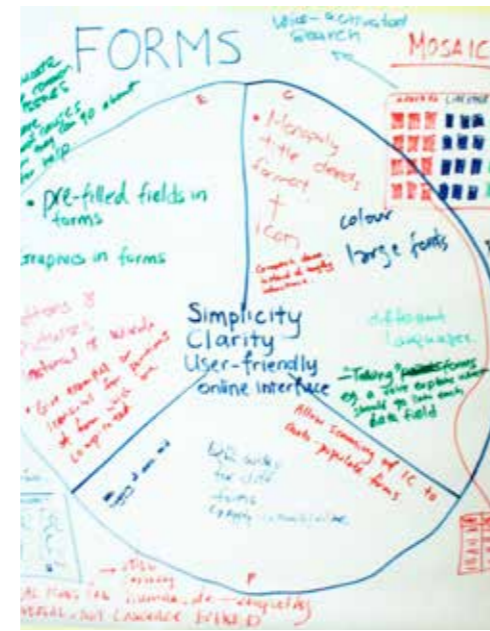
7 Prototype of blood donation area.

resting after donating blood, as well as an additional waiting area for periods of high traffic. To create a more personalised touch, a display board engages and informs visitors through the sharing of birthday photos, donor testimonials and updates on blood types needed, since keeping donors engaged and committed is an important element of the whole process. A graphic wall provides further information about what happens to donated blood, thereby helping donors to further appreciate their contribution.

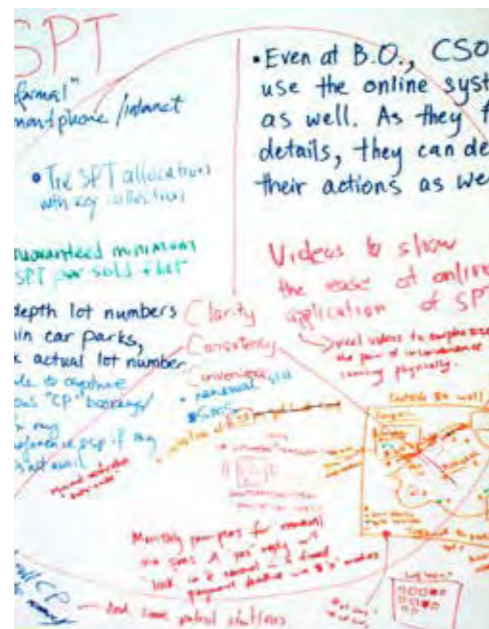
The blood donation area lies beyond the recovery area, behind an opaque feature wall that brings light into the pre-donation area. This location takes full advantage of natural lighting during daylight hours, with blinds placed so that the harsh afternoon sun may be screened. The colour palette of this area has been chosen to project a clean, safe and comfortable environment.

Specially designed movable work counters may be placed next to the couches and afford easy access to equipment as well as storage space for donors' belongings. A collecting and capping room, where blood is prepped for delivery at the end of the day, can be seen through a window in the blood donation area. There is also a private pantry area for staff use.

Blood donation is a crucial part of every community's social obligation, but can be fraught with anxiety and even fear. However, design with a view to making the process of giving blood a positive experience can go a long way to alleviate fear and encourage more donations.



HOME & FAMILY



The Housing Development Board (HDB) has a long tradition of providing public housing for Singaporeans. Although HDB branch offices are scattered all over Singapore to service and support the needs of home owners, anyone who has had cause to seek help and guidance from their local HDB office will admit that the experience often entails a frustratingly convoluted process that leaves them unsatisfied and exhausted. ONG&ONG's experience design team had the unique opportunity to redesign the Punggol HDB branch office, and develop a set of guidelines that could be used by other HDB branch offices to similarly translate staff and customer experiences into positive ones. The team won the FutureGov Award in 2014 for Service Innovation in recognition of their efforts. SCA design, part of the ONG&ONG Group, stepped in to design the physical space.

needs could be effectively dealt with by facilitating efficient traffic flow, minimising long queues, and providing options that enabled individuals to readily navigate their way through the branch office.

The entrance, as the first point of contact, was opened up and provided with various visual stimuli to attract and hold customers' attention. The outer wall was turned into a mosaic piece, and showcases videos and stories related to the neighbourhood, serving as a platform for customer engagement through. Another 'welcome wall' inside the entrance provides customers with updated information on neighbourhood activities. The main lobby area was made into a 24-hour e-lobby, with two self-help kiosks, as well as a multi-purpose scanner and printer, to cut down on waiting times.

A customer who steps into the e-lobby will now find a host - a staff-member - who is there to greet them and provide help, if necessary. This host identifies the customers' requirements and directs them to the right place. The host can also help with applications and guide them through alternative service options, such as the e-service terminals.

For those who do need to meet with a staff member, a more relaxed seating area is at hand. A queue management system has also been implemented to further reduce waiting times, as customers are encouraged to book

By undertaking initial research in order to understand the various user needs and requirements, as well as to identify creative solutions, the experience designers produced a vision statement: "Taking care of you, your family and home, for life." It was a vision that further enabled the team to develop design guidelines that would satisfy customers' need for clarity, consistency and convenience, as well as staff requirements for comfort, empowerment and efficiency.

One of the key challenges the designers had to deal with was how different customer



“TAKING CARE OF YOU, YOUR FAMILY AND HOME. FOR LIFE.” A VISION THAT ENABLED THE TEAM TO DEVELOP DESIGN GUIDELINES THAT SATISFY CUSTOMERS’ NEED FOR CLARITY, CONSISTENCY AND CONVENIENCE.

an appointment online. While waiting, customers can also peruse a ‘hint wall’ that provides information concerning selected processes that may be relevant to them. During off-peak hours, there is a dedicated family counter with a children’s play area, while express counters facilitate quick transactions during busier periods. There is also a special interview room that provides a relaxed, informal setting for staff to meet customers.

Staff are provided with roomy working spaces behind their counters, as well as movable cabinets and equipment to allow for greater flexibility and efficiency. In addition to back-of-house working areas for staff who are not on customer duty, there are discussion rooms, lockers, a pantry, and ample storage for files and documents.

The redesigned HDB branch office experience will go a long way to ensuring that Singaporeans receive the best service for their housing and community needs.

— HDB PUNGGOL BRANCH OFFICE, SINGAPORE
 DIRECTORS Mark Wee Wei Wen, *Experience Design* | Chrisandra Heng, Brandon Lim, *Interior Design* | MAIN CONTRACTOR Falcon Incorporation Pte Ltd | PHOTOGRAPHY Courtesy of SCA design




E D U C A T I O N



AS EDUCATIONAL REQUIREMENTS CHANGE ALONG WITH THE SCHOOL POPULATION, ARCHITECTS AND DESIGNERS HAVE TO COME UP WITH AN EVEN GREATER VARIETY OF EDUCATIONAL FACILITIES.

Ranked third internationally for its educational system, Singapore has achieved a great deal in the 50 years since its independence. With hundreds of primary, secondary, and tertiary institutions, including specialist sports and arts schools to choose from, students are almost spoilt for choice. Moreover, as educational requirements change along with the school population, architects and designers have to come up with an even greater variety of educational facilities. Managing and keeping their construction and facility standards on track is an intricate task that calls for specialist understanding, as well as a dedicated and tenacious approach. An in-depth interview with an ONG&ONG project management expert reveals the inside story of what goes on in the construction of some of these schools.

The design and construction of a MDIS campus extension, which incorporates student accommodation with learning facilities, represents another aspect of educational design. A wide range of sustainable energy-saving features were employed in the architectural design, making this an environmentally-conscious place of learning.



M

I

INTEGRATION, OPTIMISATION AND SUSTAINABILITY:

DESIGN APPROACHES TO THE LEARNING ENVIRONMENT



D

S



The Management Development Institute of Singapore (MDIS) has been around since 1956 and their campuses offers state-of-the-art facilities for a large student population. It was the growing student intake, especially from around the region, that necessitated the construction of a new administration and hostel block at their Stirling Road campus, in order to keep up with the changing demands of the current technology-driven education.

ONG&ONG's brief was to create an environmentally-friendly and energy-efficient building that would accommodate outdoor learning. The resultant building is one that allows for full integration of studying, working, and relaxing activities. The space is optimised through the use of modular floor plans, and the building is environmentally responsible through the extensive use of 'green' features.

There were several key components that needed addressing in the design of the new building. The hostel had to accommodate up to 800 students, so two wings with rooms offering four different configurations were constructed. The two hostel wings are linked by sky bridges at levels ten and twelve to allow for greater student interaction, and students can also enjoy landscaped communal spaces and rooftop sky gardens. The two wings have been placed on top of a podium that encompasses a four-storey atrium lobby, a canteen, a replica hotel lobby for hospitality training, and a 500-seat auditorium.

