

## ENHANCING LIVEABILITY, FOSTERING COMMUNITIES: ESTATE MANAGEMENT FOR SINGAPORE'S PUBLIC HOUSING

Public housing in Singapore is an extensive whole-of-government effort to work with communities and the private sector to ensure that Singaporeans have a liveable and high-quality home environment. Estate management is a less known but equally important aspect of public housing.

*Enhancing Liveability, Fostering Communities: Estate Management for Singapore's Public Housing* provides a detailed look at the behind-the-scenes work that government agencies like the Housing and Development Board (HDB), the Town Councils, and community and private companies put into keeping public housing estates clean, safe and liveable. Drawing on the insights from many housing pioneers, this Urban System Study explores the historical development of an islandwide system of maintenance and rejuvenation, which ensures HDB homes and estates uphold their liveability.

*"Over the years, the HDB and the Town Councils have continued to maintain a high standard of estate management and implement new technologies to enhance its effectiveness. Why and how this has been done is the subject of this publication. It brings together the voices of the early pioneers and the quiet, dedicated warriors keeping HDB estates well maintained while pushing for innovation. This book provides food for thought and lessons to learn, even as it looks ahead to the future of estate management."*

Chong Kim Chang, Deputy CEO, Housing and Development Board (1985-96)



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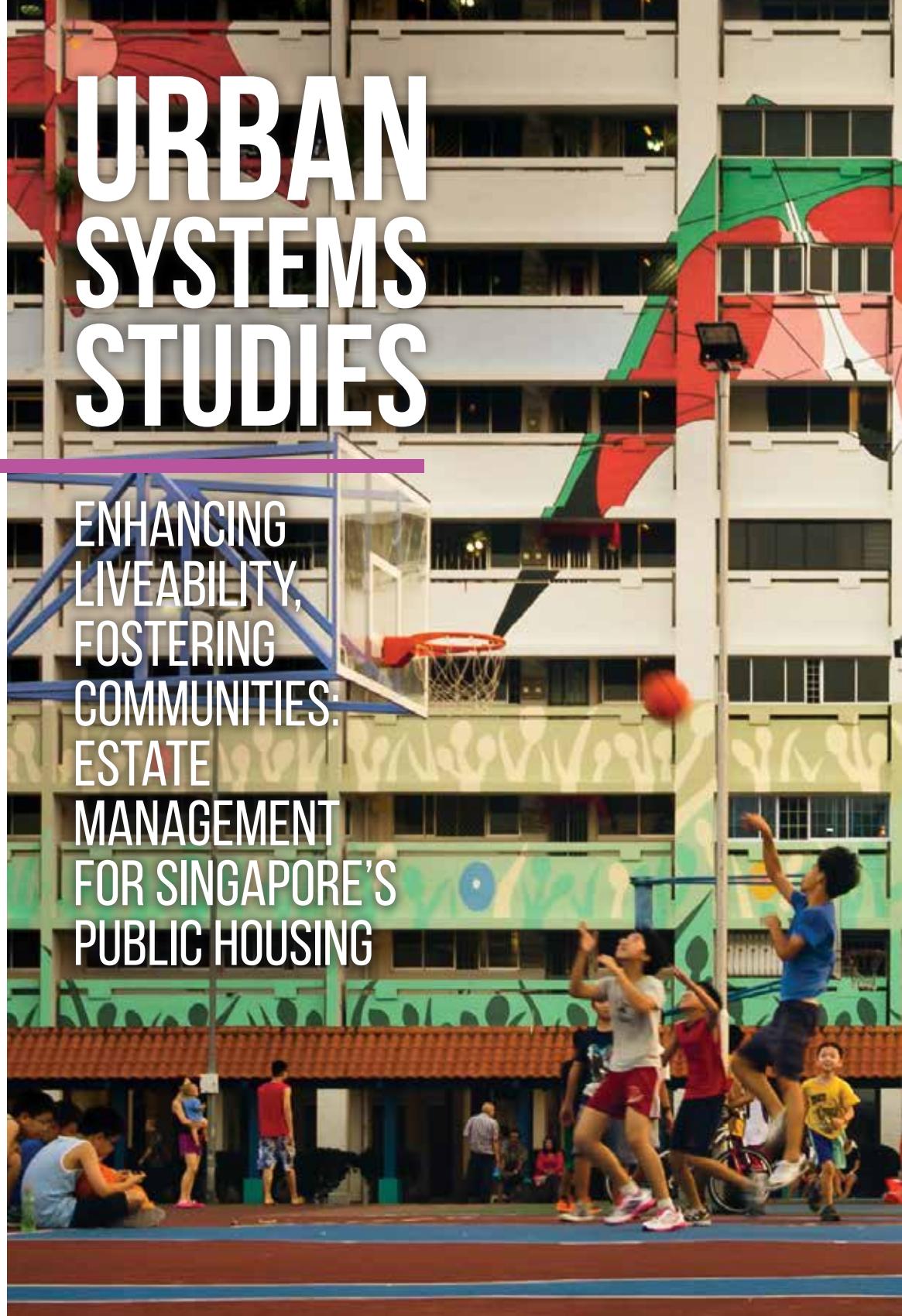
URBAN SYSTEMS STUDIES

ENHANCING LIVEABILITY, FOSTERING COMMUNITIES: ESTATE MANAGEMENT FOR SINGAPORE'S PUBLIC HOUSING

CENTRE for  
**LiveableCities**  
SINGAPORE

# URBAN SYSTEMS STUDIES

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**Liveable Cities**  
SINGAPORE

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Cover photo:  
HDB blocks with unique and distinctive designs provide character and a sense of place to the public housing estate they belong to.  
Photo courtesy of Ang Siok Hui.

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# FOREWORD

Singapore's public housing estates are known for their comprehensive reach and for providing safe and liveable homes for most of its population. Sixty years on, since the building of the first public housing estate, these estates are still remarkably well maintained and even rejuvenated. Estate management is, in fact, the "unsung hero" that keeps public housing estates physically and economically viable.

How is the work of estate management organised? What maintenance works should be cyclical, reactive or proactive? Who should bear the costs of maintenance and upgrading? How do we ensure we have the right skilled workforce? What technologies should be adopted to improve residents' lives without too much cost? How do we ensure resident feedback is garnered and acted on? These are just some of the questions that those working to maintain our public housing estates grapple with.

Estate management is as much about the physical upkeep and improvement of a neighbourhood as it is about governance. Beyond organising and planning maintenance works according to their necessity and frequency, estate management requires close collaboration between government agencies, the private sector and the community. For example, agencies coordinate and collaborate to ensure estates are continually upgraded and rejuvenated to meet changing resident needs and remain liveable. Town councils work closely with managing agents from the private sector to keep day-to-day functions of an estate moving, such as sweeping, refuse removal and lift maintenance. Most importantly, agencies work with the community to better respond to feedback and encourage residents to take ownership of the quality of shared spaces and common areas. The upkeep of an estate is the collective responsibility of its residents.

From the first Housing and Development Board (HDB) flats built, right through the 1980s, estate management functions first fell to Area Offices—cleaning of the estate and refuse removal were duties carried out by daily-rated HDB employees. This centralised estate management approach ensured that public housing estates did not degenerate. It also provided the HDB with a feedback loop, so that lessons learnt during estate management could feed into the design process to improve subsequent designs of HDB flats and neighbourhoods.

This proactive approach to estate management remained when estate management functions passed from Area Offices to Town Councils in the

late 1980s. Town Councils have proved to be an important mechanism to support responsiveness to resident feedback and enhancing the local character of different estates. This publication, which carefully documents these important principles of governance for estate management, is very timely, as we mark not only the first three decades of the existence of Town Councils but also sixty years since the formation of the HDB. I wish you an enjoyable read.

**Lim Boon Heng**

Former Secretary-General, National Trades Union Congress  
Chairman, Temasek Holdings

## PREFACE

The Centre for Liveable Cities' research in urban systems unpacks the systemic components that make up the city of Singapore, capturing knowledge not only within each of these systems, but also the threads that link these systems and how they make sense as a whole. The studies are scoped to venture deep into the key domain areas the Centre has identified under the Singapore Liveability Framework, attempting to answer two key questions: how Singapore has transformed itself into a highly liveable city over the last five decades, and how Singapore can build on our urban development experience to create knowledge and urban solutions for current and future challenges relevant to Singapore and other cities through applied research. *Enhancing Liveability, Fostering Communities: Estate Management for Singapore's Public Housing* is the latest publication from the Urban Systems Studies (USS) series.

The research process involves rigorous engagement with our stakeholder agencies, and numerous oral history interviews with Singapore's urban pioneers and leaders to gain insights into development processes. The tacit knowledge drawn out through this process allows us to glean useful insights into Singapore's governance and development planning and implementation efforts. As a body of knowledge, the Urban Systems Studies, which cover aspects such as water, transport, housing, industrial infrastructure and sustainable environment, reveal not only the visible outcomes of Singapore's development, but the complex support structures of our urban achievements.

The Centre would like to thank the Housing and Development Board and all those who have contributed their knowledge, expertise and time to make this publication possible. I wish you an enjoyable read.

**Khoo Teng Chye**

Executive Director  
Centre for Liveable Cities

## ACKNOWLEDGEMENTS

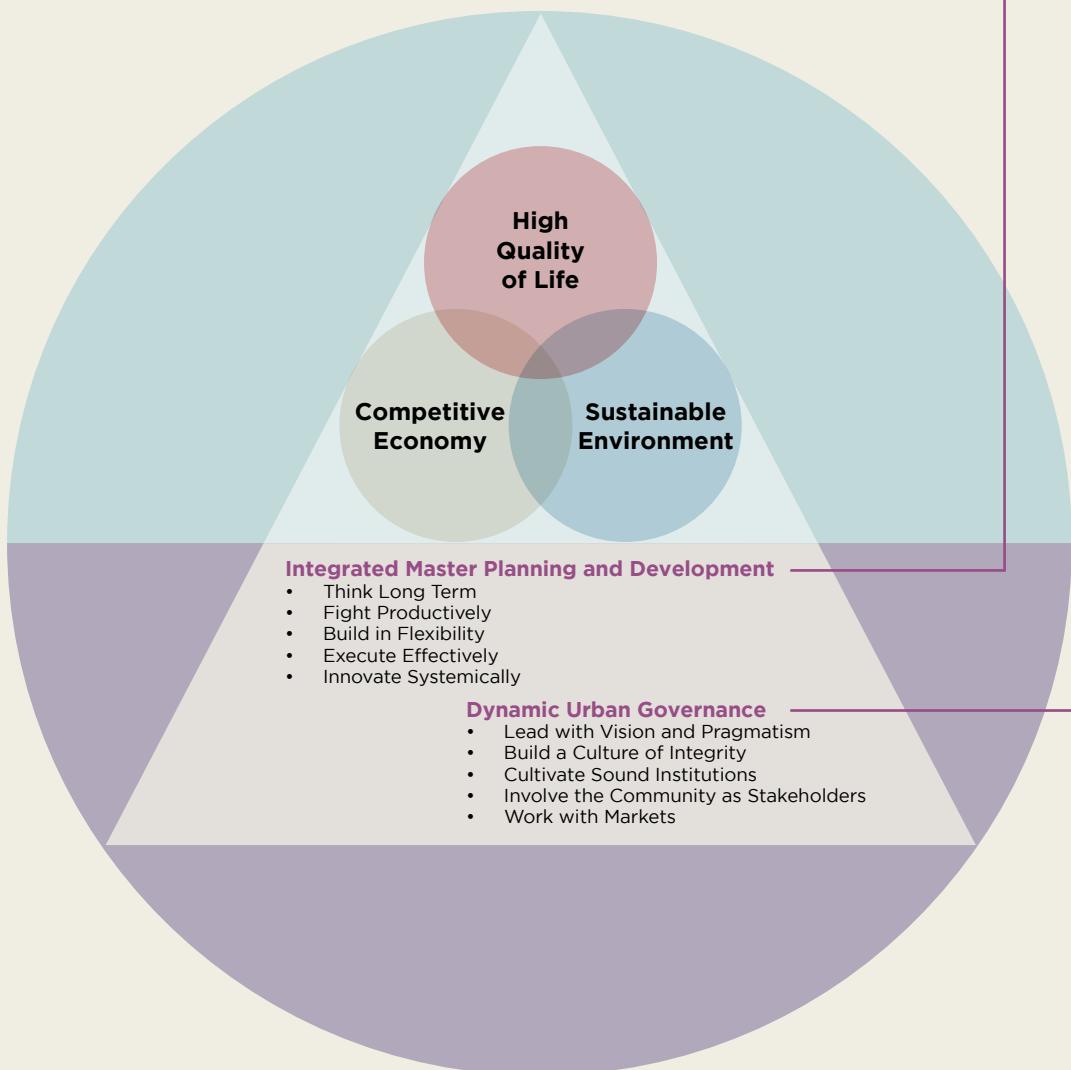
The Centre for Liveable Cities gratefully acknowledges the Housing and Development Board (HDB) for their assistance in preparing this book.

