

# ULI Case Studies

## Kampung Admiralty Case Study, Singapore



*Kampung Admiralty*

### QUICK FACTS

**LOCATION**

Singapore

**PROJECT TYPE**

Mixed-use Senior Housing/Medical/  
Community space

**DEVELOPMENT SIZE**

32,332 square metre

**DEVELOPER**

Housing & Development Board, Singapore

**ARCHITECT**

WOHA Architects Pte Limited  
<https://woha.net>

**LANDSCAPE CONSULTANT**

Ramboll Studio Dreiseitl Singapore Pte.  
Limited  
<http://www.dreiseitl.com/en/start>

**CERTIFICATION**

Green Mark Platinum

## Project Summary

In recent years, Singapore’s holistic approach to city planning has led to the emergence of a number of forward-looking planning and design strategies, one of which is known as the ‘co-located community hub’. Completed in 2017, the Kampung Admiralty (KA) project is one such hub.

Built on a 0.9-hectare infill site next to a public transport node in the city’s northerly Woodlands town, KA is a government-funded, mixed-use facility that aims to address two fundamental goals. First, intensification of land use through co-location of a number of different public facilities on a single, vertically integrated site. Second – and more importantly – it aims to create a well-designed public space that promotes

social interaction between the local community and the project’s senior residents, thereby facilitating active and independent lifestyles.

To achieve this, KA’s small footprint has been developed as a self-contained vertical village, or “kampung” (i.e. a traditional Malay village) featuring innovative, sustainable design in a stacked collection of typologies.

- On the ground floor, a spacious 1,000 square metre community plaza provides a sheltered space to host community events and promote social mixing.
- Above-ground floors feature a medical centre, a food court (aka a “hawker centre”), retail, a child care centre, and an active ageing hub.

- On the rooftop, a lush community park has been constructed across a number of cascading terraces, together with a community farm for use by residents.
- Two eleven-storey blocks are reserved for use as housing for seniors.

The entire development is barrier free and has adopted Universal Design principles, with natural cross-ventilation, numerous sitting out spaces, and optimum daylight. The project is also highly-efficient, with low operating costs and other environmentally-friendly features earning it the highest Green Mark certification under Singapore’s green building certification scheme.

## Co-located hubs

KA is one of at least three major co-located hubs already operating in Singapore, with two other facilities located at [Our Tampines Hub](#) (completed in 2017) and [Heartbeat@Bedok](#) (completed in 2018). While these other projects do not have a residential component, they incorporate a variety of amenities depending on the needs of the community, including sports facilities, libraries, arts programmes, and health clinics. Construction of other large co-located projects is underway in other parts of Singapore.

There are various reasons why Singapore has prioritised creation of integrated public facilities in this way. For one, some of the city's "New Towns" (the city has 24 towns with populations averaging around 300,000) have now aged. Beyond that, New Towns continue to grow. Changing needs mean that land needs to be used more efficiently and built to higher densities.

In the case of KA, the site was originally earmarked for development on a single-use basis as a residential development, but planners noted concurrent proposals to build both a medical centre and a hawker centre (ie, a food court) in the vicinity, prompting the idea to integrate all three uses into a single compact development.

KA's design brief targeted certain specific goals:

- To create a sense of vibrancy that facilitates better interaction within the community. In particular, KA was conceived to encourage social interaction between the project's elderly residential community, their younger relatives, and the neighbourhood in general.
- To integrate care and medical services and commercial facilities so that they can be conveniently accessed by elderly residents.
- To provide facilities that promote liveable, sustainable, and active lifestyles.



1st & 2nd storey: Tropical plaza & food centre

The site's small footprint was challenging, but ultimately gave rise to imaginative design approaches for which the project has become known. The complicated brief led to an unconventional multi-level collection of spaces that are both large and small, public and private, and communal and green – a balanced combination of functions that successfully promotes the physical, social, and psychological health of its residents.

### Peoples' Plaza

These goals are key to understanding various aspects of KA's design. Capitalising on the site's prime location next to Admiralty MRT station, the

development's entrances have been configured to require passengers arriving from the southern side to transit through the project's expansive ground-floor plaza space. As a result, the 'People's Plaza' draws large numbers of users across a diverse demographic, thereby guaranteeing its role as a focal point of the community.