Although part of the overall structure, the podium section is conceived as a public space, and is separated from the private accommodation levels by

a landscaped deck on the fifth level. Floor plans have been laid out using a modular, structured grid system that allows for flexibility. As such, different sizes and configurations of bedrooms and communal facilities may be applied, thereby reducing the overall cost of construction while increasing the efficiency of the building.

Numerous green features have been designed into the building to create a learning environment that is also sustainable. Initial site analysis determined the north-south orientation of the building, thus enabling it to capitalise on natural ventilation, with air being drawn into the central space between the two wings via the sky gardens and terraces. This helps to cool the open communal spaces of the podium, including the lobby and canteen. All the air-conditioned offices and classrooms, as well as the auditorium, are recessed into the building so that they have minimal exposure to direct sunlight for reduced heat gain.

The terraces, which help channel air into the centre of the structure between the two wings, are planted with trees and shrubs, thereby cooling the ambient atmosphere while serving as outdoor classrooms and open spaces for student activities. Because the client wanted the terraces to be used as open-air study areas, the landscaping had to accommodate this stipulation. ONG&ONG's landscape design team was employed as a sub-consultant and designed both the first floor pavilion and the various sky gardens. They had to accommodate a number of environmental variables, with some sky gardens being located in heavy shade, and others in full sunlight.



ONG&ONG'S BRIEF WAS TO CREATE AN ENVIRONMENTALLY-FRIENDLY AND ENERGY-EFFICIENT BUILDING THAT WOULD ACCOMMODATE OUTDOOR LEARNING.




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A palette of hardy plants was chosen to withstand the environmental conditions as well as the strains of public use.

The landscaping design also incorporated a rainwater collection system that harvests water from the roof terrace, the fifth storey landscape deck, and also the first storey areas, which is used to water the sky gardens by way of an automatic drip irrigation system. Water efficiency was further increased through the installation of a hybrid system of vacuum tube solar collectors in the roof trellis. A secondary hot water generator is provided by four sets of heat pumps on the roof that draw in the hot ambient air in order to heat the water. This hybrid system takes full advantage of Singapore's climate, with its abundant solar energy and high ambient temperature.

The students' accommodation has also been designed with sustainability in mind, as the orientation of the building capitalises on natural ventilation and the two wings shade each other from the sun's path. Use of low-emissivity double-glazed windows enables the transmission of light but reduces heat gain, while the positioning of non-habitable spaces, such as staircases, electrical and maintenance shafts, on the east and west-facing façades, forms a buffer to further reduce heat gain. Recyclable aluminium panels clad the external walls and further reflect radiant energy.

In a world where young people increasingly have to face up to the challenges of a future where resources are scarce, it makes sense to educate them about adopting sustainable solutions as a way of life. Being educated in a built environment where available sustainable technology is all around them is surely an important step in the right direction.

— **MDIS RESIDENCES @ STIRLING, SINGAPORE**
 DIRECTORS Ashvinkumar Kantilal, *Architecture/ID* | Lena Quek, *Landscape* | MECHANICAL & ELECTRICAL WSP Ng Pte Ltd
 | QUANTITY SURVEYOR Langdon & Seah Singapore Pte Ltd |
 MAIN CONTRACTOR Sanchoon Builders Pte Ltd



HEADING UP A SCHOOL

LIM WENG KIEN EXPLAINS
THE CHALLENGES OF MANAGING
SCHOOL CONSTRUCTION PROJECTS.





GREENDALE PRIMARY SCHOOL

Few non-professionals fully appreciate the challenges involved in overseeing the construction of any building, let alone the construction of specialised institutions, such as schools. Lim Weng Kien, director at ONG&ONG's project management arm, Project Innovations, has managed the construction of many schools in Singapore, and he shared a few insights into the challenges and rewards of the job.

Lim explained that the main client in school projects is inevitably the Ministry of Education (MOE), although some of Project Innovations' other clients include the Ministry for Information, Communication and the Arts, Singapore Institute of Technology and Singapore Polytechnic. Although Lim has managed many other institutional commissions, such as police stations and fire stations for the Singapore Civil Defence Force, MOH Holding Pte Ltd for Nursing Homes, Catholic Welfare Service for St. Joseph's Home, he said that schools are among his most common assignments.

When asked about his duties as project manager, Lim replied, "I primarily manage time, cost,

quality and safety. In addition, I have to ensure that environmental and sustainability requirements are met." In other words, the project manager has to ensure the job is done efficiently and effectively while making sure that the project brief is fulfilled.

Lim went on to explain, "We are usually engaged as the project manager at the same time as the other consultants, such as architects, mechanical and civil engineers and quantity surveyors, are engaged by the client. For some specialised schools, we are engaged first and then we work together with clients to appoint the multi-disciplinary team."

He continued, "When I start, I will confirm the project brief and specific needs with the client. Then I'll use that information to draw up a preliminary master programme and start charting milestones to prioritise what has to be done, and also by when."

"MOE has a detailed handbook outlining the core design of any school. Because school sites tend to be standardised –as do building heights and number of floors– it tells you how many classrooms are required so you will know the main





PUNGGOL VIEW PRIMARY SCHOOL



SINGAPORE SPORTS SCHOOL



SENGKANG GREEN PRIMARY SCHOOL

parameters in which you have to operate. The concept plans are presented to the school and to the ministry for approval," Lim said.

Lim went on to outline the more detailed aspects of his job as project manager. "I have to keep an eye on issues such as the placement of the ventilation. It is important in schools because classrooms and common areas use natural ventilation – only offices and certain special teaching rooms have air conditioning. Lighting and noise issues also have to be checked. The acoustics are often a major headache," he said. "It's no good having classrooms next to music rooms or sports facilities. And if there's a main road nearby I have to ensure that the zoning of buildings is appropriate."

These represent some of the macro issues that the project manager has to deal with – but what about the micro-details?

"Yes, I have a hand in those, too," said Lim. "I will always return to the original design schematics, but I may sometimes adjust the placement of a power point, for example. There are also things that are not in the MOE handbook that I have to make decisions for, such as railings, sun


and rain shades, or if it's possible for water to enter open corridors. I may even have to make sure care is taken to ensure that the children don't sit in rooms where the sun will shine directly onto their faces."

In addition to the master programme, Lim also draws up micro-programmes for each stage of the project. "Through these programmes, we are able to add value and make sure that the various consultants and contractors do everything on time and up to standard," he said.


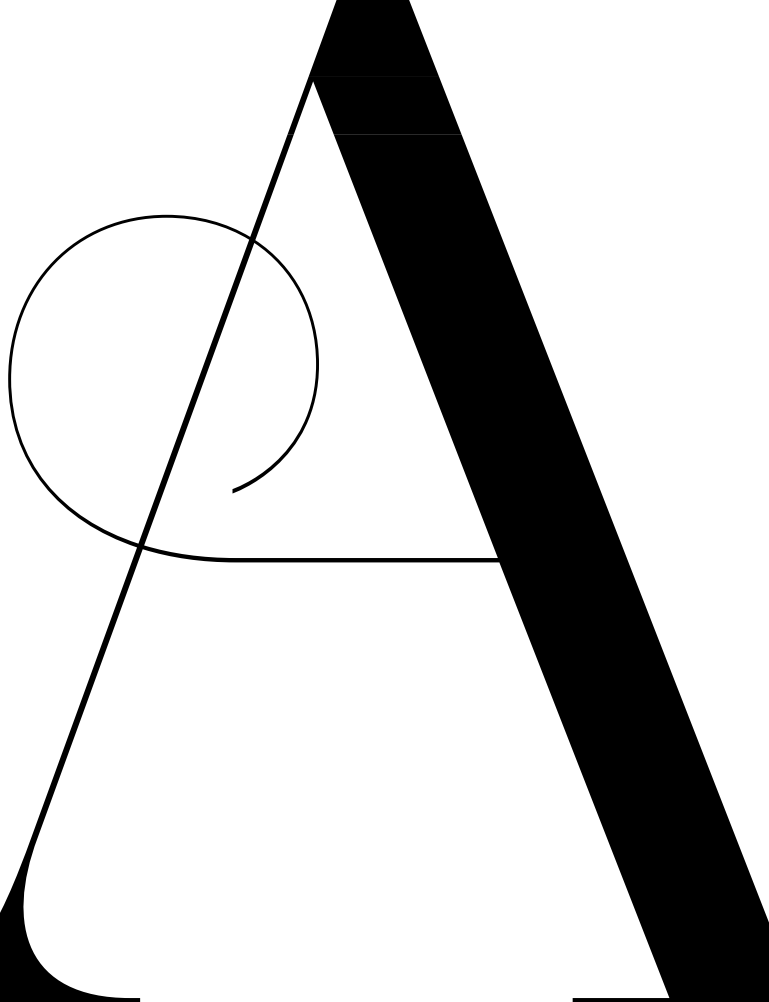
Keeping his eye on these different aspects of a project seems like juggling a set of balls and keeping them all in the air at one time. "It is, I suppose," agreed Lim. "I'm monitoring the cost and monitoring each consultant to make sure they're doing what they should be doing when they should. I'm moving the whole programme along and if I'm doing it properly, then everything should be going smoothly."