The Centre also extends special thanks to the following interviewees (in alphabetical order) for sharing their insights on the HDB and Town Councils' estate management: Ang Mong Seng, Chong Kim Chang, Johnny Wong, Lim Boon Heng, Lim Hng Kiang, Liu Thai Ker, Mike Chan, Seng Joo How, Simon Koh, Tan Bing Chui, Tan Choon Hin, Tan Kim Chwee, Tan Poh Hong, Teo Ho Pin, Thomas Lim, Tony Khoo, Yeo Jin Kiat and Yu Shi-Ming.

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# THE SINGAPORE LIVEABILITY FRAMEWORK

The principles under Integrated Master Planning and Development and Dynamic Urban Governance are reflected in the themes found in this Estate Management USS:



## Integrated Master Planning and Development

### Execute Effectively

In the 1960s, there were often maintenance challenges because of the speed with which public housing was built. As a result, a feedback loop was created between architects, engineers and estate managers to ensure that HDB estates were designed for maintainability and the community they were built for. These estates were also continuously improved on. See page 12.

### Innovate Systemically

Rubbish disposal is a perennial challenge for high-rise public housing. Innovation thus has a big impact on how effective and user-friendly waste disposal is. From the outset, homes were designed with dedicated chute hoppers, and innovations were introduced to chutes and the waste disposal systems over time to facilitate easier and hygienic waste disposal. See page 92.

## Dynamic Urban Governance

### Lead with Vision and Pragmatism

With the experience gained in planning the first few HDB towns, newer towns like Pasir Ris and Bishan were much better planned and designed. Rather than adopting a piecemeal approach to retrofit old estates, it was instead decided to upgrade estates as a whole. This required leadership on the part of politicians and the HDB to bring government agencies and residents on board. See page 16.

### Cultivate Sound Institutions

In 1986, Town Councils were piloted and signalled the beginning of decentralisation for estate management. This was demonstrated by the way Town Councils were structured to ensure that they had enough autonomy to make decisions in response to local realities and also in retaining certain regulatory oversight to protect residents' interests and public monies. See page 41.

### Involve the Community as Stakeholders

Estate management is only truly effective when the community has collective ownership over shared public spaces. This principle has been central to how the HDB has educated residents on high-rise living during the early days, up to the present with its approach to renewal programmes. In recent estate rejuvenation efforts, communities participated in consultative processes to design and reimagine public squares, greenery and walkways. See page 77.

## OVERVIEW

Singapore is known for its extensive and well-planned public housing estates, which are home to 80% of its population. These homes and estates have continued to maintain their economic, social and environmental value through the years. Part of this success can be attributed to the systematic efforts and dedication to estate management. From the Housing and Development Board's (HDB) early days with Area Offices to present-day Town Councils, estate management has drawn on the key principles of efficiency, strong accountability and innovation. This has led to a series of policies and programmes emphasising a strong administrative and institutional culture that demands high-quality estate management, decentralised management to encourage more local ownership over towns, public-private partnerships to ensure greater professional capacity for estate management, and community engagement for well-designed and well-run towns whose residents play a part in maintaining.

The chapters in this book chronicle these various policies and programmes and the practical ways that estate management work is organised to keep our homes liveable. The first two chapters explore how estate management is organised and executed through efforts to maintain estates through the entire lifecycle and the institutional structures upholding high standards. The third chapter looks at the centrality of the community to estate management and the innovative, creative and consistent ways that agencies and Town Councils have engaged with communities through the years. The fourth chapter shines a spotlight on innovation and highlights the simple, ingenious "hacks" through to the more complex innovations that support estate management. The last chapter analyses the challenges in the years ahead for estate management and how public and private-sector stakeholders are gearing up for the future. This story highlights the principles of sound leadership and institutional support driven by a long-term planning view, ensuring estate management is prioritised as our estates are built, age and rejuvenated.



# CHAPTER 1

## MANAGING THROUGH THE ESTATE LIFECYCLE

“

In many countries the importance of estate management in public housing development has often been overlooked...Building and estate maintenance are like the two legs of a person. They must coordinate in order for the person to walk properly.<sup>1</sup>

”

**HSUAN OWYANG**  
Chairman, Housing and Development Board (1983–98)

## Estate Management: Overlooked but Critical

The majority of residential housing developments in Singapore are publicly governed, developed, and managed by the Housing and Development Board (HDB), which houses more than 80%<sup>2</sup> of the resident population.<sup>3</sup>

In discussions on public housing, estate management is an area one may be tempted to overlook, as it has less to do with physical design, planning and construction. Yet, the success of public housing involves much more than just the provision of housing to the city's residents. Estate management—the management of public housing estates—is intimately linked to the everyday lives of residents and greatly impacts the liveability and success of public housing. Future generations, too, depend heavily on the upkeep of estates.

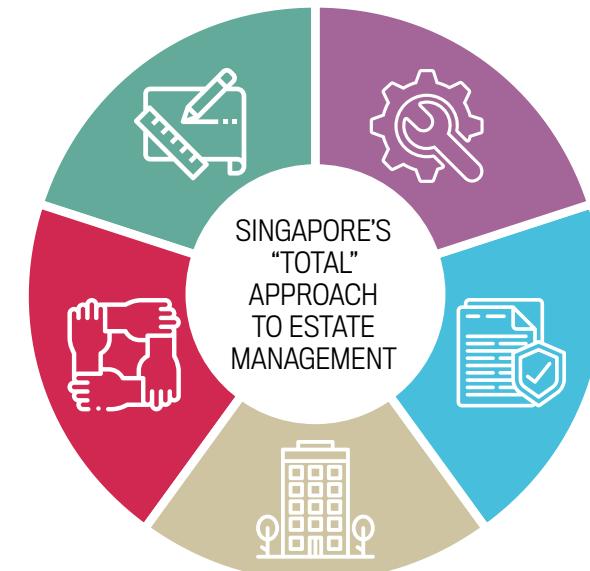
In Singapore, a “total” approach to estate management is adopted. This includes physical maintenance and management to ensure a quality living environment, as well as aspects of social management to foster a more cohesive urban community. The main areas can be seen in Exhibit 1.

Policymakers and practitioners have emphasised the importance of estate management right from the start of Singapore's public housing endeavour in 1960. The quality of estate management has consequences for the standard of living conditions experienced by a large majority of the population and impacts the “social value” of estates. Seng Joo How, Former Chief Estates Management Officer of the HDB, said:

In Singapore, we paid a lot of attention to the management of public housing because we don't want whatever money you spent, whatever investment you put in public housing, to deteriorate. So actually we have very good, very strong estate management that not only covers the estate management services, but also formulates very, very good housing policies as well as to enforce certain environmental standards.<sup>4</sup>

The importance of proper management and maintenance in high-rise, high-density housing estates cannot be over-emphasised. It would be instructive to consider the experiences of high-rise housing in many cities that started with great promise but subsequently turned into urban slums due in part to a lack of management and maintenance, for example, the Pruitt-Igoe Public Housing Project in St Louis, United States. Originally heralded as a model public housing project and a future paradise of futuristic living, it degenerated into a modern slum infested with crime and vandalism, leaving the housing authority no other alternative but to demolish it 18 years later.

### EXHIBIT 1 SINGAPORE'S “TOTAL” APPROACH TO ESTATE MANAGEMENT.



#### Designing for maintainability

Ease of maintainability is one of the key tenets of the HDB's planning and design, to ensure that designs and equipment are cost-effective and not difficult to maintain, directly contributing to smoother upkeep and maintenance of HDB estates.

#### Physical upkeep and maintenance through the estate's lifecycle

This includes everyday conservancy and cleaning, repairs and replacement, and emergency services, both inside the public housing units as well as in outside areas. As estates age, physical upkeep also extends to physical renewal, upgrading and redevelopment.

#### Regulatory functions

Rules and regulations reflecting the government and the HDB's policies are spelt out, and inspections, enforcement and control actions are carried out conscientiously.

#### Provision of post-allocation lease and tenancy services for residents

This includes managing matters of lease, tenancy and services like the collection of housing loan payments and rents, maintenance of rental properties and control of renovation works.

#### Community engagement

Efforts to build trust between government agencies and residents, and between residents themselves, to raise the level of ownership over shared spaces.

Lim Boon Heng, who was a Minister in the Prime Minister's Office from 2001 to 2011 and also the Chairman of one of the first Town Councils in Ang Mo Kio West in 1986, observed that a big difference between public housing programmes in Singapore and those elsewhere was that the HDB was in charge not only of developing public flats, but also the maintenance of the estates. This ensures that standards would be kept. Lim explained:

The HDB was not only developing and letting out some public flats but also taking charge of the maintenance. And this to me was the great differentiator between the public housing programme in Singapore and public housing schemes elsewhere. Whereas if you take the UK [United Kingdom], council houses tend to deteriorate and then degenerate into slums. And in Singapore because of the HDB and subsequently the Town Councils maintaining it, the standards were kept.<sup>5</sup>

### Physical Management and Maintenance through the Lifecycle

Estate management addresses both the external and internal environments of housing estates via policies, programmes and processes to ensure proper upkeep through the estate lifecycle. This seeks to ensure a safe, clean, healthy and liveable environment for residents.



1. The often unseen aspects of estate management that keep Singapore's public housing to a high standard.

In Singapore, the HDB and Town Councils adopt a philosophy of continued maintenance, with comprehensive schedules for maintenance covering routine maintenance, essential maintenance and cyclical/preventive maintenance. The key physical aspects of estate management are shown in Exhibit 2.

### Pre-1960s: Estate Management under the Colonial Government

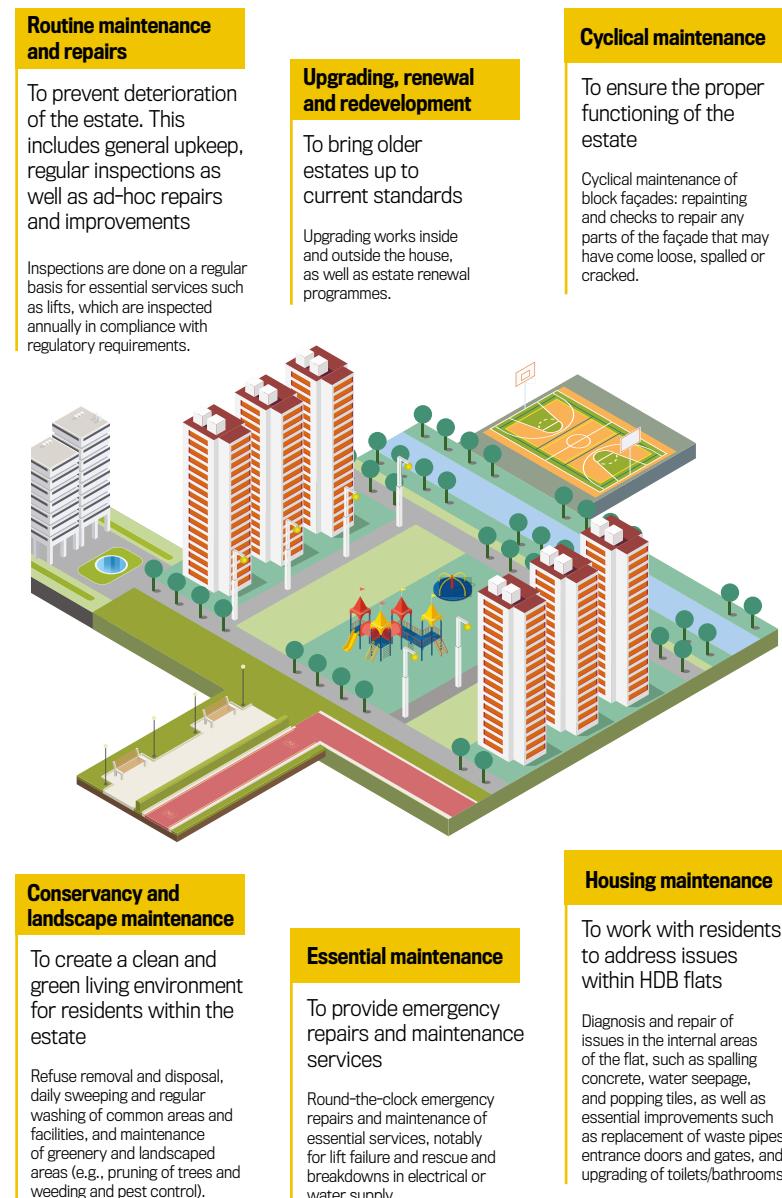
The Singapore Improvement Trust (SIT) was set up in 1927 as part of the Colonial government in response to the housing needs of the population of Singapore. The SIT's approach to estate management put in place several building blocks of estate management, which were later undertaken and expanded on by the HDB.