The need to create a prominent, community-oriented space also explains the plaza's design. Generally, high-traffic parts of privately-owned, mixed-use facilities are developed to maximise revenues, usually by filling them with a dense concentration of retailers willing to pay high rents.



In this case, however, the plaza is conceived more as a community living room. It is designed in an asymmetric way that encourages people to linger, forming a porous, high-ceilinged space generally devoid of commercial tenants that allows residents to gather in a recreational context, either informally or as part of a range of organised community activities. These include large-scale sports and fitness activities, educational events such as cooking classes and handicraft workshops, cultural performances, and free movie showings.

Despite this focus on community, KA still manages to cater to retail venues for residents' convenience. In particular, various shops, a bank, and a supermarket have been located both in the basement and on the 1st floor, while a food centre is located on the 2nd floor, overlooking the plaza.



*Naturally ventilated public space*



*The Medical Centre*

## Medical Center

While the ground floor People's Plaza is designated as a multi-role community space, KA's other functions are layered above it "like a club sandwich", as the HDB describes it.

On the quieter 3rd and 4th floors, the Admiralty Medical Centre occupies 11,836 square metres of space. Although open to the community generally, the centre aims to cater especially to the neighbourhood's elderly residents for health monitoring and to those who are suffering from chronic diseases, with specialists from a nearby hospital offering outpatient services such as day surgery, endoscopies, and rehabilitation and diagnostic consultations. A pharmacy, an in-house diabetes centre, and a range of community health education and chronic disease management programmes are also included.

The medical centre incorporates some innovative design features. In particular, its single large waiting area looks out into a rain garden courtyard situated at the base of the complex's cascading rooftop park, providing a relaxing, natural environment for patients waiting for appointments. One-way glass has been installed to protect privacy. The facility's surgical recovery rooms enjoy similar views.



## Biophilic Design

In 2013, HDB published the Biophilic Town Framework, a new design philosophy aiming to improve liveability and community health across Singapore through creation of nature-centric neighbourhoods. This has resulted in an even greater emphasis on greenery in the built environment, which was already common across the city before the policy was introduced.

In KA's case, the range and extent of biodiversity is impressive even by Singaporean standards. Recreating what is essentially a small tropical rainforest, the landscaping is central to project design and is an important means of attaining desired levels of livability and sustainability. Importantly, too, it is not designed only as a scenic backdrop but performs various functional roles as well.

The total green areas at KA cover some 4,730 square metres, or about 53 percent of the total plot area. A series of rooftop terraces are intimately scaled and step down towards the building centre. They feature more than 50 species of plants in a variety of typologies ranging from water features on the ground plane, to planter beds on levels 3 and 6, to community gardens and farming on the upper floors. In addition, an abundance of mature plants and trees have been planted, requiring reinforced superstructure to support the extra load.

Landscaping was designed in collaboration with Singapore's National Parks Board, who advised on appropriate types of vegetation as well as structural requirements to hold the resulting load.

## Water Retention and Harvesting

KA's green features are not designed only as a biophilic resource. In addition – and in accordance with government regulations applicable to all new developments in Singapore – they are also intended to help address the recurring threat of flooding to the city caused by heavy seasonal rain. The project's landscaping features therefore also serve as a water harvesting