And does it always go smoothly?

"The most difficult part of the project manager's job is acting as interpreter – managing and understanding different personalities. Different people have different ways



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of doing things, and if I haven't worked with the consultant before, I have to get to know him," Lim explained.

He admitted that very few projects go as smoothly as he would like. "One of the best and most challenging projects I had to deal with was St. Hilda's in Tampines. It had a huge sports complex: sports field, hockey pitches above ground and two halls below for basketball and other purposes. It was finished on time, everything was done on time and everyone was happy," he said.

Lim went on to stress that as the project management arm within an architectural establishment, they have great incentive to research and study how educational facilities affect learning and how these spaces could be better designed to do so. He believes that educational spaces need to grow beyond the four walls of a traditional classroom and contain the varied spaces, flexible furnishings, transparency, and technological tools that push students to become better independent thinkers, collaborators, and problem solvers. At the time of this interview,

Lim was working on the upgrading of Raffles Girls' School.

The director also enjoys managing projects that are a little different. "For the Sports School in Woodlands, we were both the architect and project manager and we were working with good contractors who delivered on time. It is a specialised school and it was interesting to work on. The American School was another project that stands out. They took a very different approach to what a school should be like, and it was interesting to see different cultural approaches to education being put into practice."

He takes an understandable pride in his work and stresses that he has always worked toward exceeding the client's expectation in all his endeavours to complete the projects on time and within budget. Lim concluded by explaining that even though schools are the main assignments, other building types, such as landed and non-landed properties, hospitals, auditoriums and infrastructure facilities, are also in Project Innovations' diverse portfolio.





C O M



M U N



I T Y



NO MATTER WHERE
YOU FIND YOURSELF
IN SINGAPORE –
WHETHER AT THE
CENTRE OF TOWN
OR OUT IN THE
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THERE IS A STRONG
SENSE OF BEING PART
OF A COMMUNITY.

It seems that no matter where you find yourself in Singapore – whether at the centre of town or out in the heartlands – there is a strong sense of being part of a community. Community values and identity may be expressed in many ways, and the various ONG&ONG projects represented here are good examples.

Cultural identity is celebrated in the new Indian Heritage Centre that has made its appearance in the heart of Little India. The innovative and striking façade has been designed as though the building were a canvas upon which aspects of the Indian culture may be painted onto with light. For horse racing enthusiasts, the upgrading of the Grandstand and Parade Ring at Kranji will make the spectacle all the more enjoyable. The improved facilities cater to a wide range of punters, while the upgraded parade ring better shows the horses ‘strutting their stuff.’

The National Library has always been a popular place to hangout, with visitors often having to arrive early in order to find a spot to sit and read. Today, the library also offers other community activity areas, such as exhibition spaces and a theatre. ONG&ONG has created a series of green sky gardens and terraces throughout the building, thus providing areas for restful interludes inbetween work.

B

B R E A K I N G B O U N D A R I E S

FUTURE COMMUNITIES: ASHVINKUMAR KANTILAL
AND ROBERT BRODETH EXPLAIN THE CONCEPTUALISATION
OF THE BEDOK INTEGRATED COMPLEX

B





Artist impression for illustration purposes only



“IT WAS A NATURAL GATHERING PLACE FOR THE COMMUNITY, AND IT WAS IMPORTANT TO PRESERVE THAT CENTRALITY AND NEIGHBOURHOOD FOCUS.”

The new Bedok Integrated Complex (BIC), slated to open in late 2017, demonstrates ONG&ONG’s capacity to win by design and also manage a multitude of clients within a single project. The complex is among one of the first inter-agency government projects, bringing together five Co-Location Partners who own the complex: the People’s Association, SportSG, National Library Board, Singhealth Polyclinic, and Ministry of Health. Among the facilities to be housed there are the Kampong Chai Chee Community Centre, Bedok Sports Centre, Bedok Polyclinic, Bedok Eldercare Centre, and Bedok Library.

Ashvinkumar Kantilal, ONG&ONG’s Group Chief Operating Officer, stated that “it was the first design competition won by ONG&ONG without an external design consultant partnership.”

Robert Brodeth, the Associate leading the team, concurred. “The competition team went through an intense period before we got the commission: four months of competition, then the tender submission and finally, the clarifications. We were fortunate that Kim Seng Heng, the construction partners, boldly took the risk with our design. Of the final four competitors, we were the only one that presented a curved building.”

The project represents a prototype mixed-use complex that is unusual elsewhere. “It is rare to have a civic mixed-use building with contradicting programmes, such as a library with a sports complex – a quiet activity together with a noisy one. We have swimming pools too, so it’s also wet versus dry. In addition, we’re dealing with the polyclinic and the senior care centre or the day care centre – for the sick and the vulnerable,” Brodeth said.

With the ground-breaking ceremony having taken place in July 2014, how

did the ONG&ONG design team begin conceptualising and planning this challenging project?

“We began by considering the original identity of the site,” explained Ashvinkumar. “It was originally an adventure park with a skating rink, so it was important to preserve that centrality and neighbourhood focus.” Brodeth added, “We observed people’s behaviour and kept the desire lines where they walked.”

“The winning scheme originally had a hill bringing the park into the building which bridges over to landscape behind, but the HDB had guidelines on the porosity and wanted to see the pedestrian mall behind the complex. There was also concern regarding the elderly using the hill,” recalled Ashvinkumar. This was a major issue given that 35% of the Bedok community are senior citizens. The hill would have needed a ramp up to the polyclinic as well, thus the idea had to be revised although the plan to place the park beneath the building remained.

Brodeth elaborated, “Our environmental & sustainable design team then conducted studies of the prevailing winds and the sun path so that we could ensure that the design was sensitive to the environment and people’s comfort.”

Ashvinkumar added, “We didn’t want an engineered solution so we pushed for passive design, and were fortunate to be collaborating with Kim Seng Heng Engineering Construction Pte Ltd, who are open to more challenging concepts.” Hence, the design team came up with four curved blocks that intersect.

Brodeth said, “The building is stacked in reverse. Instead of a large podium with individual blocks on top, we have the blocks below and then the podium on top.





Seated: Ashvinkumar Kantilal
 Standing from left to right:
 Michelle Guanzon, Daniel
 Greteman, Tan Kia Gee,
 Robert Brodeth and Joleen Woon

This provides walkways and shaded spaces where the public could gather below.” Ashvinkumar said, “If we had the sports complex on the ground, it would sterilise the space from pedestrians. The building had to achieve Green Mark Platinum, so passive design made sense.”

The sports block will comprise an open louvered envelope and high ceilings to enable cross ventilation, enclosed in a solar shading structure known as the ‘drum’, which serves as shade and a rainwater harvesting system. There are also monsoon windows that enable continual natural ventilation. Due to the design’s unique organic shape, the northerly winds will be captured to create a comfortable microclimate in the sports section, which houses five swimming pools, including an eight-lane competition pool.

When conceptualising the landscape design, Lena Quek, head of ONG&ONG’s landscape department, took account of the current land use. She said, “We capitalised on the open building concept, allowing the green of the outdoor to flow through the internal spaces. As an integrated complex, we saw the space as a more holistic centre. As such, we have programmed a multi-age children’s playground on the ground level, a community garden on level three, and we have also meticulously considered the design of the existing footpaths that lead to the adjacent HDB blocks, market and library.”

Lena had to mediate the preferences of the different stakeholders as well. “One of the points on the clients’ brief was to include a lush planting palette with lots of trees in the planters encircling the upper levels of the building. This will involve careful consideration of safety issues so wind loads have to be taken into account,” she said.

The eventual selection of the plants will be affected not by the facilities in the complex,





but by the orientation of the planting area, as the different sides of the building have different sun angles. Quek added, “Each side faces different urban aspects: the road, the market, low-rise HDB blocks and the library, all of which will impact the duration and amount of sun exposure. This will also affect plant selection.”