For example, the SIT included an Estates Department whose duties included dealing with housing estates and land management. Estate management works done by the Department include "site works, refuse collection and conservancy work".<sup>6</sup> The work of the Estates Department was done via the establishment of Area Offices that were each responsible for a geographical area. (See Chapter 2 for more details about how these SIT Area Offices functioned.)



2. Singapore Improvement Trust flats during the 1950s.

**EXHIBIT 2**  
**KEY PHYSICAL ASPECTS OF ESTATE MANAGEMENT.**



## 1960s: Meeting Basic Needs

When the HDB launched its housing programme in 1960, the priority was to build the maximum number of units in the fastest and most economical way, to alleviate the acute housing shortage and poor housing conditions rampant in the city.

Right from these early days, policymakers and practitioners in Singapore acknowledged the importance of estate management. They were conscious of the potential vicious cycle where physical deterioration of the living environment gives rise to ghettoisation of public housing estates, as evident in high-rise housing in other cities. Avoiding this vicious cycle was of particular importance for Singapore, given there was little choice but to build vertically because of its limited land area.

High-rise, high-density living was a totally new concept of living that could not be forced on but had to be made acceptable to the people; they had to be convinced they were moving into significantly better living conditions than their previous housing environment. It was clear that unless the lifts, water pumps and public lighting worked, and the common areas were properly maintained, high-rise, high-density living would not be readily accepted as a viable way of life. Chong Kim Chang, Former Deputy CEO of the HDB, who started working in the HDB at its inception in 1960, reflected on what makes good public housing:

A collection of well-designed dwelling units, even in a well-planned layout with complete infrastructural facilities and amenities, is at best like a clump of computer hardware. It does not necessarily result in an economically sustainable and liveable housing estate.

Good housing management policies and well thought out maintenance and improvement programmes are essentials that need to be added on, like software loaded onto the computer. The desired end is for young residents to be happy and proud to call this their home, in an environment conducive to bringing up their children, and for the old to find their retiring years wholesome and rewarding, a community thriving and vibrancy.<sup>7</sup>

In the early years, estate management geared itself towards providing good basic living conditions. The two priorities at that time were to create a clean, hygienic and green environment, and to ensure the reliability of maintenance and repair services.

By 1961, within a year of the HDB's establishment, the Estates Department was the largest in the HDB, with a total of 750 staff involved in the estate management of 4,241 properties. Of these staff, 654 were daily-rated, such as labourers.<sup>8</sup>

Estate conservancy was introduced, with daily sweeping and regular washing of common areas. This brought about a clean and hygienic environment acceptable to most residents. In line with Singapore's approach in the 1960s for a green city, it was important to soften the harsh impact of the high-rise, high-density environment with greenery, from trees to bushes to turfed areas.

In June 1966, the Emergency Repairs Unit was set up to carry out repairs to electrical and sanitary fittings. For the first time, repair services were provided after office hours. In the first year of its operations, the Unit received and attended to more than 5,000 calls.

Besides repairs and maintenance of buildings and estate conservancy, the Estates Department was also responsible for tenancy supervision—attending to the enquiries and complaints from residents—and hawker control. At that time, illegal hawking was common in the HDB estates—this affected the businesses of legitimate shop tenants and market stallholders, caused traffic congestion, and posed serious hygiene problems. In order to re-site hawkers, the HDB incorporated the provision of hawker centres in its town plans and managed the operations of these hawker centres. Enforcement action against illegal hawkers was carried out. By the end of the 1960s, 4,000 hawkers had been re-sited into these centres.



3. The Kallang Estate Fresh Market and Food Centre was built in 1972 to resettle hawkers from the Kallang Estate.

## 1970s: Improving the Living Environment

By 1971, the HDB's Estates Department was managing a total of 140,049 units.<sup>9</sup> In this decade, Singapore saw its gross domestic product (GDP) grow at an average annual rate of 9%, one of the highest in the world at the time. The HDB's building programme was rapidly intensified, especially with the success of its Home Ownership for the People Scheme. At the same time, with growing affluence and having had their basic needs satisfied, residents' expectations of the quality of the HDB living environment and estate management rose.

The emphasis of building programmes responded to this by shifting from meeting the population's basic need for proper shelter to quality that extends beyond the design of the flats to the surrounding living environment. This is evidenced by efforts to improve the landscape architecture, enhance the visual identity of housing estates and provide better amenities for the residents. For example, while the priority in the 1960s was to plant as many trees as possible, the HDB moved onto enhancing the quality of its environment through elaborate landscaping in town centres and the introduction of neighbourhood parks and town gardens by the 1970s.

Alongside the expansion of existing services, new estate management services were introduced. A 24-hour Essential Maintenance Service Unit (EMSU) replaced the Emergency Repair Unit in 1971, which aimed to provide better and faster response to residents' complaints and requests for repair services. In 1973, EMSU services were further expanded with the introduction of around-the-clock lift rescue service. In 1974, a haulage and debris removal service was introduced, to prevent frequent breakdown of lifts in new HDB blocks due to misuse by renovation contractors. In the following year, the Licensing of Renovation Contractors' Scheme (now referred to as the Directory of Renovation Contractors) was introduced to tackle the touting and malpractices of "mosquito" contractors. Over time, through regular reviews and engagement with the renovation industry and its partners, changes have been made to ensure that the Directory of Renovation Contractors and the HDB's renovation guidelines stay relevant to serve the needs of residents.

By the mid-1970s, there was also a growing desire for a more neighbourly spirit and stronger community life between residents (see Chapter 3).

## RELATIONSHIPS BETWEEN PLANNING, DESIGN, ESTATE MANAGEMENT AND COMMUNITY RELATIONS

It is important to note that estate management does not just “begin” after the housing is built and equipment installed. Considerations are incorporated into the planning and design phases of public housing development and learnings from actual experiences in estate management are fed back into the planning and design of future estates—a feedback loop.

### Designing for Maintainability

The HDB's objectives as the master planner are to strengthen the attractiveness of its towns, deepen the sense of belonging among residents to their homes, sustain the quality of design, and ensure coherence in design and town identity. In 2018, the HDB announced the new HDB Town Design Guide, formulated with feedback from stakeholders including Town Councils, that serves as a broad reference to guide the design of new developments and the rejuvenation of existing developments in the town.

Throughout the planning and development process, there is a conscious effort to design for maintainability and to ensure that designs and equipment are cost-effective and not difficult to maintain. For example, Teo Ho Pin, Coordinating Chairman of the PAP Town Councils from 2006 to 2020, cited that even in the matter of selecting light fittings, should “fancy lights” be selected, then replacement and maintenance costs would go up. Dr Liu Thai Ker, who was the CEO of the HDB from 1979 to 1989, also recalled the decision made in the early days to only use lifts running on direct current—these types of lifts had fewer parts and components, which meant lower breakdown rates and maintenance costs. The quality of workmanship also played a role in the maintainability of housing. Thomas Lim, who started his career as a Housing Maintenance Inspector for the HDB in 1967, recalled that in the 1980s, the HDB received many complaints from residents who moved into their new homes during the Accelerated Building Programme because the standard of workmanship had suffered due to time constraints. Over time, coordination between estate managers and the HDB improved. In the late 1990s, Teo chaired a committee of Town Councils to look at all the maintenance challenges and defects arising from design, and eventually published a book, *Design for Maintainability*, to guide architects.<sup>10</sup>

### Understanding Behaviours

Designing for maintainability also goes beyond the choice of technology and the level of workmanship. There is also a need to understand how residents respond to the design and equipment. These sociological aspects of public housing living were recognised early on, and a Statistical & Research Unit (SRU) was set up in 1968 to investigate how HDB estates were impacting people's living patterns. As Liu recalled, there was an early awareness that the HDB was not just building “buildings” but “different types of communities”, which necessitated the input of sociologists in the SRU.

Architects, planners and those involved in estate management needed to understand actual behaviours on the ground. As Teo recalled, estate managers worked closely with the police in assessing the security and safety of housing designs. For example, during the earlier days where staircase landings and balconies were built too close, someone could easily place a plank and cross over to a resident's unit, thus posing a security issue. To combat this issue, Town Councils subsequently resorted to building barriers such as grilles and spikes to ensure security.

Tan Choon Hin, who joined the HDB in 1977 and eventually became the Head of Housing Maintenance, also recalled that when centrally designed rubbish chutes were introduced, some residents would not cooperate with the guidelines and dump bulky items, such as mattresses and carpets, into the central chute, causing it to choke and smell.

To support the feedback loop between design and estate management, regular dialogue sessions between architects, engineers and planners, as well as those involved in estate management, are held within the HDB to discuss building maintenance issues posed by design. Additional dialogues between estate managers, local grassroots advisers and leaders are conducted to address issues pertaining to residents' misbehaviours.

With these feedback loops, insights can be taken from one estate to the development of new ones. Mike Chan, Deputy CEO (Estate) of the HDB, cited that due to previous experience with cavity walls constructed using bricks, which caused blockages of the drainage openings and seepage at blocks, newer blocks were designed with precast gable end walls. With the use of prefabricated technology, these cavity walls are produced in a controlled environment in the factory. The walls are produced with

concrete sandwiched between a layer of insulation material to provide the heat insulation medium. Thus, the gable end in the new building is of better quality and is able to eliminate the seepage issues that have affected some of the older blocks.

Ultimately, as the HDB continues to roll out new housing typologies and designs, a continual and deliberate process is taken to ensure that designs are easy and practical to maintain. As Er Dr Johnny Wong, Group Director of the HDB's Building & Research Institute noted, the HDB is careful to think long-term and is cautious before applying new technologies and designs in its estates. The deliberation process involves understanding (or predicting) behaviours and developing sustainable business models that do not involve much higher costs or introduce technologies that create technical issues for Town Councils who oversee estate management.

#### Leveraging Analytics and New Building Technologies

In more recent years, to help monitor estate management issues and behaviours, the HDB's Building & Research Institute has leveraged analytics to understand issues in estate management. For example, Wong noted that the HDB's analytics team had observed that lift breakdowns occurred often during the first two years of completion of new housing blocks. Upon investigation, it was discovered that this was mainly because of the behaviour of contractors when residents first moved in. To keep the doors open to facilitate the movement of bulky items and equipment, these contractors would jam the doors with pieces of cardboard to keep them open. Having observed this trend, the HDB implemented the additional "Door Hold" button in lift cars, which contractors can depress to keep the doors open longer.

Chan also noted that new building technologies could assist in developing more easily maintained buildings. For example, water seepage and spalling concrete issues used to be big problems in estate management. This was because, in the earlier days, concrete was cast at the building site. Today, precast technologies allow casting to be done in the factory, which makes it possible to centrally manage the quality of production, and minimise issues of water seepage and spalling concrete.<sup>11</sup>

#### Continual Feedback Loop and Consultation with Town Councils

In the development of new housing typologies, care is also taken to ensure that local Town Councils, which oversee estate management of the common properties in HDB housing estates, are involved in the upstream design

process. For example, Simon Koh, who is General Manager for Tanjong Pagar Town Council, cited that in the development of The Pinnacle@Duxton, an award-winning public housing development, the Tanjong Pagar Town Council was consulted early on during the development process. For example, they were consulted on the selection of landscaping on the sky bridges and roof gardens, given their familiarity with the maintenance required for different types of plants. Koh also recalled that the HDB adopted his proposal for a scaffold railing to be installed at the top of the Pinnacle to facilitate the use of gondolas for block cleaning and maintenance.<sup>12</sup>

Overall, designing for maintainability requires a long-term, systems-level mindset that incorporates the needs and behaviours of those who live in and those who manage the estates.



- |                                   |                            |
|-----------------------------------|----------------------------|
| 1. Precast Column                 | 9. Precast Staircase       |
| 2. Precast Façade                 | 10. Precast Lift Wall      |
| 3. Precast Façade At Laundry Area | 11. Precast Parapet        |
| 4. Precast Air-Con Ledge          | 12. Precast Store Room     |
| 5. Precast Gable End Wall         | 13. Precast Wall           |
| 6. Precast Slab                   | 14. Precast Partition Wall |
| 7. Precast Staircase Wall         | 15. Precast Beam           |
| 8. Precast Refuse Chute           |                            |

4. The HDB's precast building system, which helps to manage quality to minimise seepage and spalling concrete issues.

## 1980s Onwards: Systematic Renewal and Upgrading of Public Housing

By 1986, the HDB's Estates Management Department was managing more than 550,000 residential units and 440,000 units of supporting facilities, which included shops, offices, hawker stalls, industrial shops, and communal and community facilities.<sup>13</sup>

The HDB had started to look into the upgrading of older estates in the 1970s, introducing new facilities and replacing utilities infrastructure. But it was only in the 1980s when the scale of upgrading was expanded.