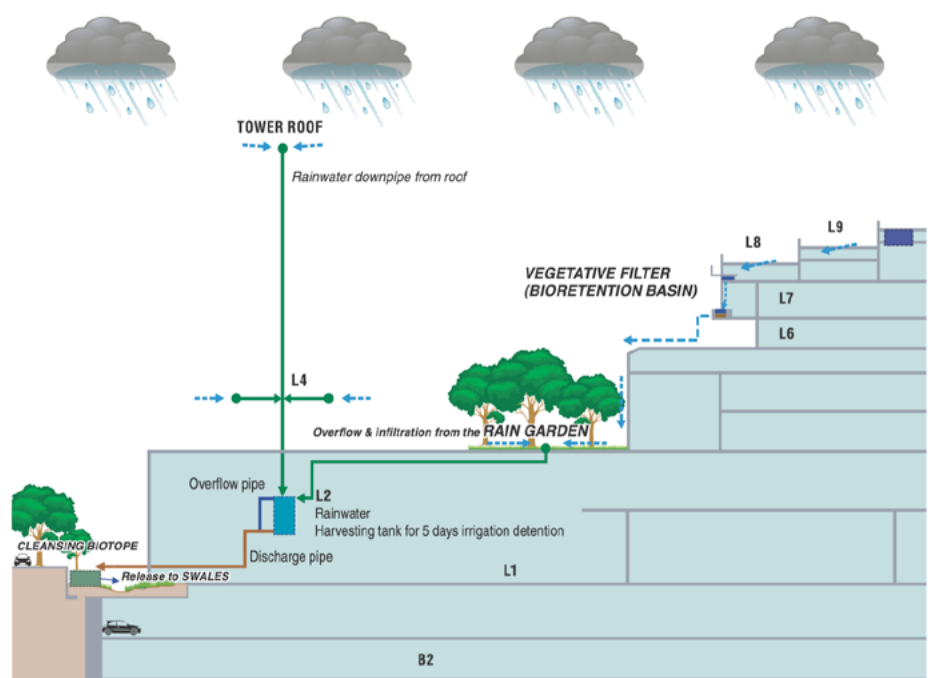
*Kampung Admiralty's rooftop gardens*

and stormwater management system, with rainwater collected and stored onsite until flood conditions subside and excess water can be released into the municipal drainage system.

Despite KA's small 0.9-hectare footprint, the stormwater treatment design manages to cleanse runoff from some 33 percent of the site area before discharging the treated water to the harvesting system. Multilevel planters installed on the 6th, 7th, and 8th storeys form a series of cascading bio-retention basins that sequentially drain, store, and filter the water.

Runoff from these upper floors, together with any overflow, is then channeled to a raingarden situated on the building's 4th floor for a final round of treatment. This enclosed area is not open to the public, but is visible through plate glass windows and functions as a tropical garden exhibit for visitors in the waiting area of the Admiralty Medical Centre.

From there, water is dispatched to a harvesting tank installed on the mezzanine level. Some of this water is then pumped to other parts of the building for re-use – either back to the rooftop for irrigating the



*Water harvesting system*

rooftop gardens, or otherwise as needed across the facility. In this way, recycling allows savings of up to 4.1 million litres of tap water annually, according to an HDB official.

Water that is not re-used is then directed via an overflow pipe to the ground floor, where it arrives at a series of vegetated swales and a cleansing biotope before flowing into a neighbouring eco-pond. The swales and biotope serve as an additional source of natural filtration for the eco-pond, which is a relatively large facility located next to the stage built in KA's main foyer.

This eco-pond is intended as a scenic backdrop for a communal area where residents and visitors can gather, either for social purposes or for activities such as exercise classes. It hosts a number of

fish that both add to the biodiversity and prevent mosquito breeding. Water in the eco-pond is regularly pumped from the eco-pond back to the nearby cleaning biotope, where it is filtered to maintain the desirable water quality, thereby preventing stagnation. Eventually, any excess water is dispatched via overflow pipes to the city's public drainage system.

In this way, and in keeping with the spirit of a co-located facility, the landscaping serves a variety of purposes beyond its obvious decorative intent. Rainwater harvesting allows the building to function sustainably as a catchment to prevent flooding, while also providing cleaning and irrigation water. In addition, it helps to regulate heat and creates recreational opportunities (including for farming) that boosts residents' quality of life. Finally, the wide variety of mature plants helps

support extensive biodiversity, including birds, butterflies, dragonflies, amphibians, and fish, providing positive reinforcement for people who value biodiversity in a built-up area.

Another way in which the building has been made to be sustainable is through installation of solar panels. Although space limitations imposed by the high-rise environment create an inherent tension between use of rooftops for both landscaping and solar power generation, HDB has been installing solar panels on the rooftops of public housing projects as part of Singapore's nation-wide sustainability push. In this case, solar infrastructure has been reserved for the tops of the two residential towers and is dedicated for use in lighting the project's public areas.