One of the core considerations of the building’s design is to have a green, sustainable identity that helps to define the landscaping identity. “Designing with ‘green consciousness’ is really about trying to achieve zero-energy use,” she explained. “You can use plants to screen large window expanses, which reduces the use of artificial lighting without increasing the heat load. Roof gardens can also be used to reduce heat and consequently cut down on the use of air conditioning for the upper floors. Rainwater may be harvested and used for auto-irrigation, making the building more water efficient by not having to rely on potable water. You can also make use of green products made from recyclable materials.”

The BIC will only look complete once the lighting has been installed to highlight and pick out features of the architecture and landscaping. The lighting specialists worked alongside the architect and landscape teams right from the beginning, since the concept planning stage. Ong Swee Hong, director of ONG&ONG’s lighting studio, stressed that, “Although lighting has a strong visual aesthetic that has to be considered, we were also keen to explore ways that lighting could help create a visual landmark for the community.”

Due to the porosity of the architectural design, there would be a need for

the lighting to complement and encourage greater use of the building at night. Ong said, “There was a greater potential for creating a visually defined neighbourhood centre, illuminated to form a comfortable space for residents to inhabit. With technological improvements, better lighting fixtures and increased awareness of how lighting can enhance the environment, more people recognise the need for good lighting in suburban malls and neighbourhood centres.” Lighting becomes a means of reinventing neighbourhood centres and looking at ways that light and public space can create energised spaces that extend the building’s use.

“For all projects of a sizable scale, the biggest issue is managing client expectation regarding the outcome,” Ong acknowledged. “There are a number of stakeholders in this project and we have to work with them to create a collective vision of how they perceive the building.” Eventually, the lighting design team has to weave an entire narrative of design into the building, so the main challenge involves synthesising different stakeholder requirements into a complete storyline.

Ong concluded, “The fact is that lighting is not a tangible material – rather, it is a complex medium that needs the support of other consultants. I think that a well-executed project is one where you step into the illuminated space and it is so comfortable that you cannot pinpoint exactly why and how.”

— BEDOK INTEGRATED COMPLEX, SINGAPORE

DIRECTORS Ashvinkumar Kantilal, *Architecture*
| Tan Peck Khoon, *Mechanical & Electrical Engineering* | Lena Quek, *Landscape* | Ong Swee Hong, *Lighting* | MAIN CONTRACTOR Kim Seng Heng Engineering Construction Pte Ltd

CIVIC CONCERNS: ASHVINKUMAR
KANTILAL AND ANDREW LEE TALK
ABOUT THE CHALLENGES AND TRIUMPHS
OF WORKING ON CIVIC PROJECTS

What are the most important considerations when designing for a civic project? What are the major differences between a civic project and other private commissions?

Ashvinkumar: There are major differences that we have to consider. A private client will present a very specific brief, so that it is very clear what needs to be done in terms of the space functions. With a civic commission, the end users are more diverse and the building has to cater to multi-faceted functions. The Bedok Integrated Complex is a good example – it has to accommodate a community centre, library, sports centre, polyclinic, and eldercare centre. These various needs have to be considered when working on the centre.

Many civic projects entail negotiating the wishes and demands of multiple stakeholders. How do you handle conflicting ideas and demands from clients?

Ashvinkumar: Managing multiple stakeholders is always a challenge. With Bedok Integrated Complex, we deal with five co-location partners. SportSG needs a very large area, so they should be put on the higher levels to avoid creating unused public spaces below. The People's Association has first level frontage, while the polyclinic and library are both placed on the second and third floors respectively. We have to define a clear matrix to carve out the spaces, as we have to carefully analyse the various functions vis-à-vis public or communal spaces, and then work it out. Form follows function!



What are the most challenging kinds of civic projects you have to work on, and why?

Ashvinkumar: Every project, civic or otherwise, has its own challenges. Bedok Integrated Complex has its own particular issues because it had to be considered within the bigger picture, which was the re-making of the town centre area. The complex has to be plugged into an existing community network. Gateway Theatre has a different set of issues that has to be navigated.

What are the most rewarding kinds of civic projects you have dealt with, and what made them rewarding?

Ashvinkumar: Every project is rewarding in its own way. In the end, the greatest testimony is how well it meets the needs of the end users, and whether people are comfortable with using it.

When invited to design the Gateway Theatre, what were your initial thoughts and intentions towards the project?

Andrew: In examining the typology of a conventional theatre, we were struck by how the circulatory routes around different parts were defined by their scale and exclusivity. The nature of the theatre's spaces become distinctively less public, and increasingly more segregated, as one moves inward from the street to the auditorium.

With an emphasis on the community, the Gateway Theatre is focused to include a broader slice of society. In this context, we sought to similarly reflect this ethos and intention architecturally, in the theatre's functional and aesthetic expressions.



We wanted to deliberately disrupt and blur the boundaries between various functions, and allow for changes in the pattern of the building's use. Instead of creating a new monument that functions as a theatre, we wanted to establish an open and inviting environment for a contemporary community of theatre participants.

This project's brief involved creating art spaces in a local community area rather than the city centre. How did this define your approach to the project and what were the design measures taken?

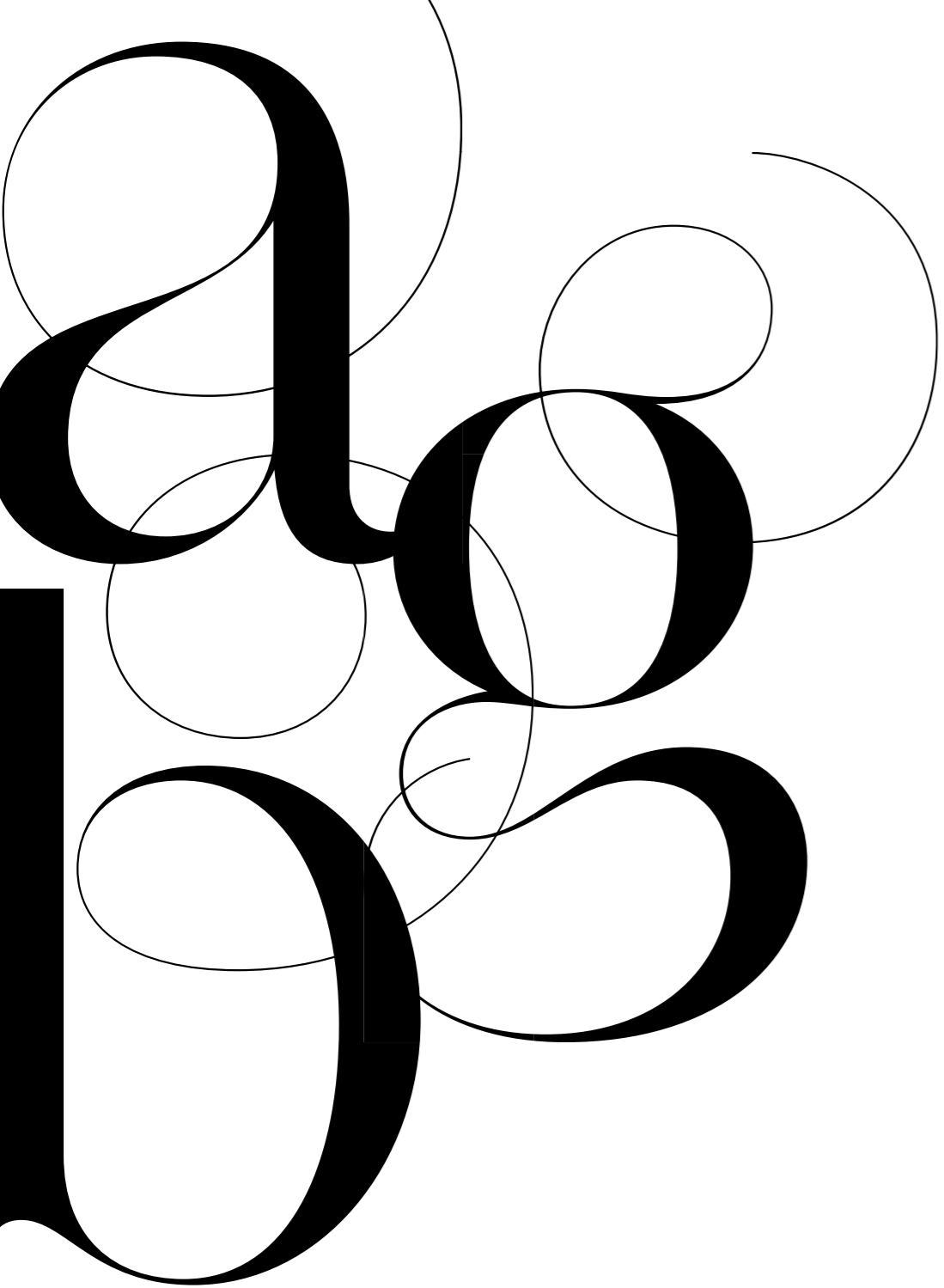
Andrew: The Gateway Theatre's location in the heartlands instinctively provided an opportunity to not just cater to performers and theatre goers, but to encompass different community groups that include the young, the old, and others with special needs through a wide range of activities. To meet this challenge we would need to furnish additional supporting spaces in an already tight plot. We realised that this likely meant the site would be rather densely built up, with little opportunity to explore iterations of the theatre's exterior. Instead, we turned inwards, carving out green spaces that also serve to reduce the massiveness of the block.