At that time, it was recognised that while public housing in Singapore had been well managed and maintained, more had to be done for the older public housing estates built between the 1960s and the early 1980s. In terms of design, fittings and facilities, they were lagging behind the newer estates.

For example, residents living in residential blocks built before the 1990s did not enjoy the convenience of having lifts serving every floor, while residents living in flats completed during the peak construction years of 1981 to 1986 faced maintenance issues such as spalling concrete and water seepage. Government leaders, by then, had noticed contrasts between older blocks of flats in Toa Payoh compared with those rising just across the road in the new Bishan estate. Lim Hng Kiang, then Deputy Secretary at the Ministry for National Development, said:

Yup, [upgrading] was Dhanabalan's idea, and we were very deeply involved because we had all these new towns coming up in Bishan and Pasir Ris, and they were, quality-wise, so much better than the mass production flats that we had to go through in the early years. And the difference was just too much, and so there was an idea that we should go and upgrade the old ones.<sup>14</sup>

Apart from the physical ageing of the flats, so too was the population in these older estates. As younger residents moved out to form their own nuclear families, attracted to the latest designs and modern facilities of newer towns, they left behind not only their older folks but also a vacuum in the social and economic life of the estates. Without the economic pull and dynamism of a younger population, the vibrancy and sustainability of older towns was affected. It became urgent to improve the living environment and inject new life, as well as to find a suitable mechanism to effect the needed changes.

The initial plan was to spruce up the older estates and public spaces, but after a study trip in the 1980s, government leaders realised that retrofitting was not good enough. Instead, upgrading was required in order to address the physical ageing of flats and enhance the quality of estate living. Lim Hng Kiang reflected on the genesis of the Main Upgrading Programme (MUP):

So Dhanabalan led a group of us to look at some of these examples in the West. We visited England, we visited France, and we visited Germany. In France, what we saw were public housing and council housing, which they upgraded in quite a major way because there was not enough insulation so they had to improve the insulation. At first, we started off by wanting to do an upgrading by changing the inside, etc., but the example we saw in France where they added a balcony, I think, caused us to say, "Look, why not do something even bigger and actually add a room or a balcony, and use pre-fab [prefabrication methods] to do so." So that was the genesis of the MUP.<sup>15</sup>

## The Main Upgrading Programme

In July 1990, a large-scale project to upgrade and transform older HDB developments was unveiled. The MUP was an ambitious plan to refurbish older public housing estates, covering improvements to the flats, blocks and precinct areas. Government leaders acknowledged that to keep pace with the expectations of Singaporeans, it was necessary for upgrading to "bring about a complete change in the perception of public housing" and to enhance the sense of ownership and identity that residents have with their homes and estates. S. Dhanabalan, then Minister for National Development, who had led the above study trip to Europe, said:

When the HDB embarked on its public housing programme, Singaporeans were facing a critical shortage of housing and we had to solve a huge housing problem quickly. Quality and distinctiveness had to take a lower priority, especially in the early years. The result was many large public housing developments, which were uniform and lacking in finish and character.

Now, 78% of our people live in purchased HDB flats of their own. We have overcome the housing shortage. With continued economic growth and rising affluence, Singaporeans aspire for a better quality

of life. More and more HDB applicants are seeking a high quality flat to invest their savings in, rather than just a roof and shelter for their family and themselves.

The upgrading programme will do more than give a facelift to old blocks. It should bring about a complete change in the perception of public housing. Each HDB estate will be divided into small precincts of five to seven blocks. Each precinct will be a small area which the residents can relate to as their own, to enjoy and be responsible for... We aim to create small communities with a distinct sense of identity, ownership and belonging, so community ties in each neighbourhood will be stronger and residents will not feel compelled to move in order to upgrade.<sup>16</sup>

Targeted at blocks completed up to 1980, improvements within the flats included upgrading toilets and repairing spalling concrete to extend the flats' lifespan. For some flats, residents were also offered the option of adding about 6 m<sup>2</sup> of space to their units. Improvements to blocks and precincts entailed the replacement of older facilities and the introduction of new amenities, such as upgrading of lifts and lift lobbies, construction of drop-off porches and covered walkways, as well as the replacement of surface car parks with multi-storey ones to free up outdoor spaces for greeneries and recreational facilities.

Two pilot projects involving four vacant apartment blocks, two at Woodlands and the other two in Teban Gardens, were launched in February 1991. The purpose was to test the construction techniques as well as to surface implementation problems.

To ensure affordability, a large share of the upgrading cost was borne by the government, with flat owners bearing 7 to 18% (or 20 to 45%, if flat owners opted for the additional space-adding item to the flat) of the total cost, depending on the flat type. After a period of consultation, the MUP would be implemented in a precinct where at least 75% of the flat owners agreed to the programme.

In 1990, six precincts were selected for a demonstration phase, which proved highly popular—9 out of 10 owners in the 6,000 flats in the demonstration precincts voted for the MUP. The demonstration phase was a success and extended island-wide until it was replaced by the Home Improvement Programme (HIP) in 2007. In 2012, the MUP drew to a formal close when the last outstanding precinct in Ang Mo Kio was

completed. It cost the government S\$3.3 billion and reached 128 precincts and 131,000 households.

At the point of inception, the government noted that the MUP would substantially increase its expenditure on public housing over the next 20 years. Nevertheless, it supported the programme, viewing its share of the upgrading cost as a transfer of its budget surplus to the flat owners.<sup>17</sup> It also recognised that the upgrading programme would enhance the liveability of the flats. From its onset, it was also designed to include resident feedback. The programme is thus an investment in housing infrastructure that enhances the environment and provides a better quality of life for residents.<sup>18</sup>



5. Examples of the MUP upgrading: a drop-off porch and additional utility rooms and spaces in older flats.

It is worth noting that rental blocks are upgraded in tandem with sold flats in the same precinct under the MUP, with the upgrading costs for rental flats fully funded by the government. The HDB also implemented specific upgrading programmes for rental blocks such as the Rental Flat Upgrading Project and Project LIFE (Lift Improvement and Facilities Enhancement) for the elderly as part of the government's overall strategy to renew and rejuvenate HDB estates and to ensure that rental tenants are not left behind. Project LIFE, which aims to benefit the elderly poor, also features an alert alarm system (AAS) for the elderly residents to trigger for help when they experience health distress episodes. The Ministry of Health also set up Senior Activity Centres located at the blocks or nearby blocks to manage the AAS and provide care and support services to the elderly.

## 1995: Estate Renewal Strategy

After the introduction of the MUP, other upgrading programmes were introduced over the years, including the Interim Upgrading Programme (IUP), which focused on upgrading younger estates not eligible for the MUP, Selective En bloc Redevelopment Scheme (SERS), as well as other improvements for older estates such as modernising town centres, adding or upgrading community facilities, schools or hawker centres, and improving road and transportation networks.

In 1995, the Estate Renewal Strategy (ERS) was introduced by the HDB to consolidate these programmes, so that the refurbishment of older estates could be done in an integrated and systematic manner. Masterplans for the renewal of older estates were drawn up by the HDB with input from agencies such as the People's Association (PA), PUB, Singapore's National Water Agency, Ministry of Education, National Environment Agency, Land Transport Authority (LTA), National Parks Board (NParks) and Sport Singapore, to turn them into modern and thriving new towns comparable with newer ones.

The Lift Upgrading Programme (LUP), which aimed to provide lift access on every floor in HDB blocks built before 1990, was subsequently launched in 2001. In the old days, lifts did not stop on every floor because it was more cost-efficient. However, as residents aged and desired greater mobility and access, it was necessary to upgrade lifts to stop on every floor. Retrofitting old blocks with modern lifts was a large task that required extensive planning and innovation. At the launch of the programme it was estimated that 5,300 blocks would need the LUP, and over 1,000 blocks



6. Retrofitting older blocks with new lifts that would reach every floor.

were found ineligible due to their design and the enormous cost required to upgrade them.<sup>19</sup> However, with innovative engineering solutions including installing machine-roomless, shaftless and smaller lifts, new construction methods and lighter materials, only about 100 blocks were left ineligible for the programme.<sup>20</sup> It cost the government about S\$5 billion and benefited about 500,000 households.<sup>21</sup>

## 2000s Onwards: Neighbourhood Renewal and Remaking Our Heartland

In August 2007, based on feedback from the Forum on HDB Heartware,<sup>22</sup> a public consultation exercise to engage residents for fresh views and ideas on ways to build strong and cohesive HDB communities, the HIP and Neighbourhood Renewal Programme (NRP) were launched. These two programmes replaced the MUP and IUP Plus, respectively.

The HIP focuses on improvements within the flat while the NRP focuses on block and precinct improvements. Block-level improvements include new letterboxes, residents' corners, seating areas at void decks and lift lobby tiling at the first storey, while precinct-level improvements include drop-off porches, covered linkways, playgrounds, foot and jogging paths, fitness corners, pavilions and shelters, and landscaping.

Coordination and integration are important to the NRP. Firstly, each NRP project involves two or more precincts. This means that improvements can be done with better coordination and integration across precincts. Secondly, from 2015, selected NRP projects will also include the repainting of blocks and repair works for items such as spalling concrete, crack lines, apron drains and void deck floors, which allows the NRP works to be better coordinated with routine maintenance works and enables blocks and precincts to be comprehensively enhanced without inconveniencing residents twice.<sup>23</sup>

In 2007, the HDB went beyond the upgrading of individual housing precincts to develop a blueprint to renew and remake the HDB heartland holistically and systematically over the medium term. This was termed the Remaking Our Heartland (ROH) programme. The ROH programme goes beyond the ERS in scale and scope. The HDB serves as the overall planner and coordinator for multi-agency projects to improve each ROH town/estate.

Under the blueprint, Singapore's public housing estates will be totally transformed over the next 20 to 30 years. Different visions and development strategies were adopted for each category of estates. For example, new estates such as Punggol would have more attractive housing forms such as waterfront housing, and a full slate of commercial and recreational facilities,

to realise the vision of "A Waterfront Town of the 21st Century". For middle-aged estates like Yishun, where redevelopment potential was generally lower as they were built at higher densities than the older towns and had relatively stringent height constraints, the key thrust was rejuvenation through the enhancement of facilities, the environment and flats. Hence, more recreational facilities would be added, and the housing precincts would be rejuvenated under the new HIP and NRP. Tan Poh Hong, Former Deputy CEO of the HDB from 2004 to 2009, explained further:

*Under the Remaking Our Heartland programme, different strategies were adopted for estates of different ages. The strategy for the oldest estates was to "regenerate" them, for middle-aged estates, to "rejuvenate" them; and for new estates, to "realise" visions!<sup>24</sup>*

For mature estates like Dawson, where large tracts of vacant land were now made available through earlier clearance programmes, a new generation of public housing with exciting design concepts like Housing in a Park and Sky Gardens had been introduced.<sup>25</sup>

The ROH programme continues to be key to the renewal and transformation of towns and estates across the city. In 2011, the government announced ROH 2 rejuvenation plans for Hougang, East Coast and Jurong Lake, and in 2015, ROH 3 programmes for Pasir Ris, Toa Payoh and Woodlands. In March 2020, the government announced that Bukit Merah, Queenstown, Choa Chu Kang and Ang Mo Kio had been selected to be rejuvenated under ROH 4.



7. Remaking Our Heartland—Yishun Town Square.

## Housing Maintenance Programmes from the 1980s

Estate management also involves the maintenance of the internal areas of the home. In the 1980s, a common issue observed for older blocks was spalling concrete, caused by carbonation, a natural deterioration process, which caused steel bars embedded in the ceiling slab to corrode, which in turn causes the concrete cover to crack and bulge. Another common issue was leaks in the walls or ceilings. In wet areas like the toilets, a waterproof membrane is laid over concrete before the laying of the floor tiles. However, if the membrane is damaged or not laid properly, leaks may occur over time.

The HDB would assist in investigating the causes of these issues and suggest appropriate remedial action. Yet, under the Lease, the resident is responsible after the defect liability period for the repair of any spalling concrete in his flat, as well as repair to leaks in the ceiling/floor slab, with costs borne equally between residents above and below the affected floors. Not everyone was happy with this rule, as residents did not always see themselves as being responsible for these maintenance faults.