## Liveability

Another aspect of KA design that makes it different from commercial mixed-use projects is a focus on liveability. Although the design of the ground floor plaza is calculated to attract maximum foot traffic, designers have also focused on promoting liveability through minimising noise pollution and crowding.

One way this has been achieved is by stacking the structure of the building against the adjacent MRT station in order to reduce noise from trains. In addition, KA has been designed using software (i.e. Integrated Urban Environmental Modeling) to develop 3D models that simulate the impact of sun, wind, and humidity on the building structure.

Passive design configurations were then incorporated into the built form, orienting it to maximise air movement and minimise solar exposure. As a result, KA is punctuated with a range of porous facades, sheltered walkways, landscaped terraces, and cross-ventilated spaces intended to create a comfortable living environment. The pre-cast façade has deep sunshades, and natural daylight is maximised by creating high ceilings, light wells, and numerous open spaces.



*Biophilic elements are integrated throughout the project's open spaces*



Otherwise, significant effort was expended in the design process to ensure that KA's upper floors – including both the landscaped terraces areas and residential towers – remain peaceful and relatively secluded, despite being public-access areas. The absence of noise and pollution allow residents to leave windows open, simultaneously increasing exposure of the residential spaces to the outdoors while also promoting natural ventilation.

Another way in which liveability is enhanced is by leveraging the complex's lush greenery. As noted above, the Medical Centre's waiting area features a large glass-panel wall looking onto a recessed outdoor garden sitting at the bottom of a series of landscaped terraces, creating a serene environment that reduces stress. Residential units also enjoy views of the multi-level roof gardens – the cascading greenery is a constant theme that offers visual relief varying from mature trees to rain gardens, ponds, and bioswales.

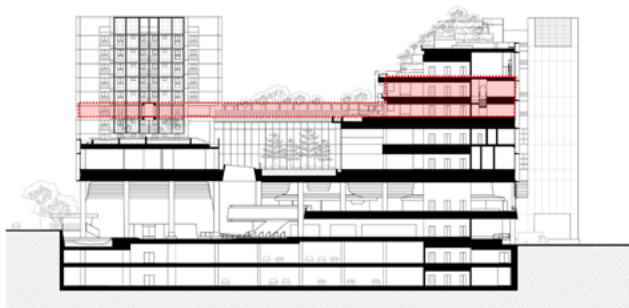
In keeping with the vertical village concept, the rooftop terraces incorporate features typically found in ground-level HDB projects, including covered walkways, sheltered open spaces, and strategically-placed seating.



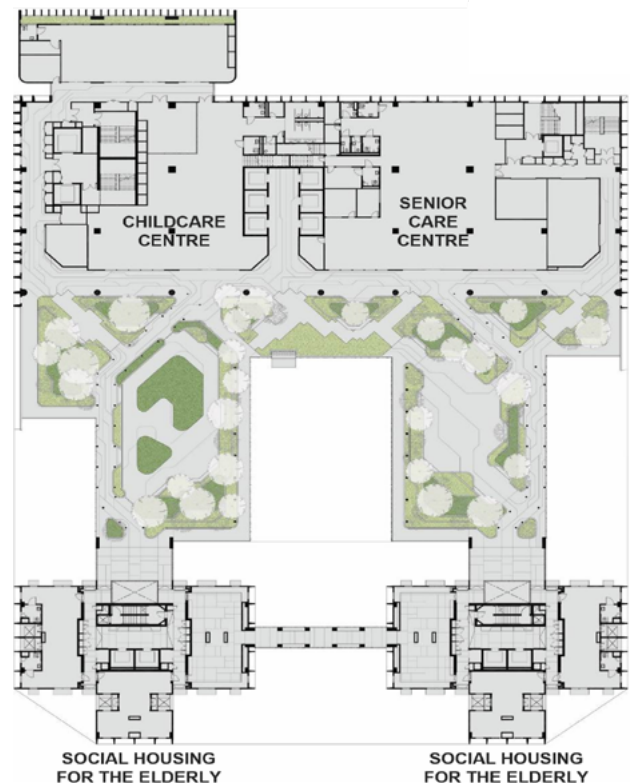
Public open spaces for different demographic uses are featured throughout the upper floors

The process of implementing these types of design-driven amenities is not necessarily more expensive or difficult than in more conventional projects. However, by nature they are generally hard to retrofit and therefore should not be seen as an afterthought or value-add to be layered onto a pre-designed structure. To be successful, buildings that incorporate

a wide mix of complementary uses are complicated and require attention to detail. This means that architects need to be engaged in a central role early in the design process, (for example at the tendering stage) in order to advise on feasibility studies – an approach that is not always adopted by developers in the private sector.