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These spaces are intended to integrate greenery effectively within the theatre's design, beyond merely having the overused practice of attaching decorative green walls. We want to achieve a conscious, comprehensive, complete blurring of inside-outside zones. Entering from a landscaped entryway, into the garden spaces of the building, there is an open ambiguity that invites the public to come in.

The use of green spaces also acts as an intermediary between functional areas. Rooms in the building are designed as being contained within a garden, to allow for various circulatory paths to be determined during when visitors explore the architecture. The green areas become markers for way finding in the theatre, and can also operate as neutral zones where an assortment of unplanned activities can occur.

The approach of designing the Gateway Theatre as a 'theatre in a garden' has always been to devise an inviting, inclusive setting for a broader audience to draw them to the performing arts. It hopes to be less daunting than the typical theatre, appealing to a common familiarity towards the garden, and shared among the community at large.



A GREEN BEACON

THE DESIGN OF THE NEW GATEWAY THEATRE BY ONG&ONG TAKES THE CONCEPT OF REACHING OUT TO THE PEOPLE IN THE HEARTLANDS A STEP FURTHER.





THE GATEWAY
THEATRE IS BIRTHED
WITH THE VISION
TO BRING LIGHT
TO THE NATION; TO
BE A BEACON TO
THE COMMUNITY;
AND A RISING
STAR OF THE ARTS
AND ENTERTAINMENT.
THE THEATRE WILL
ALLOW BUDDING
ARTISTES AN
ALTERNATIVE AND
AFFORDABLE SPACE
TO TRAIN, PERFORM
AND SHOWCASE
THEIR TALENTS
AND PRODUCTIONS
TO THE HIGHEST
STANDARDS.

The common typology of a theatre often incorporates a clear demarcation of thresholds, with areas marked out definitively to dictate the flow of people. From the procession through a grand foyer towards an opulent auditorium; scale and size is used to portray a fashion of status and splendour associated with the patrons who would traditionally attend the performances held within the walls of the theatre.

Yet today's performing arts have the potential to involve a broader section of society through its participatory nature - if made more approachable and not just restricted to the privileged. The advent of the performing arts as a medium is evident as more government ministries, non-governmental and voluntary welfare organisations include programmes like plays or forum theatre in their outreach to different community groups, which range from the youth, to the elderly, and to those with special and healthcare needs.

The new Gateway Theatre designed by a team led by ONG&ONG directors Andrew Lee and Ashvinkumar Kantilal proposes to expand the engagement of the performance arts, by creating a new interwoven community of performers and observers. Lee highlights that to achieve this, reducing any notion of exclusivity is essential: situating multiple gardens within the theatre help to break down any notions of monumentality; providing a more intimate and accessible environment for programmes to be conducted.

While the auditorium takes centrestage as the core of the building, the



 WE WANTED TO DISRUPT CIRCULATION BY INSERTING 'RELIEF' SPACES THAT

REVEALED THE BUILDING CONTENTS AND BROKE UP THE UNIFORM FAÇADE.



designers have specified ancillary spaces like dance studios, a black box and a band room to serve as supporting functions that allow for both practice and performance to occur. The result is a theatre that not only allows for an increased number of activities to take place, but for more people to participate in them too.

Located in the heartlands, realising a theatre of this scale demanded fitting multiple programmes into a 1,500 square metre plot with a height constraint of nine storeys to match its neighbouring block. The Gateway Theatre would have to accommodate 2,500 people into the building at any one time, significantly more than the existing theatre on the same site could. This likely meant the site would be built up rather densely, leaving little or no room for exploration of the theatre's exterior.

In response, Lee has retained sections of the existing building to make it consistent with the newer major reconstruction works. Secondary 'relief' spaces are inserted into an otherwise uniform façade to create a patterned wall.

Anchoring a corner plot, the resulting design is a crisp, white block with parcels of the façade punctured by overlapping green terraces or 'relief' spaces that cascade to the ground level: overhanging gardens that mitigate the scale of the large block. Crucially,

there is a production of spatially and visually enlarged spaces, in an otherwise constrained site.

This overall impression of openness serves as a welcoming gesture to passersby and the community at large, who are invited to enter and enjoy the building and its landscape. A green landscape artery melds and integrates with the surrounding urban scape, acting as a bridge to bring members of the public into the Gateway Theatre. Functionally, the landscaped sections act as seamless 'breakout' spaces, catering for moments of interaction among the community.

While not the first instance in which a building tries to incorporate greenery within its frontage, the Gateway Theatre's design is refreshing by going beyond the clichéd green walls that are usually merely decorative. Instead, there is a palpable and thorough, three-dimensional blurring of inside-outside zones. Coupled with a pattern of light strips at its corners, the building's façade appears to be dissolving at the edges. The play of light illuminates and highlights the composition and contrast as wall transitions into garden, and into wall again.

The garden spaces play a part in exploring new courses of defining spatial norms, appearing a buffer



between programme containers. By abandoning the typical planning of a theatre that would usually entail clear division of spaces and specific exit and entry points, Ashvinkumar states that the team's intention is to challenge conventional movement patterns with the Gateway Theatre's layout. Having the knowledge that the theatre would be designed to the edge of its site, the designers attempt to probe the idea of divisible territories in both habitable and non-habitable spaces. Ashvinkumar points out that the building's contents are seen as being housed inside a garden, within which territories are carved out, establishing secondary circulation spaces that allow visitors opportunity to explore. The green areas act as follies - or reference points - which serve as guides to navigate the theatre, and also become neutral zones where various impromptu activities can occur. With boundaries between spaces blurred, there is a clear objective for movement among the spaces to follow more in fluid and casual manner, spontaneously allowing for chance encounters.

Much like a theatrical set, the Gateway Theatre forms the context to prompt different members of the community as they interact in their own demeanour and methods. Each aspect of the building's architecture is carefully considered and choreographed, with overlapping gardens designed with an algorithm that shape a 'theatre in a garden'. In questioning the common typology of a theatre, the Gateway Theatre promises to fulfill its social intent - to become a nucleus in the neighbourhood, serving the need of the heartlands.

— GATEWAY THEATRE, SINGAPORE
 DIRECTORS Ashvinkumar Kantilal & Andrew Lee Siew Ming, *Architecture* | Tan Peck Khoon, *Mechanical & Electrical Engineering* | Lena Quek, *Landscape* | Ong Swee Hong, *Lighting* | MECHANICAL & ELECTRICAL Rankine & Hill (S) Pte Ltd | CIVIL & STRUCTURAL JS Tan Consultants Pte Ltd | QUANTITY SURVEYOR Rider Levett Bucknall LLP | ACOUSTIC CONSULTANT Alpha Acoustics Engineering Pte Ltd | MAIN CONTRACTOR SEF Construction Pte Ltd



BETTING ON SUCCESS
A SUSTAINABLE RACING EXPERIENCE



The Singapore Turf Club has a long history that stretches back to 1842. It has since moved from its original location at Farrer Park to Bukit Timah and in 1999, to a brand new racecourse and Grandstand at Kranji. Fifteen years into the 21st century, with changing expectations and demographics of punters, ONG&ONG was tasked with upgrading the architecture and interior design facilities of the existing Grandstand to improve user experience by maximising the space and generally enhancing the existing structure.

Two main considerations were made clear from the start. Firstly, the project had to focus on sustainability. Secondly, the upgrading had to provide for a new generation of racegoers, whose expectations reflect those of a younger demographic, while at the same time recognising that the race course had to serve multiple groups from different walks of life. ONG&ONG saw the project as an opportunity to create a more design-centric improvement for racegoers and staff by transforming the spaces into an entertainment clubhouse for horse racing.

Renovation and upgrading took place on all five levels of the grandstand, with kitchens, F&B outlets and dining facilities all being expanded and modified to offer a wider range of options for contemporary needs.

In addition to adding a new broadcasting studio in the basement, the ground level inner hall is now enclosed and air-conditioned. The spacious new hall now incorporates a set of realigned betting counters that are placed so that circulation from the Parade Ring to the track-side viewing galleries is improved. Feature lighting further enhances the atmosphere of the Inner Hall. An additional 660 seats on the mezzanine gallery and LCD screens in the Inner Hall provide an improved experience that accommodates more people. If this isn't enough, there are also new glass viewing boxes at key track-side viewing stands.