Initially, as a goodwill gesture in the late 1980s, the HDB repaired spalling concrete in some 17,000 flats in older estates under a 5-year programme, to the tune of S\$7 million. The HDB recognised that if the spalling concrete problem was left unattended for a long time, the structural stability of the flats might be affected.<sup>26</sup>

Between 1995 and 1998, the Spalling Concrete Repair Assistance Scheme (SCRAS) was also launched to address spalling concrete within HDB flats. Under the SCRAS, the HDB co-paid 70% of the repair cost for 1 to 4-room flats and 60% for 5-room and Executive flats, and the balance was to be paid by residents, capped at S\$300 per flat. In 2001, the Goodwill Repair Assistance Scheme (GRA) was introduced, which remains running to this day. Under the GRA, the HDB pays 50% of the repair cost. For ceiling leak repairs, the balance is shared equally by the upper- and lower-floor flat owners, for both Singapore citizen (SC) households and Singapore Permanent Resident (SPR) households. For spalling concrete repairs, the affected SC households pay the balance of the repair costs. There is no repair subsidy for SPR households.

In 2005, an extended warranty programme, Assure 3, was introduced for new builds, with warranty periods of five years for ceiling leaks and water seepage from external walls, and 10 years for spalling concrete.<sup>27</sup>

Alongside these programmes, the HDB also provides collaterals and online resources to assist and educate residents on proper housekeeping and to diagnose housing maintenance issues. The HDB also provides listings of minor repair contractors.

In 2007, the HIP was launched, which sought to address common maintenance problems within ageing flats such as ceiling leaks and spalling concrete. The scheme comprised essential improvements such as replacement of waste pipes, repair of spalling concrete and replacement of pipe sockets with a new clothes drying rack. Optional items include the replacement of refuse chute hoppers, entrance doors and gates, and the upgrading of toilets/bathrooms. Flats built in 1986 (or earlier) that had not undergone the MUP were eligible for the HIP. By 2018, all eligible flats were selected, and in August that year, the HIP was extended to include flats completed between 1987 and 1997.

The HIP includes flexible options that residents can pick from. For the optional items, residents pay 5 to 12.5% of the cost, depending on their flat type. The essential improvements, on the other hand, are fully funded by the government for SC flat owners. The programme is implemented in a block if at least 75% of the eligible flat owners in the block vote in favour of it.

Since July 2012, more optional home improvements catering to the growing elderly population have been made available under the Enhancement for Active Seniors (EASE) programme. These additional options include ramps (to navigate level differences within the flat and single and multi-step entrances), grab bars and slip-resistant treatment to toilet/bathroom floor tiles. Residents who wish to install the EASE improvements before their blocks undergo the HIP or whose blocks are not eligible for the HIP may apply directly to the HDB.



**RESIDENTIAL ESTATES**  
The majority of Singapore's public housing is built in large-scale residential estates.

These estates consist of multiple blocks of flats, typically ranging from 10 to 40 stories high, and are designed to accommodate large numbers of people.

They provide a range of facilities such as swimming pools, playgrounds, and community centres.

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RESIDENTIAL ESTATES

## EXHIBIT 3 ESTATE RENEWAL PROGRAMMES FROM THE 1980s.

### MUP

Main Upgrading  
Programme

1990-2007

Blocks built up to 1980 were targeted to bring them up to the standards of newer ones



- Included upgrading of toilets and repairing spalling concrete.
- Replacement of older facilities and introduction of new amenities, such as upgrading of lifts and lift lobbies, construction of drop-off porches and covered walkways, and replacement of surface car parks with multi-storey car parks.

**How It was Financed:**  
Cost was largely borne by the government, with Singapore Citizen flat owners bearing 7 to 18% of the total cost, depending on the flat type.

**Resident Agreement:**  
At least 75% of eligible flat owners in the precinct must support the programme.

### IUP

Interim Upgrading  
Programme

1993-2001

For younger estates that were not yet eligible for the MUP and to speed up the renewal process



- Previously, lifts did not stop on every floor because it was more cost-efficient.
- As residents aged and desired greater mobility and access, the LUP upgraded old blocks with modern lifts that could stop on every floor.

**How It was Financed:**  
Cost fully borne by the government.

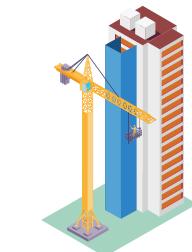
**Resident Agreement:**  
At least 75% of flat owners in the block must support the programme.

### LUP

Lift Upgrading  
Programme

2001-Present

Aims to provide lift access on every floor for older housing blocks built with no full lift access



- Previously, lifts did not stop on every floor because it was more cost-efficient.
- As residents aged and desired greater mobility and access, the LUP upgraded old blocks with modern lifts that could stop on every floor.

**How It was Financed:**  
The majority of the cost is borne by the government, with flat owners paying up to \$3,000, depending on the flat type and block configuration.

**Resident Agreement:**  
At least 75% of flat owners in the block must support the programme.

# IUP+

Interim Upgrading  
Programme Plus

## 2002-2007

A combination of the IUP and LUP



- Enabled both lift upgrading and interim improvement works to be carried out concurrently.

**How It was Financed:**  
Interim upgrading works fully funded by the government.

**Resident Agreement:**  
Co-payment arrangements for the lift-upgrading component (same as LUP).

# HIP

Home Improvement  
Programme

## 2007-Present

Focuses on addressing common maintenance problems within ageing flats



- Includes the replacement of waste pipes, repair of spalling concrete, upgrading of electrical load and replacement of pipe sockets with new clothes drying racks.
- Optional items include replacement of refuse chute hoppers, entrance doors and gates, and the upgrading of toilets/bathrooms.
- HDB flats built in 1997 and earlier that have not undergone the MUP are eligible for the HIP.

**How It was Financed:**  
Essential improvements costs are fully borne by the government.

For optional items, Singapore Citizen flat owners pay 5 to 12.5% of the cost, depending on the flat type.

**Resident Agreement:**  
At least 75% of eligible flat owners in the block must support the programme.

# NRP

Neighbourhood Renewal  
Programme

## 2007-Present

Focuses on block and precinct improvements



- NRP focuses on block and precinct improvements, such as seating areas at void decks, first-storey lift lobby tiling, drop-off porches, covered linkways, playgrounds, foot and jogging paths, fitness corners, pavilions and shelters, and landscaping.
- Through active engagement, residents can collectively decide on the improvements for their neighbourhoods.
- HDB blocks built in 1989 or earlier that have not undergone the MUP, IUP or IUP Plus. From September 2014, the programme was extended to include blocks that were built in or before 1995.

**How It was Financed:**  
Fully funded by the government.

**Resident Agreement:**  
At least 75% of flat owners in the block must support the programme.

# SERS

Selective En bloc  
Redevelopment Scheme

## 1995-Present

Allows optimisation of land use via demolition of old blocks to make way for new developments



- SERS flat owners are given compensation packages and assured allocation of new replacement flats nearby, where possible.
- Residents are required to vacate their existing flats only after the replacement flats are ready.

Source: Adapted from *Singapore Infopedia*.<sup>28</sup>

# ERS

Estate Renewal  
Strategy

## 1995-Present

Rejuvenates older HDB towns to make their physical environment more compatible with the newer estates



- Goes beyond the ERS in terms of scale and scope.
- Thirteen towns and estates have been identified for renewal—Punggol, Dawson, and Yishun in 2007; Hougang, East Coast and Jurong Lake in 2011; Pasir Ris, Toa Payoh and Woodlands in 2015; and Bukit Merah, Queenstown, Choa Chu Kang and Ang Mo Kio in 2020.

# ROH

Remaking  
Our Heartland

## 2007-Present

To transform young, middle-aged or mature towns and estates into vibrant homes



## ESTATE MANAGEMENT: THE LIFECYCLE OF TOA PAYOH TOWN

Toa Payoh, a centrally located town, is today home to about 104,200 HDB residents, with the HDB managing around 38,500 flats in the area. Toa Payoh is the first town comprehensively planned and developed by the HDB, and represented a new frontier in public housing, based on the Neighbourhood Principle where several neighbourhoods are grouped around a town centre that acts as a focal point for the entertainment and shopping needs of residents.

Yet, in the 1960s and 1970s, the area used to have issues such as crime. Secret society gangsters prowled the area and possessively—often forcefully—marked their turf. So rampant was the lawlessness that Toa Payoh was called the “Chicago of Singapore”—a moniker that lasted well into the 1970s when a new town was erected there.<sup>29</sup>

However, proper estate management through the lifecycle of the township has vastly improved its liveability of the estate. Besides day-to-day maintenance and cyclical works, upgrading works were done for Toa Payoh. For example, lift upgrading was done even for the oldest 4-storey blocks, and to make way for the installation of lift shafts, creative solutions such as moving stairwells outside the block were adopted. Upgrading was also done in ways that created visual interest and identity for the town, for example, adding vertical elements to “typical” slab blocks.

In 1995, the Estate Renewal Strategy (ERS) was piloted in Toa Payoh. The ERS is a consolidation of the array of on-going estate upgrading programmes such as the Main Upgrading Programme (MUP) and the Interim Upgrading Programme (IUP). To rejuvenate Toa Payoh, the old town centre was transformed into a new commercial hub with an integrated air-conditioned bus and Mass Rapid Transit (MRT) interchange, as well as modern shopping facilities and office space. Some of the older blocks in Lorong 2 were also demolished, and new 40-storey point blocks with better facilities and layout were built in their place.

Under the Selective En bloc Redevelopment Scheme (SERS), which is also a key feature of the ERS, selected precincts with redevelopment potential were redeveloped during the renewal process. Residents involved were offered new replacement flats near their original flats where possible so that they could retain their community ties in a familiar environment. Vacated rental blocks were also replaced by new housing and amenities such as neighbourhood parks.

Following Toa Payoh’s successful renewal strategy, the estate was used as a model to rejuvenate other towns such as Ang Mo Kio and Clementi.<sup>30</sup> Exhibitions showing the plans and proposals were held for residents.

In 2015, Toa Payoh was announced as one of the towns to be rejuvenated under the Remaking Our Heartland (ROH) programme. Under the ROH programme, Toa Payoh will see the building of new flats and recreational and social spaces created at the town centre and neighbourhoods, and improvements such as more greenery, shelter and seating. The estate will also be made more senior-friendly, with ramps and handrails to be installed, and paving levelled.<sup>31</sup>

Even if Toa Payoh is one of Singapore’s oldest towns, it remains highly sought after. This is a result of its location, comprehensive planning, and a series of estate renewal and rejuvenation programmes where the liveability of the estate has been maintained.



8. Toa Payoh through the years: Toa Payoh village, c. 1963 (top left), aerial view of the area, c. 1967 (top right), Toa Payoh Central during the 1970s (bottom left), and in 2014 (bottom right).

## REJUVENATING MATURE TOWNS: SOME LESSONS FROM TAMPINES<sup>32</sup>

As a comprehensive range of upgrading programmes has been introduced to meet various estate improvement needs, it has been observed that there is room for improvement, especially in the local integration of programmes and policies, to achieve better outcomes for residents.

The case of Tampines, which introduced a pilot initiative in local planning, is a good example.

Constructed about 40 years ago, Tampines is a middle-aged town with more than 250,000 residents. The town received international recognition in 1992 when it was awarded the United Nations' World Habitat Award for its innovative housing developments, which transformed Tampines from rural farmland into a vibrant urban living environment. Over the years, improvements continued, and in 2010, Tampines became the first town in Singapore to have an intra-town cycling path network. More recently, in 2017, three new Downtown Line MRT stations, as well as the first integrated community hub in Singapore, Our Tampines Hub, were completed. A stocktake in 2014 revealed the significant resources dedicated to Tampines—a total of 30 public infrastructure projects amounting to over S\$1 billion.

However, there is still some room for improvement.

For example, the Tampines cycling network, implemented by the LTA, NParks and Tampines Town Council (TTC), has inconsistent design standards. Certain paths are discontinuous and sheltered walkways, which were implemented by the LTA and TTC over different periods, have uncoordinated designs.

Recognising the need to improve the local integration of these rejuvenation programmes, the Town Advisors, led by then Finance Minister Heng Swee Keat, started the Reimagining Tampines initiative in March 2014. The initiative aimed to facilitate co-creative efforts involving people from the public and private sectors to make Tampines a better home for its residents through both hardware and software initiatives.

Seeing the need to bring in international expertise and best practices, the Centre for Liveable Cities worked with the HDB, URA, LTA, NParks and PA, and brought in renowned public space experts, Gehl Architects, to lead workshops from August to November 2014 to generate solutions for improving a mature town like Tampines in a more holistic manner. Some ideas discussed during the workshops have already been realised. These include a pedestrianised connection between Our Tampines Hub

and Tampines Central Park, as well as street closures in the town centre to create a more pedestrian-friendly environment.

After the workshop, a Design Review Panel was set up, followed by a series of initiatives to understand the town's community's infrastructure needs. To understand the community's walking and cycling infrastructure needs, the team conducted a preliminary audit of the walking and cycling spaces in Tampines. This audit found that residents often used driveways—they occupy over 20% of the land in a typical HDB precinct—to walk or cycle to and from their homes. This prompted solutions to make these driveways more pedestrian- and cycling-friendly via greener links and improving community greening initiatives such as community gardens and informal doorstep gardens, which would enhance their social value as community spaces.