Cascading terraces of the upper floor roof garden



6th storey plan: community sky park & social amenities

## Active Ageing

The community plaza is only one way the project seeks to promote social interaction. Another approach is to create facilities specifically aiming to draw younger people into the building, where they can interact with residents. A childcare centre and an active ageing hub has therefore been co-located on the 6th floor. A children's playground and elderly exercise equipment are also located at the community park, in front of the two centres, helping to bring kids and seniors into proximity and provide activities in which they can collectively participate.

The active ageing hub offers a variety of activities and health programmes to keep residents occupied, from cooking

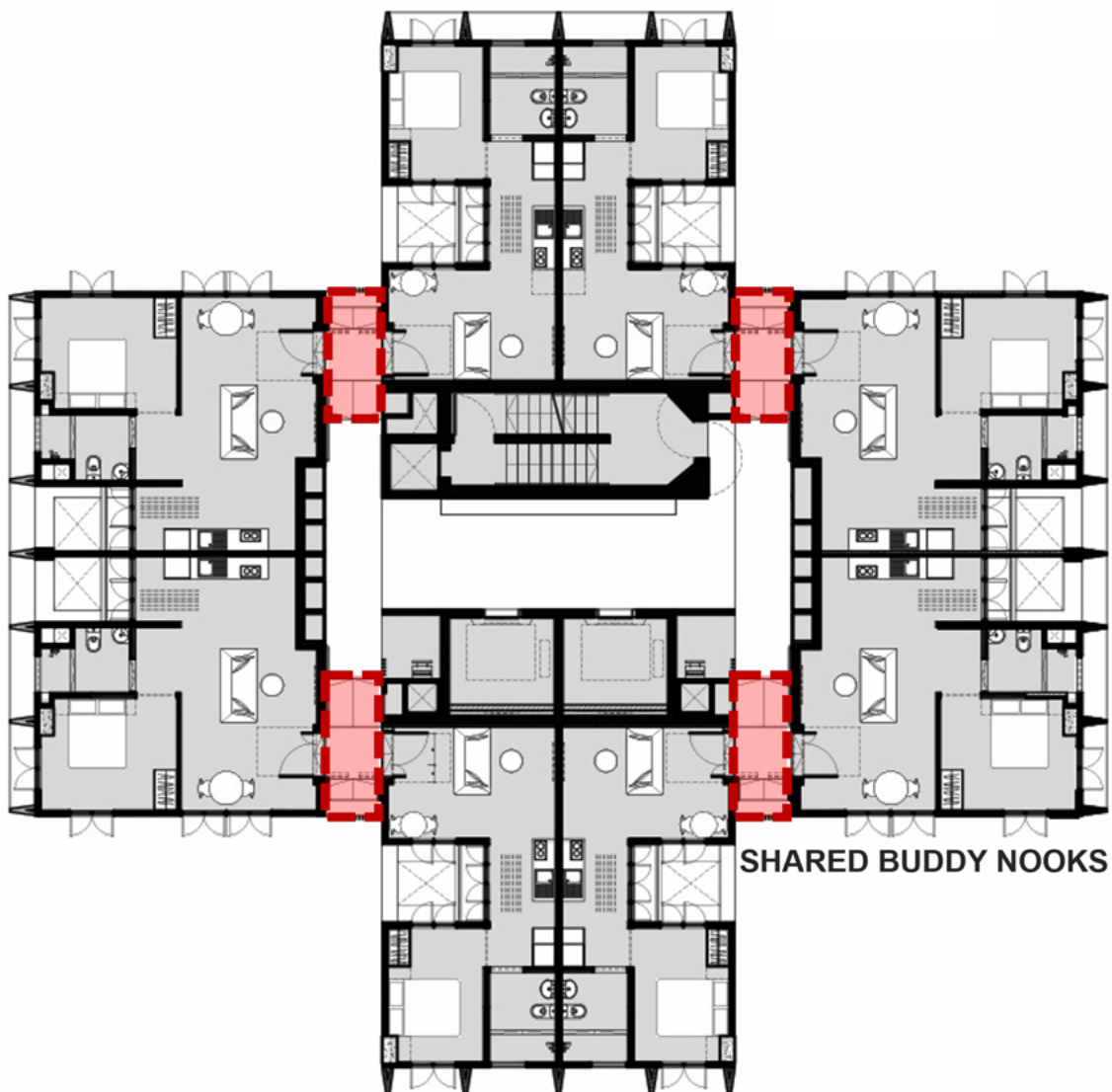
to life skills. The building also features a high-rise community farm installed on the 9th floor rooftop. This consists of a 180 square metre garden where a wide variety of edible plants is grown (and often eaten) by residents. Indoor gardening workshops are also offered to help adorn the interior of the building.