At level three, refurbishments have been made to accommodate four new customer segments and the



ONG&ONG SAW THE PROJECT AS AN OPPORTUNITY TO CREATE A MORE DESIGN-CENTRIC IMPROVEMENT FOR RACEGOERS AND STAFF BY TRANSFORMING THE SPACES INTO AN ENTERTAINMENT CLUBHOUSE FOR HORSE RACING.



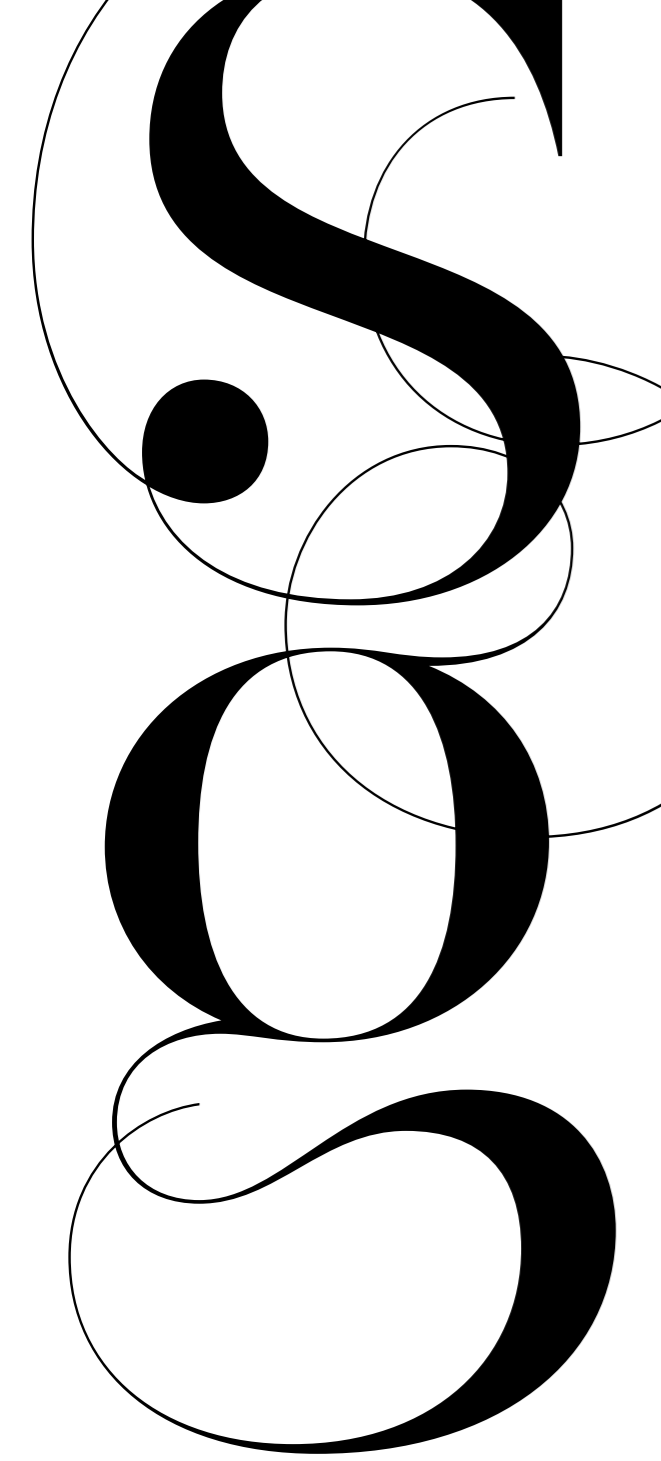
dining areas were updated to include both Western and Chinese cuisines. For high-rollers who demand a greater level of privacy and service, lavishly furnished quiet spaces allow for discretion whilst providing clear views of the track. A series of private boxes for rental are also incorporated into the new layout.

The existing corporate boxes on level four have been refurbished and expanded, and new function rooms were created by displacing the existing boxes for stewards and judges. These have now been moved to level five where some of the more extensive changes have been made. In addition to new and improved race day rooms and meeting rooms, there is also an English language broadcast studio. This level boasts the furthest cantilever on the structure, and seats provide optimal views of the track. A drop-down balcony has also been built to provide live track-side views for officials.

Now that the new grandstand is finished, a whole new segment of the population will be able to enjoy upgraded and up-to-the-minute racing in an environment that reflects new expectations and values.

**TURF CLUB GRANDSTAND,
SINGAPORE**

DIRECTORS Ashvinkumar Kantilal, *Architecture* |
Chester Goh, *Interior* | MECHANICAL & ELECTRICAL
WSP Ng Pte Ltd | CIVIL & STRUCTURAL KTP
Consultants Pte Ltd | QUANTITY SURVEYOR
Davis Langdon KPK (Singapore) Pte Ltd | MAIN
CONTRACTORS Vigcon Construction Pte Ltd | JS
Metal Pte Ltd



SHADES OF GREEN

NEW ROOFING
INSPIRED BY NATURE



For many racegoers, an important part of the whole Turf Club experience is to watch the horses strut their stuff in the Parade Ring before the race. Like the Grandstand, the Parade Ring –which lies behind it– also needed a new look. ONG&ONG was invited to conceptualise and construct a new cover over the unsheltered portion of the ring, and the resulting design won the “Trophy Award” from Singapore Structural Steel Society.

The aim was to improve and enhance the existing steel structure that only provided minimal shelter for the spectators, and did not protect them from the driving rain or intense heat. Sustainability was also key in the conceptualisation of the project.

When conceptualising the new cover, the design team took their cue from nature and considered ways of how it could be used as shelter from the elements. The team wanted to design a system that would enhance natural ventilation in the space, and diffuse the amount of natural





THE TEAM WANTED TO DESIGN A SYSTEM THAT WOULD ENHANCE NATURAL VENTILATION IN THE SPACE, AND DIFFUSE THE AMOUNT OF NATURAL LIGHT THAT ENTERED.



light that filtered into the parade ring. In this way, they planned to optimise comfort levels of both spectators and horses. The paving around the ring was made from industrially-reconstituted rubber, providing a more even and comfortable base.

The Parade Ring is surrounded by a lush green landscape that includes mature rain trees around the edge of the site, which provided the inspiration for its redesign. By taking the simple form of the leaf as the starting point, the designers came up with a two-tiered steel structure that emulated a giant leaf folding over and enclosing the voluminous space of the Parade Ring. It was designed so that it was sufficiently open at the sides to allow the space to be naturally ventilated. The huge leaf-like shape of the Parade Ground cover forms a central arch as a visual focus that roots the structure to the ground on which the horses parade before the crowd.

— TURF CLUB PARADE RING,
SINGAPORE

DIRECTOR Ashvinkumar Kantilal, *Architecture*
| MECHANICAL & ELECTRICAL WSP Ng Pte Ltd
| CIVIL & STRUCTURAL KTP Consultants Pte
Ltd | QUANTITY SURVEYOR Davis Langdon
KPK (Singapore) Pte Ltd | MAIN CONTRACTOR
W Y Steel Construction Pte Ltd





SPOTLIGHT

**FIREPROOF
ENGINEERING**



WHEN DESIGNING A BUILDING, YOU NEED TO UNDERSTAND THE FORM AND FUNCTION OF THE BUILDING, ITS OCCUPANT CHARACTERISTICS, POSSIBLE FIRE SCENARIOS, AND MITIGATING MEASURES.

As a registered fire safety engineer, Elton Ng Soon Kuan is trained to make buildings as fireproof as possible. He is part of ONG&ONG's 360° Solution, and is frequently called in during the design and development stage to ensure that the final structure incorporates adequate fire safety features. Ng is one of approximately 80 qualified fire safety engineers active in Singapore.

Ng explained, "There are fundamental rules and regulations laid down by the Singapore Civil Defence Force's Fire Safety and Shelter Department, and my first responsibility is to ensure that these are adhered to. The first approach regards 'life safety' – ensuring that there are clearly marked egress routes for people to leave the building, and that there is an early warning system to let people know that there is a fire threat. The second approach is that of 'asset protection', which means preventing the fire from spreading, by compartmentalising it, which also helps prevent property loss."

"When I look at a proposed design of a building, I have to consider things such as the occupancy characteristics – do the people in the building have physical impairments? Can they be readily evacuated? A development like the Bedok Integrated Complex will have a wide range of people to consider, and the physical site also has a bearing on what we do. Since the complex has been designed to be open and unobtrusive, smoke and toxic gases would also be able to spread readily, so we have to consider the kinds of solutions we implement."