9. Community engagement to garner feedback for the Reimagining Tampines initiative.

Grassroots Advisers and leaders were tasked with making decisions on improvement and upgrading works under various programmes. With professional expertise and advice, they were better equipped to make the best planning and infrastructural decisions for the community. Also, the HDB dwellers of today are well educated and thus had ideas on how they wanted to improve their local communities.

The Reimagining Tampines initiative showed the value of professional inputs and the benefits of working closer with local residents, stakeholders and agencies, thus providing a more comprehensive and sustainable approach to town rejuvenation.

## Conclusion

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In Singapore, there has been a commitment to holistic estate management and the systematic renewal and upgrading of estates over the past 50 years. This has prevented the deterioration of its public housing estates into slums. Instead, the liveability of public housing has been upheld, with estate living keeping pace with residents' expectations, to support the quality of life. This was led by the vision of leaders and policymakers who recognised the importance of estate management right from the start of the public housing endeavour in Singapore. Grace Fu, Former Minister of State for National Development, said:

One characteristic of our public housing programme is that, even as we build new HDB estates, we do not neglect the older ones. We bring the benefits of newer designs and improvements to these estates through our upgrading programmes so that they can continue to attract new families and maintain their vibrancy.<sup>33</sup>

Alongside this vision was a commitment of financial resources, as well as the setting up of sound institutions for estate management, which will be the subject of Chapter 2.

# CHAPTER 2

# CULTIVATING SOUND INSTITUTIONS FOR EFFECTIVE EXECUTION

“

Besides creating the physical part of the building itself, there're also other objectives that we must meet, the infrastructure support, the staff, even the contractors. All this to build up a system that enables the HDB to sustain itself over the years and continue to renew itself.<sup>34</sup>

”

**TAN KIM CHWEE**  
Former Director,  
Housing Management Group,  
Housing and Development Board

## Why Institutions Matter in Estate Management

Estate management is as much about policy as it is about successful execution. To ensure successful execution, institutions need to be set up with the right mandate, structure, resourcing and incentives; otherwise, the risk of poor performance and accountability is very real.

The current scope and practice of estate management did not come about naturally; neither were they developed overnight. Rather, the systems and institutions evolved over the years, as new challenges, changing needs and situations arose.

### Pre-1960s: Estate Management Institutions under the Singapore Improvement Trust

As mentioned in Chapter 1, the Singapore Improvement Trust's (SIT) approach to estate management put in place several building blocks of estate management, which were later undertaken and expanded on by the Housing and Development Board (HDB).

The SIT included an Estates Department whose duties involved dealing with housing estates and land management. Estate management works by the Department included “site works, refuse collection and conservancy work”<sup>35</sup> and was done via the establishment of Area Offices, each responsible for a geographical area.

By 1954, the Estates Department had established three Area Offices, each led by an Estate Officer and assisted by a staff of Lady Housing Visitors and Housing Assistants. The three Area Offices were located at Cambridge Road, Upper Pickering Street and Princess House, with the objective of establishing an easy channel of communication between the SIT and the residents.

Each Lady Housing Visitor was “responsible for approximately 900 lettings which she [was] required to visit at least once every six months” and “enforce the Trust’s regulations as regard [to] keeping the premises clean and tidy, [report] unauthorised occupation by persons not in the tenant’s family, and generally to give help and advice on the principles of good living”, while Housing Assistants “controlled the labour force, site works, refuse collection and conservancy work”.<sup>36</sup> The Estates Department employed more than 500 labourers in total, who were engaged in “carrying out conservancy work and small-scale site works in the estates”.

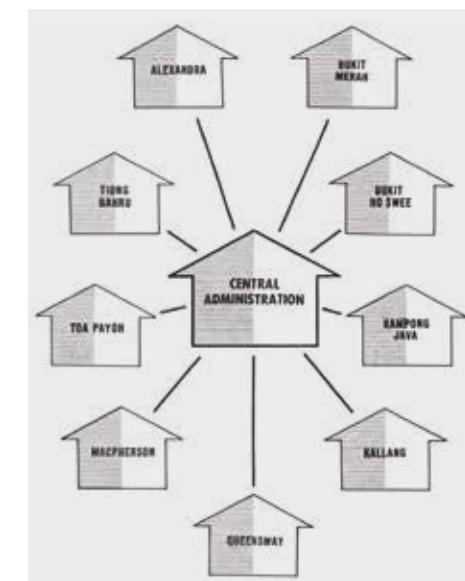
## 1960s: Decentralisation of Estate Management Responsibilities to Area Offices

From the HDB’s inception to the late 1980s, estate management was solely under the purview of the HDB—it adopted and built on the system of decentralisation introduced by the SIT, with responsibilities for estate management decentralised to a network of HDB Area Offices under the guidance of a central administration.

The decentralised system geographically divided large housing estates into conveniently situated groups of properties of manageable size. Each group contained about 15,000 units of flats plus ancillary facilities and was managed by an Area Office located within its boundary. The decentralised approach provided convenience for residents and increased the ability of the HDB to respond with on-the-spot services such as cleansing and repair works. Residents could also complete necessary procedures simply and quickly by visiting the Area Offices. For example, a resident who wanted to renovate his flat could simply apply for a permit at the Area Office.

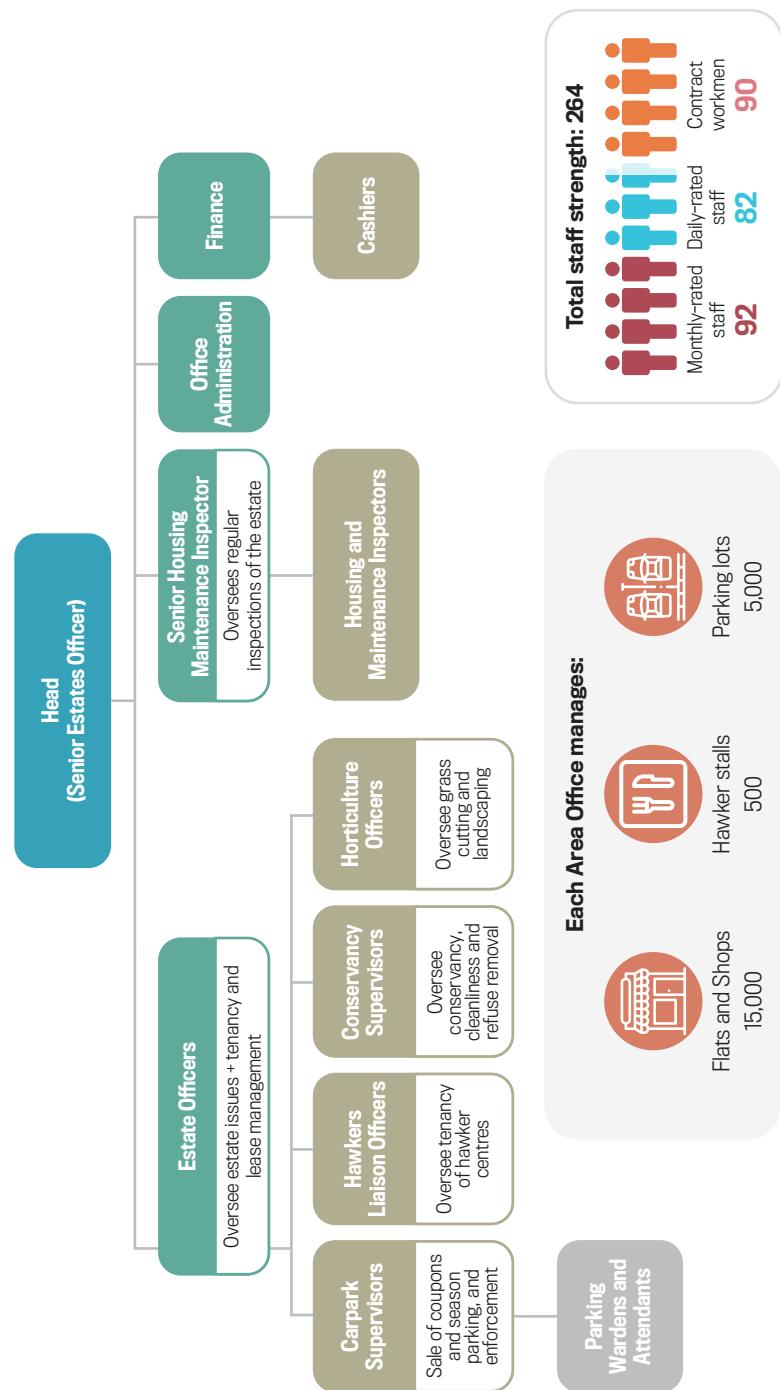
Area Offices were responsible for lease and tenancy management, maintenance of common facilities, overseeing hawkers in the area, daily cleaning and upkeep of parks and plants, and handling the general finances and administration of the estate.

As public housing was developed, the number of Area Offices grew from 9 in 1966 to 25 in 1980, and 45 by 1989.



10. Decentralisation of estate management to the nine Area Offices in 1966.

**EXHIBIT 4**  
**HIERARCHICAL STRUCTURE OF AN AREA OFFICE.**



## Structure of an Area Office

Each Area Office had its own administrative hierarchy and support staff to carry out routine functions of managing properties under its jurisdiction. These estate management functions were assigned to designated sections within the Area Office (see Exhibit 4).

Each Area Office was headed by a Senior Estates Officer. Estate Officers oversaw estate issues and tenancy and lease management issues. During the early days of public housing, HDB flat sales, mortgage loan repayments and payments of conservancy charges were done by hand, with residents coming down to the Area Office to complete transactions or fill up paperwork. Estate Officers were also involved in arrears management and conducting investigations on tenants and occupiers suspected of flouting the tenancy and lease rules.



11. A resident paying her conservancy charges at an Area Office.

Reporting to each office's head were Housing Maintenance Inspectors, who conducted regular inspections of the estate.

Estate Officers managed a team of hawker liaison officers, horticulture officers, conservancy supervisors and car park supervisors. These conservancy and car park supervisors oversaw the scheduling and execution of the physical upkeep and maintenance of the estates and managed teams of daily-rated employees as well as conservancy contractors.<sup>37</sup>

### Staff Organisation in the Area Office

When Area Offices were first started, all staff members, consisting of monthly- and daily-rated staff, were hired by the HDB. At the beginning, the former consisted of administrative staff, technicians and senior staff, while the latter was involved in conservancy and landscaping works. Other forms of works such as repair and repainting were outsourced to contractors.

By the 1970s, a shortage of labour made it harder for the HDB to hire direct labour and so it outsourced some estate conservancy and landscaping works to contractors. This meant that the HDB would now have to employ and maintain a large pool of skilled labour in the requisite trades for a large number of properties under management, and would require large numbers of supervisory staff.

Moving to term contracts by way of competitive tenders allowed the HDB to be selective in ensuring cost-effectiveness, and also saved on manpower. It also overcame the problems of acquiring and storing large quantities of material and equipment. Furthermore, term contracts enabled private participation in the maintenance of large-scale public housing estates and introduced the element of competition, important to sustaining a high level of performance. It also enabled a transfer of HDB management skills and technical know-how to the private sector. By the 1980s, 60% of the estate conservancy and landscaping works were under the care of contractors; the remainder came under the care of the HDB's direct labour force.

#### **Feedback Loop between Area Offices and the HDB's Central Administration**

The decentralised system of estate management required good coordination and supervision by the central administration and effective communication with the Area Offices. At the same time, Area Office staff, by being on the ground daily, gained a reliable system of feedback on estate conditions and residents' reactions to policies and actions in public housing. With this in mind, a feedback loop between Area Offices and the HDB's Estate Management Department was established.

The central administration of the Estate Management Department was situated at the HDB headquarters (HQ) and comprised the Operations Section (which guided Area Offices on policy implementation and day-to-day management functions), Services and Planning Section (which covered support services such as car parks, landscaping and hawker management, and also formulated policies based on feedback from Area Offices and the Operations Section), and Training and Social Administration Unit, which monitored the changing expectations, needs and problems of HDB residents, including assisting in the formulation of policies on social management, advising Area Offices on ways to overcome residents' problems, and liaising with social welfare agencies to meet the identified social needs of residents.