## Senior Housing

With a mandate to cater mainly to senior citizens, KA is the first public housing development in Singapore that combines residential, healthcare, and recreational space under one roof, providing a one-stop hub that facilitates aging in place. The success of the project has led to plans to build similar developments in other parts of Singapore.

The project's housing component comprises two 11-storey cruciform blocks built on the side of the building furthest away from the MRT station. These have a total of 104 senior citizen apartments located between the 4th and 11th floors in an area relatively buffered from the bustle of the activity-focused lower floors. Each storey contains 8 studio units of either 36 or 45 square metres for singles or couples aged 55 and above.

Similar to other public housing projects, precast components were used for construction, with bathrooms built as standard modules offsite and transported to the site readymade. Building management software has been installed to maximise efficiency of electrical and water use.

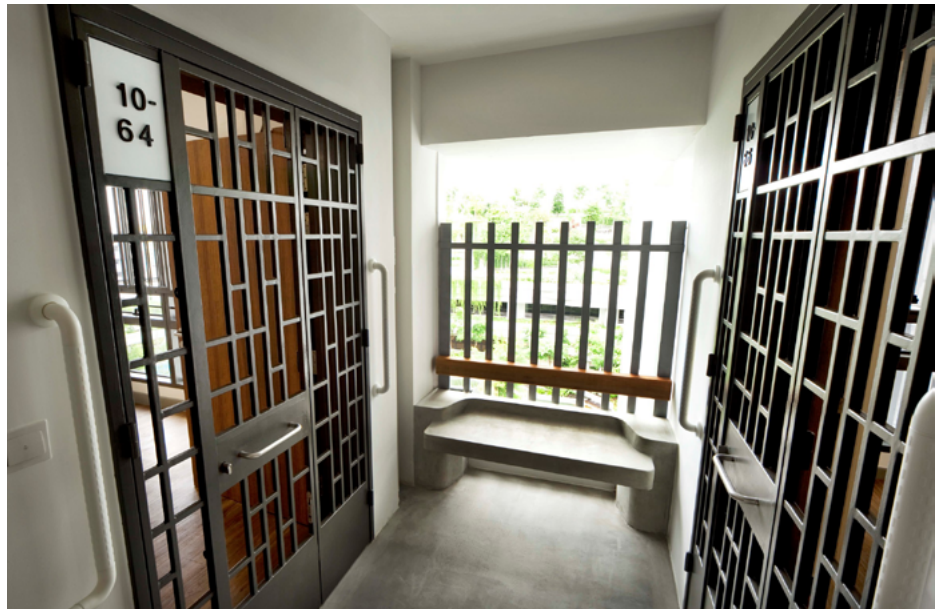


*4th-11th storey: housing for the elderly*



Passive cooling and views over the sky gardens reduce air conditioning costs and encourage outdoor activity. Flats were built to be move-in ready and come with fittings suitable for elderly occupants, including for wheelchair use. These include:

- A variety of age-friendly fixtures, such as grab bars, entrance ramps, panic buttons, etc. Apartment windows are built at a lower level to provide views to the outside gardens or street for wheelchair users.
- Kitchens with fitted cabinets and induction hobs, which are regarded as safer alternatives to gas cookers.
- An emphasis on community. For example, doorways of adjacent units open directly opposite each other, both to encourage socializing and to facilitate neighbours looking out for one another. In addition, “buddy benches” are installed on the common areas of each floor, with the same purpose.
- A pneumatic waste conveyance system (for both recycled and normal waste) serves the entire development, including the residences. It comprises a network of pipes using suction technology to dispatch refuse from individual homes and commercial units to a centralised collection point.