What are the potential solutions that a fire safety engineer has at his disposal? When designing a building, you need to understand the form and function of the building, its occupant characteristics, possible fire scenarios, and mitigating measures. Ng added that smoke is often the major hazard in a fire. "Spaces can be ventilated with pressurisation fans during normal periods, and when there is a fire, the same system can be used to stop the infiltration of smoke," he said.

In fact, factoring adequate ventilation into a building's design is an important aspect of a fire safety engineer's job. "The same ventilation systems that draws air out of shopping malls, sports centres or car parks, can be used to draw smoke away from people being evacuated," Ng said. "Fire compartment walls are also an important part of safety design, as they are part of passive fire protection in kitchens, plant rooms, and escape routes, and provide up to four hours of fire resistance."

Sprinklers are ubiquitous features in most public and civic buildings. Ng said, "Sprinklers have changed from merely controlling and limiting fire spread to being able to suppress the fire. However, in tall atrium spaces, they may not have much of an effect, as the water droplets evaporate due to the heat from the fire. In some instances, water sprinklers cannot be used. Aerospace hangers have to use AAF foam, and in places where water-reactive chemicals are present, other solutions have to be considered. That's where I come in. My job is to make



sure that the solutions implemented are suitable for the task."

Ultimately, one of the most important considerations when looking at fire safety is to ensure that the early warning annunciation and automatic sprinkler systems operate efficiently. As soon as the alarm goes off, it triggers a switch that prevents the elevators from stopping at the floor where the fire is located. As people instinctively head for the place they enter from – usually the elevator, clear indications have to be placed throughout the building to direct people out through the nearest exit. "The early warning system should be designed so that those on the floor of the fire are evacuated first to avoid bottlenecks," he said.

What are the toughest challenges for a fire safety engineer? "If you think of places like the Singapore Indoor Stadium, it's vast so you can quickly evacuate," said Ng. "It's the more intimate, enclosed spaces like theatres that present the greatest challenges. Underground spaces are also tricky, especially if they have low headroom."

Fortunately, new technology makes the task easier. Ng said, "We now have access to sophisticated software that enable us to simulate different fire conditions. We can then deploy evacuation modelling to work out escape times, and see what would happen during low occupancy periods and peak occupancy periods." Even though we can be assured that there are individuals like Ng who are looking out for our welfare, we can never underestimate what happens in a fire.

BLAZING

AHEAD

A FUTURISTIC
FIRE STATION
IN TUAS
INDUSTRIAL
ESTATE





THE ARCHITECTURE IS OF A STRIKING FAÇADE THAT FLOWS ROUND THE CORNER IN A GRACEFUL SWEEP SO THAT IT APPEARS TO ENFOLD ITS INNER SPACES. PLAYING WITH THE IDEA OF CREATING CURVATURE IN THE OVERALL DESIGN FORM.

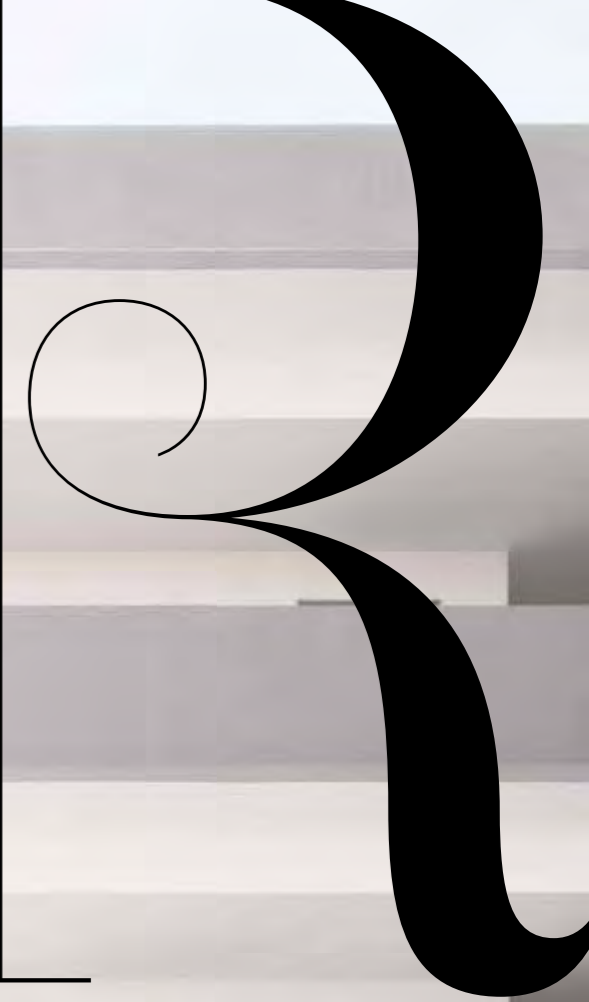


Singapore's Civil Defence Force (SCDF) has been fighting fires, saving lives, and dealing with emergencies for well over a hundred years – albeit under different names. Fires are among the greatest hazards the SCDF has to deal with, and Singapore now has 20 fire stations scattered across the island, with personnel poised and ready to spring into action. The latest of the stations is the Tuas View Fire Station, designed by ONG&ONG under the direction of Dr Goh Chong Chia (architecture), Tan Peck Koon (mechanical and engineering), and Lim Yang Ping (civil and structural).

Tuas View Fire Station has been built specifically to serve the rapidly developing Tuas South Industrial Estate. Due to its location on a corner site, the architecture is of a striking façade that flows round the corner in a graceful sweep so that it appears to enfold its inner spaces, playing with the idea of creating curvature in the overall design form.



THE RED AND GREY ARE SCDF'S CORPORATE COLOURS, WITH THE RED ACTING AS A VISUALLY STRIKING ELEMENT IN THE OTHERWISE MUTED GREY AND CREAM LANDSCAPE OF THE INDUSTRIAL ESTATE.





A streamlined, contemporary feel has been employed by adding a curtain of red perforated steel mesh that covers a second inner layer of grey steel louvers. The red and grey are SCDF's corporate colours, with the red acting as a visually striking element in the otherwise muted grey and cream landscape of the industrial estate. Moreover, the red mesh's shape accentuates the sleek lines of the building and suggests movement. This screen also plays a functional role in shielding the windows and walls from the sun. In addition to the main structure, the architects incorporated a seven-storey training tower, also predominantly red, that may be seen from a distance like a beacon.

As Singapore continues to grow, it is inevitable that more fire stations will be constructed in years to come. It is thus comforting to know that the Tuas View Fire Station has set new heights in design by creating an ideal work environment for the members of the Civil Defence units who look out for public safety.

— TUAS VIEW FIRE STATION,
SINGAPORE

DIRECTORS Goh Chong Chia, *Architecture* |
Tan Peck Khoon, *Mechanical & Electrical* |
CIVIL & STRUCTURAL SCE Consultants
Pte Ltd | FIRE SAFETY Rankine & Hill (S) Pte
Ltd | QUANTITY SURVEYOR Faithful+Gould
Pte Ltd | PROJECT MANAGEMENT Parsons
Brinckerhoff Pte Ltd | MAIN CONTRACTOR
TKT Development Pte Ltd

RHYTHMS OF LIFE

LIGHTING
DESIGN
THAT PULSES
TO THE
BEAT OF
THE INDIAN
COMMUNITY





Many know how brightly Little India lights up for Deepavali, creating a magical spectacle along Serangoon Road. When the new Indian Heritage Centre opens this year, visitors to Little India will be able to enjoy a similar light show throughout the year. When ONG&ONG was brought in as the lighting consultants for this project by the National Heritage Board and the now Ministry of Communication and Information, the designers set out to create a dynamic and versatile 'theatre of light' across the building's façade.

The structure, which forms the canvas on which the light will be 'painted', consists of a *baoli* (meaning 'stepwell' in Hindi) diamond pattern that seamlessly integrates with the façade. They set out to create a visual for the façade that will illustrate the building's purpose, whilst also highlighting the importance of the centre within the local Indian community, as well as to the Indian community abroad.

In order to make the lighting system appear to be integral to the building, all the fittings had to be carefully embedded into the curtain wall and the mullion structure. In this way, the lighting and façade are fused together. So well integrated is this system that the lighting serves to pick out and enhance the details of the façade by accentuating the surface artwork.