Formal and informal channels of communication between Area Office staff and senior management from the central administration were established. Area Office heads and senior management from the central administration would meet monthly to discuss and resolve problems faced in managing the estates. On a quarterly basis, there would also be dialogue sessions between architects, engineers and planners of the Building & Development Division and officers of the Estates & Land Division to improve coordination and relay residents' feedback obtained by Area Offices to the relevant departments for action. These sessions would also discuss building maintenance issues posed by the design of the estates, for example, tiles that were hard to clean or difficult-to-fix defects.<sup>38</sup>

In 1976, a Special Action Unit (SAU) was set up within the HDB HQ to support the HQ in monitoring the performance of estate management by the different area offices and to detect any shortcomings of services to residents.<sup>39</sup> Tan Bing Chui, who was an Assistant Estate Officer for the Henderson Area Office in 1971, recalled that it was important to have the SAU, as the "eyes and legs of HDB HQ", to monitor the performance of Area Offices, which numbered more than 40 at its peak.<sup>40</sup> This unit comprised senior inspectors from the HQ who would come down to estates to conduct surveillance and checks, often unannounced. These "stealth" checks caused some consternation amongst Area Officers. Tan Poh Hong, Former Deputy CEO of the HDB from 2004 to 2009, exclaimed:

The SAU, some HDB staff in the Area Office saw them as audit, others even considered them "spies" for HQ—I remember, when I was a young officer, there would be a mini-commotion every time we realised that the SAU was coming to do their spot checks!<sup>41</sup>

## **1970s: New Estate Management Institutions to Drive Responsiveness to Residents' Needs**

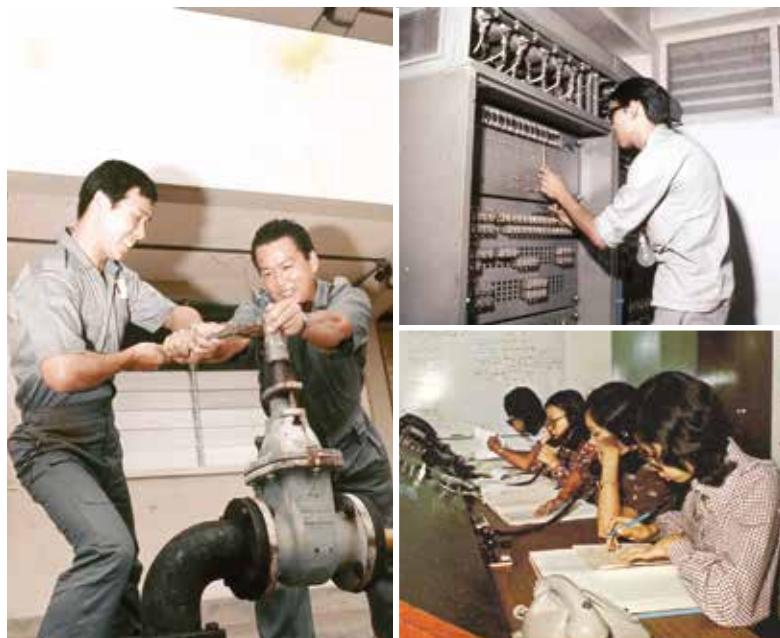
In 1971, the 24-hour Essential Maintenance Service Unit (EMSU) was formed to allow HDB Area Offices to respond more quickly to resident needs. Yeo Jin Kiat, who was supervising EMSU operations during that period, recalled that the EMSU was set up because the HDB management recognised that it was a big adjustment for people who shifted from their *kampong* dwellings into HDB housing estates.<sup>42</sup> As such, should HDB residents encounter breakdown in essential services, such as major disruptions in water or electricity supply, it would not be reasonable for them not to have assistance after Area Offices closed at 5 p.m. As such, the EMSU was first piloted with operation hours from 4 p.m. to 8 a.m. the following morning. Eventually, this was extended as a 24-hour call centre, with a lift rescue unit also merged into the EMSU.

The EMSU offered three forms of services—a 24-hour call centre, lift rescue and EMSU tradesmen. It also provided prompt attention to the breakdown of essential services such as electricity or water supply failure, lift breakdowns, sanitary chokage and overflowing water tanks.

Under this system, residents would first dial into the call centre, then centrally located at the basement of the Ministry of National Development (MND) building, which would then channel their calls to the right Area Office, which would in turn activate the relevant service needed.

By the 1980s, the EMSU “nerve centre” at the HDB HQ had 10 telephone lines to receive incoming calls, plus a “hotline” to communicate directly with Area Offices where maintenance and lift rescue teams were stationed for immediate response. At its peak, there were 400 employees in the EMSU, 260 rescue operators and about 100 tradesmen.<sup>43</sup>

The EMSU also provided services at below-market rate charges for certain essential repairs, which were in fact the residents' own responsibility, for example, the clearing of sink and water closet chokes. In 1984, the EMSU received a total of about 300,000 requests for its services.<sup>44</sup>



12. The different types of services the EMSU provided during the 1970s—tradesmen providing regular maintenance work and an EMSU call centre.

## 1980s: Move to Town Councils

“It was never the original intention that the HDB should become the management corporation for 80% of our population...That is over-centralisation and such over-centralisation is undesirable. While the HDB has discharged its responsibilities admirably, it has done this at a price. The price is uniformity and a rather inflexible set of rules.”<sup>45</sup>

—Goh Chok Tong,  
Then Deputy Prime Minister and Minister for Defence

The HDB was managing flats housing about 80% of the population, a total of 400,700 units by 1983.<sup>46</sup> However, there were several challenges. The central management system made it inefficient for the HDB to respond to problems and complaints by residents. Lim Boon Heng, then a Member of Parliament (MP) for Kebun Baru, recalled that the Committee of Supply debates at the annual Budget Sessions used to be dominated by questions filed on estate management. Residents also regularly sent complaints to the Forum pages of the local newspapers demanding a response from the HDB on daily estate management issues.<sup>47</sup>



13. HDB flats in the 1980s looked uniform in terms of style and structure.

The need for a standardised set of rules and treatment for all housing estates also led to monotony among housing estates. It was very difficult for each town to develop the features that they may have wanted. Lim Boon Heng elaborated:

The first is that in the monolithic structure of HDB estate management, any local request made had to be considered by the HDB on the whole of Singapore basis. If a request for a feature is granted in one precinct, it had to be applied across the board—meaning it was expensive. But what residents of one precinct wanted may not be in the same order of priority of other precincts. Once granted, however, the HDB had to be seen to be fair to all. Therefore, requests made by MPs were routinely turned down, to the frustration of MPs and their residents. This system hindered the development of local character to distinguish different towns. Every HDB town would look very much the same!<sup>48</sup>

The idea of decentralising estate management to local management councils was first put forth by MPs Lim Boon Heng, S. Chandra Das and S. Vasoo in December 1984 during the General Elections hustings. The plan was to tap into the existing pool of community leaders and have them help in some decision-making. It was believed that local autonomy would help develop a distinctive character for each new town and that the elected MP, together with his or her residents, could determine how they want to manage and develop their towns.<sup>49</sup> Lim added:

During the hustings for the 1984 General Elections, a reporter caught me doing house-to-house visits. I was asked what I intended to do for the residents, if re-elected. I think I gave a number of ideas for how the environment of the town could be changed for the benefit of residents. Then I expressed my frustrations at having requests turned down by the HDB. The follow-up question was what I thought could be done. So I mentioned the possibility of local councils. I did not expect that to get headlines!<sup>50</sup>

Town Councils, led by local MPs and community leaders, were also mooted as a way to assist the government to be more responsive to residents' wishes and needs and to develop shared responsibility, which was good for neighbourliness and community solidarity.<sup>51</sup> It was also promoted as a means to encourage voters to choose their MPs carefully and sincerely and to vote for those with the ability to manage the physical and social environment of their constituencies well.



14. Members of Parliament mingling with residents living in their constituencies: (left) Melvin Yong at the launch of a community reading programme at Blk 39 Cambridge Road, and (right) Pritam Singh greeting a resident.

Then Deputy Prime Minister Goh Chok Tong noted that the direct link between MPs and the quality of their constituencies made it possible, in fact, for all political parties to demonstrate their ability. He said:

Town Councils provide a stepping stone for political parties without any track record to demonstrate to voters that it can manage the country. If a party can manage Town Councils well, it will prove its competence in at least one area—good administration, which is the prerequisite of any government.<sup>52</sup>

While this proposal was viewed favourably by Cabinet ministers, there were some doubts as to whether these Town Councils would be committed and able to provide better services than the HDB. Dr Tan Cheng Bock, then the MP for Ayer Rajah, made an observation: "I notice that there are a lot of problems confronting those who manage condominiums and private housing estates. I'm worried that the management by Town Councils may turn foul when they cannot do as good a job as the HDB, which has the expertise and the resources."<sup>53</sup> There were also concerns that it would breed competition between Town Councils for resources and lead to the fragmentation of society itself.<sup>54</sup>

#### Piloting Town Councils

Nevertheless, on 1 September 1986, the government proceeded with three Town Council pilots in Ang Mo Kio East, Ang Mo Kio West and Ang Mo Kio South.<sup>55</sup>

These pilots were instituted to test out the relationship between the HDB and Town Councils and the operation and structure of the latter. These three pilots were a success, with the residents from these areas coming up with ideas and suggestions to give their areas a distinctive look, and learning to make decisions on allocating limited funds to projects that would benefit all residents. For example, the pilot councils initiated projects like void deck murals and the planting of shrubs to liven up the neighbourhood surrounds.<sup>56</sup>

Following the success of the pilots, the Town Councils Act was passed in 1988, which enabled the formation of Town Councils in all estates.



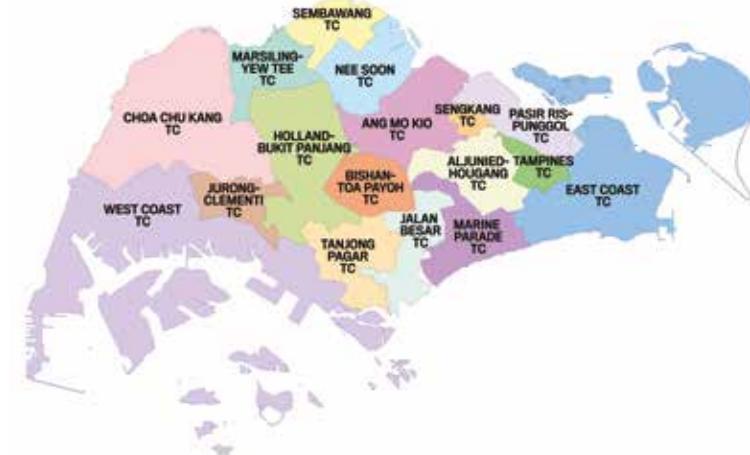
15. The present-day Ang Mo Kio Town Council's greening efforts include the planting and maintenance of shrubs.

#### **Roles of Town Councils**

Town Councils are autonomous legal entities formed under the Town Councils Act. They control, manage, maintain and improve the common property of HDB residential flats and commercial properties within the Town. In addition, the Town Councils also, on behalf of the HDB, manage and maintain HDB car parks as agents of the HDB. The MND sets the broad legislative framework and financial guidelines under the Town Councils Act and Town Councils Financial Rules to ensure proper governance and accountability by Town Councils.

#### **Locations and Boundaries of Town Councils in Singapore**

Town Council boundaries follow the geographical boundaries of electoral constituencies. Each Town Council could consist of a single constituency or any two or three constituencies where the MPs agree to their constituencies being declared as a town.<sup>57</sup> Currently, there are 17 Town Councils with each township ranging from 376,000 to 100,000 dwelling units.



16. Town Councils across Singapore, post General Elections 2020.

#### **How Each Town Council is Structured**

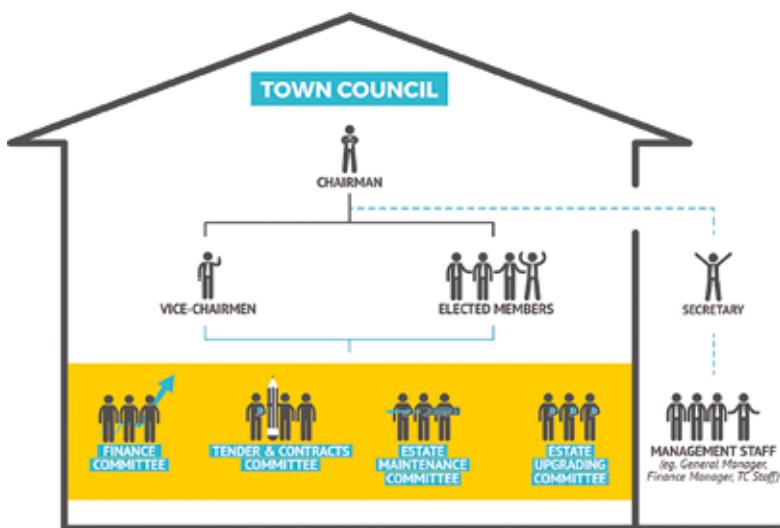
The members of the Town Council include elected members and appointed members. A Town Council is led by elected MPs whereby a number will either be appointed as the Chairman of Town Council, Vice-Chairman (if applicable) or elected members under the Town Councils Act. Appointed members are chosen by the elected MPs. Two-thirds of the members are required to be residents of the area, in order to represent residents' needs. Lim Boon Heng, who had been the Chairman of one of the first Town Councils in Ang Mo Kio West in 1986, explained how this came into passing:

In other countries, there were local councils, responsible for a number of municipal issues. The councillors were elected. We were considering limited functions—estate management. So local council elections did not seem necessary. But there was a need for a mandate that comes only from an election process. It was pointed out that in France, mayors—who run local municipalities—could concurrently run for the national parliament. So came the idea of making the elected MP the council chairman. He would be responsible for appointing town councillors.<sup>58</sup>

A Town Council has the discretion to form committees tasked with different operations, such as a Finance Committee (to regulate and administer the allocation and use of Town Council funds), a Tender and Contracts Committee (to review and approve tender specifications prepared by the Managing Agent and evaluate and advise on awarding tenders), Estate Management and Estate Upgrading Committees (to

oversee the physical upkeep, improvement and upgrading of existing facilities and amenities), and a Publicity and Outreach Committee to oversee the development and dissemination of publicity materials and communication link between the council and residents.