*Housing for the elderly features entrance ‘buddy nooks’ with appropriately equipped interiors*

In common with all public housing units in Singapore, apartments are sold on a leasehold basis, although in KA’s case these are flexible leases that run until tenants reach a minimum age of 95 years. Flexible leases offer a more affordable model for seniors (who must be at least 55 years old) than longer fixed-term leases.

## Interagency cooperation

Historically, government departments in Singapore (as in most countries) planned and built new facilities according to their own needs on a single-use basis. Today, however, the integrated approach embraced by KA is becoming increasingly common – not only because Singapore’s shrinking land supply requires it be used more

efficiently, but also because the synergies derived from co-location create so much added value.

That said, integration is not necessarily straightforward. Government bodies’ pursuit of departmental agendas can lead to some tension over how a shared facility should be constructed and operated. Previous efforts to create co-located hubs in Singapore had already experienced such problems, and the wide array of different uses planned for KA – with seven different government stakeholders involved – led to a longer development process with extensive negotiations among different agencies.

Debate ensued over which typologies should be located on the ground floor, for example, while the design and/or location of other facilities were less favoured because proposed solutions were contrary to established policy or design norms. For KA, these disputes were resolved efficiently via a steering committee, co-chaired by senior members of the project’s stakeholder agencies, set up from the outset of the project.

In doing so, the committee was careful to focus on the overarching goals of the project – in this case, serving the community – rather than simply reaching a compromise that might serve the interests



of the various agencies but would have delivered a lesser end result for building occupiers and users.

Another lesson learned during this process was that the project's complexity, in terms of packing together so many different typologies in such a compressed space, means that good design was critical to the final outcome. Architects therefore need to be involved in the process at an early stage to help shape the vision and design a user-friendly and efficient end product.



*Kampung Admiralty at night*

## Project Information

### Development Timeline

Site Acquired	4th July 2014
Construction Started	4th August 2014
Construction Completed	5th August 2017
Opened	5th December 2018

### Site Size

Commercial Space	Medical Care GFA	8,981 square metre
	Retail	11,836 square metre
	Civic and Community	5,710 square metre
Senior Living Apartments	104 units	5,246 square metre
Childcare		36 and 45 square metres
Open Space	Sheltered Plaza	2,078 square metre
Community, Civic & Institutional		1,873 square metre
Number of parking spaces		5,259 square metre
		220
Sustainability certifications		Green Mark Platinum

### Financing Information

Total Investment	S\$150 million excluding land cost
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## About ULI

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ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics. Established in 1936, the Institute has a presence in the Americas, Europe, and Asia Pacific regions, with members in 80 countries.

The extraordinary impact that ULI makes on land use decision making is based on its members sharing expertise on a variety of factors affecting the built environment, including urbanization, demographic and population changes, new economic drivers, technology advancements, and environmental concerns.

Peer-to-peer learning is achieved through the knowledge shared by members at thousands of convenings each year that reinforce ULI's position as a global authority on land use and real estate. In 2020 alone, more than 2,600 events were held in about 330 cities around the world.

Drawing on the work of its members, the Institute recognizes and shares best practices in urban design and development for the benefit of communities around the globe.

More information is available at [asia.uli.org](https://asia.uli.org).

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## Project Staff

### May Chow

Senior Vice President,  
ULI Asia Pacific

### Colin Galloway

Principal Author,  
ULI Consultant

### Diwa Law

Senior Associate  
ULI Asia Pacific

### Lawreane Jamie de los Santos

Graphic Designer

## Urban Land Institute Asia Pacific

3418 Jardine House  
1 Connaught Place  
Central, Hong Kong

Tel: +852 2886 1620

Email: [asiapacific@uli.org](mailto:asiapacific@uli.org)

[asia.uli.org](https://asia.uli.org)

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