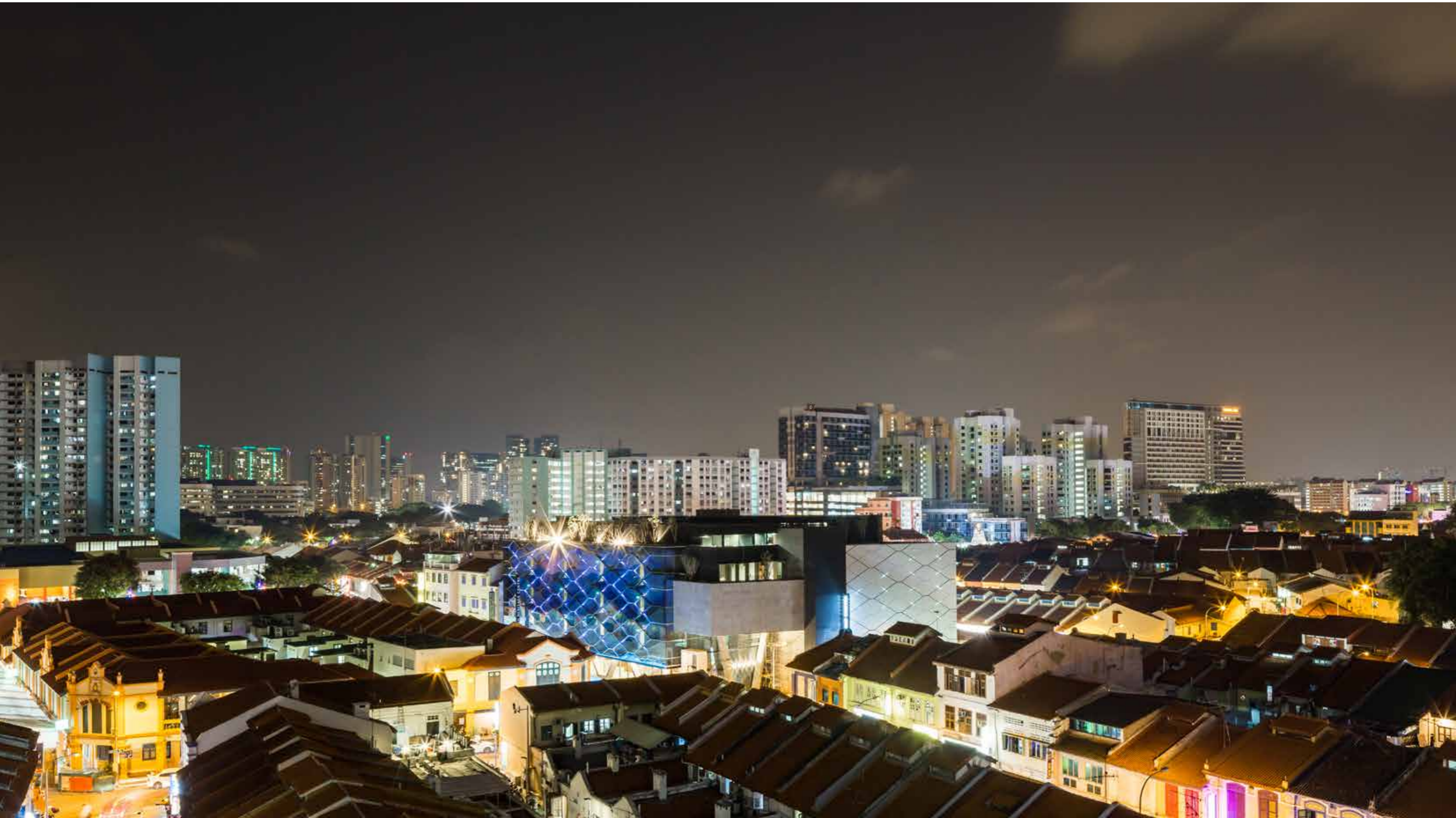
The lights are also able to adapt to the surrounding environment, as they 'tune in' to the life and rhythm of the street. On weekends and during festive celebrations, the lights may be programmed to dance or pulsate rhythmically to classical Indian music. Different colours reflect various activities on the site and its surroundings by expressing the pedestrian and traffic flow, or drawing attention to programmes and activities being celebrated within the centre. The programming of the lights can even sequentially highlight the commissioned artwork on the façade.

ONG&ONG's lighting design studio created a theatrical performance of light and art that illustrates the synergy between different areas of the building. Although the structure is a contemporary one, the centre's roots lie deep within ancient traditions, and these values are communicated via the theatre of light playing across the building's surface.

— INDIAN HERITAGE CENTRE,
SINGAPORE
DIRECTOR Ong Swee Hong, *Lighting*

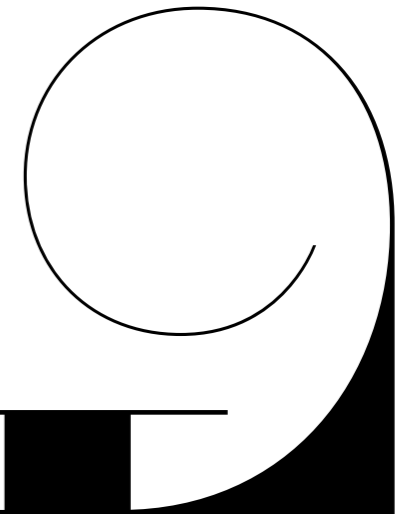


THEY SET OUT TO CREATE A VISUAL FOR THE FAÇADE THAT WOULD ILLUSTRATE THE BUILDING'S PURPOSE, WHILST ALSO HIGHLIGHTING THE IMPORTANCE OF THE CENTRE WITHIN THE LOCAL INDIAN COMMUNITY, AS WELL AS TO THE INDIAN COMMUNITY ABROAD.



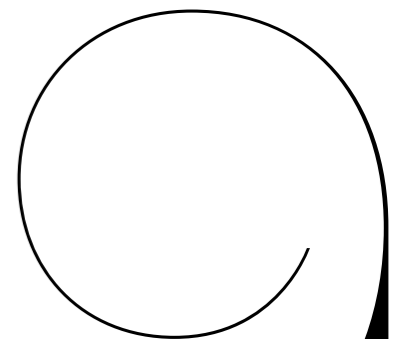


LIVING



LIBRARY

LANDSCAPING
TO CREATE
A UNIQUE
HIGH-RISE
EXPERIENCE





Singapore's National Library is renowned for its reading and lending collection. Now visitors can begin to enjoy the collection, along with the many programmes offered by the library, amidst the lush foliage of its sky terraces and floating gardens, as well as the sunken basement gardens that are liberally interwoven among the gleaming glass façade of the building.

The National Library Board (NLB) allocated some ten percent of the total floor area of the building to green space. The building has 14 sky courts and terraces spread throughout the building, and the NLB wanted ONG&ONG's head of landscape design, Lena Quek, to turn these spaces into a 'living library'. The idea was to intersperse the region's rich bio-diversity between the library spaces as a means of re-establishing human psyche with nature.

Quek explained her response to the brief. "Being an island site, it provided an opportunity to create a high-rise garden. I perceived it as a tropical park within the building," she said. Essentially, Quek was setting out to create a garden that formed an integral part of the overall library experience. Indeed, it was conceptualised as a spatial guide that would influence how people used, interacted with and recognised the spaces.

If the first layer of the concept was that of a 'living library', then at a deeper level was the concept of having a 'think park' – after all, being surrounded by books and nature is surely fuel for thought. "The concept of a 'think park' is meant to make us think, feel and be more empathetic, so that our perception of life and the elements we see can be better experienced," explained Quek.

How do these abstract concepts translate to the design of the spaces and the choice of plants? In different parts of the library, the plants are perceived, interpreted and used in different ways. In the basement children's court, for example, they can play roles in storytelling and drama. But the plants may also be used as a form of wayfinding, so that the trees that frame meandering pathways may help to enhance circulation, while more formal planting strategies discourage people from wandering into other areas.

Certain challenges were presented when deciding what plants should be used and where they should be used.



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Quek outlined a few of the problems she had to resolve. “The design of the terraces had to be flexible so that they could accommodate both the gardens and the various library programmes, such as poetry readings, book signings, or exhibitions for example,” she said. Quek also had to select plants that would withstand high wind speeds on the roof terraces, as well as plants that could survive the diffused light of the sky terraces.

If that was not enough, there was also the challenge of designing the planters on the terraces so that they did not excessively impact the overall design. “Because we couldn’t sink them, due to budget restraints, we designed a series of tiered planters so that the taller planters, with deeper soil, could accommodate tall trees. By selecting the right plants and having lush species that trail over the edge of the planter, we were able to conceal and soften the protruding walls of the taller planters,” said Quek.

The project demonstrates the extent to which nature and the built environment can be integrated into a holistic urban setting. Therefore, any pocket of green the library user chooses to enjoy –be it the basement bamboo garden, the fern garden, or any of the sky terraces– allows them to inhabit a piece of high-rise nature.

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