From 1 April 2020, a new set of guidelines known as the Code of Governance for Town Councils, which goes beyond legislative requirements to include best practices, was issued to the Town Councils. These guidelines cover four domains: council effectiveness, internal controls and processes, financial management, and vendor management. Town Councils are also required to establish an auditing team for independent assessments and set term limits for committee chairmen.<sup>59</sup>

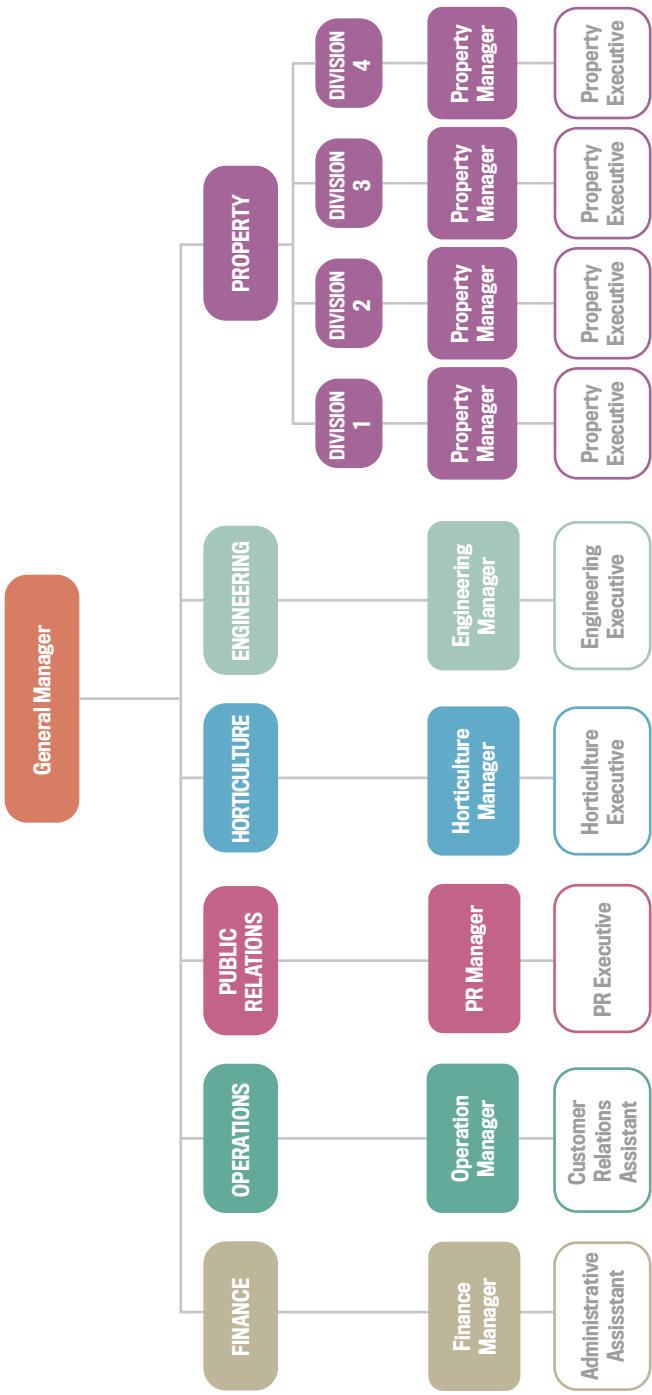


17. Members of a Town Council.

As members of Town Councils typically have day jobs, day-to-day operations are typically outsourced to Managing Agents. Areas of work taken on by Managing Agents could include maintenance and management, improvement works, emergency services, finance, secretarial and general administration, community services, enforcement of laws, and car park management. The operations are overseen by a General Manager and a management team, who may either be from the Managing Agent or directly employed by the Town Council. See Exhibit 5 for the hierarchical structure of each Town Council.

To appoint Managing Agents, an open competition tender is called for interested parties to submit their bids. This ensures public accountability in the use of Town Council funds, and allows for competitive bidding through

#### EXHIBIT 5 HIERARCHICAL STRUCTURE OF A TOWN COUNCIL.



a transparent, open and fair process. Managing Agents are selected based on track record, staff competency, management systems and managing fees. Town Councils have the advantage of having professional teams managing their estates. Managing Agents would also have access to a centralised HQ team to provide support in terms of human resources, contracts financial management and engineering services.<sup>60</sup>

#### **Impact of the Transition to Town Councils**

In the early years following the transition to Town Councils, estate management helped align the work of those managing the estates to the needs of the residents in a more efficient manner. Simon Koh, who moved from being an Estate Officer with the HDB to being on the management team of a Town Council, recalled that one of the biggest changes he experienced was that the Town Council was able to make a faster impact on the residents' lives. He explained:

*When I was in the HDB, I had to go through a longer hierarchical decision-making process, especially for cases without precedent. And in those days, it was by letters and no emails. So sometimes you want to effect change, you can't see it, [and] as a young officer you can get frustrated. When I moved to the Town Council, the decision-maker process has shortened to be more direct where I work with the local team to make a decision, effect the change and reflect the impact on the residents' lives faster.<sup>61</sup>*

The move to Town Councils also allowed for greater flexibility for each town to determine how it would run the estates. Ang Mong Seng, who was in charge of the Woodlands Area Office during the transition to Town Councils, noted that a major difference between Area Offices and Town Councils was that the latter could develop their own policies. He recalled an example of a policy that the Bukit Panjang Town Council (BPTC) developed when he was General Manager—the “yellow box” policy. At that time, estate shopkeepers often displayed their wares outside their shops, which ended up cluttering the common corridors. As a result, the BPTC decided on a “yellow box” policy where shopkeepers could pay \$30 per month to display their goods in designated areas demarcated by yellow boxes outside their shops. This allowed the BPTC to show flexibility rather than having to issue summons to shopkeepers.<sup>62</sup>

#### **Changes in the HDB's Organisation after the Setting Up of Town Councils**

The HDB's employment figure as they transitioned Area Office responsibilities to Town Councils in 1990 was around 11,000. This included around 2,000 staff members who were seconded to private management companies.<sup>63</sup>



18. Yellow boxes outside a shop in an HDB estate indicate where goods can be displayed.

As the estate management function was transferred to the Town Councils, HDB Area Offices were transformed into Branch Offices in 1989. Each Branch Office would now oversee areas previously covered by three to four Area Offices. Today, there are 22 Branches in 23 towns, handling housing maintenance issues, housing loans and car park matters.

The HDB then concentrated on providing lease and tenancy administration services in its role as landlord and lessor, as well as services like the collection of rent and mortgage loan payments, maintenance of rental properties, control of renovation works, and the management of HDB car parks, markets and hawker centres. Till today, the HDB continues to look for ways to improve the quality of services delivered by the Branches, in addition to administrating the various upgrading programmes such as the Main Upgrading Programme, Home Improvement Programme, and housing maintenance. Mike Chan, Deputy CEO (Estate) of the HDB, explained further:

*[Our branch officers] are trying to see how best to ensure that our staff [can help] the residents adequately. You don't have a situation where one staff handles 100 cases. Those were the days. And weekends also got to work. Now, we have a scheduler and timetable. Each branch staff has a fixed number of slots each day. We also have an individual account system, where each flat owner has an account. Instead of calling the branch offices, flat owners can go through the account to give feedback, with dedicated officers to handle your account.<sup>64</sup>*



19. The Punggol Branch Office where residents can visit to receive help for lease and tenancy issues.

At the same time, the HDB continues to ensure that the maintenance of the buildings is kept to a good level, such as dealing with structural issues and spalling concrete and implementing repair programmes. The HDB also continues to undertake specific improvement works that apply to all HDB estates.

The HDB also formed companies to provide managing agent services to the Town Councils, given that it had a wealth of experience and expertise managing HDB estates. The first company formed by the HDB was EM Services, which heralded the start of the private estate management industry.

Even with these changes, the HDB continues to work closely with Town Councils in its capacity as the owner of common property in HDB estates. Regular meetings between the HDB and Town Council General Managers continue today. The ESMU continues under Town Councils and still provides round-the-clock emergency repairs for breakdowns in essential services, including lift rescue services.

In 2014, the Municipal Services Office (MSO) was set up to work with key government agencies, Town Councils and community partners to improve feedback management and customer service for municipal services and



20. The HDB continuously strives to bring the highest possible standards in customer service and community engagement to create positive experiences at every touch point.

to coordinate in areas where multiple agencies are involved. The MSO also has regular sessions with the Town Council management to discuss municipal issues, which require coordination between different agencies. Simon Koh said:

The HDB has quarterly dialogue sessions with Town Councils. As does the MSO. [The] MSO will meet with Town Councils, [and] if we have issues that require discussion with particular agencies, they will bring those agencies in...the meeting with agencies with the MSO is very successful because it's specific to a certain topic. For example, if we have issues with pigeons and the mess they create, the MSO will bring in the relevant agencies and we work on a task force.<sup>65</sup>

## FINANCING ESTATE MANAGEMENT

Significant financial resources are required in estate management. In FY2017/2018, the total operating expenditure for each Town Council ranged between S\$23 and S\$65 million. Major cost items for each Town Council are utilities (e.g., water and electricity), cleaning works and lift maintenance costs.<sup>66</sup>

### Sources of Funding for Estate Management

Since the early years, service and conservancy charges (S&CC) were payable by residents of public housing (and commercial tenants) to fund estate management works. These were collected via Area Offices. It was clear early on that those levels of conservancy charges were insufficient to ensure quality estate management.

Hence, the government has provided subsidies for estate management right from the start. For example, in 1985, the HDB collected S\$212 million from conservancy charges but spent an estimated S\$314 million on estate management.<sup>67</sup> Even with the move to Town Councils in the late 1980s, the Town Councils still received financial support that had been previously provided by the government to the HDB for estate management.<sup>68</sup>

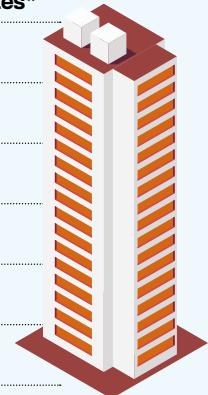


21. Routine lift maintenance work at an HDB estate can be funded through grants to Town Councils.

Today, the Government provides the following grants to Town Councils: S&CC operating grant, GST subvention, Lift Maintenance Grant and Lift Replacement Fund matching grant.

The S&CC payable by residents vary according to the location of the HDB estate and the flat type, and at present ranges from S\$19.50 to S\$101 per month for Singapore citizens, after factoring in reduced rates for them. If none of the occupiers of the flat are Singaporeans, charges are between S\$54.20 and S\$108.50. As an example, the S&CC for Ang Mo Kio are:

	Normal Rates	Reduced Rates*
1-room flat	\$55.50	<b>\$21.00</b>
2-room flat	\$59.00	<b>\$31.00</b>
3-room flat	\$67.00	<b>\$47.50</b>
4-room flat	\$72.50	<b>\$63.00</b>
5-room flat	\$85.00	<b>\$78.00</b>
Executive apartment or maisonette	\$100.00	<b>\$100.00<sup>69</sup></b>



\* If at least one of the owners, tenants or authorised occupiers are Singapore Citizens

### Ensuring Prudent Financial Management by the Town Councils

To ensure there are sufficient funds set aside for longer-term maintenance and repairs, Town Councils are required to establish separate funds: an Operating Fund for short-term routine expenses, a Sinking Fund for long-term cyclical replacements and major repairs, and a Lift Replacement Fund for long-term lift-related works. Initially, 25% of the total S&CC collected had to be set aside into the sinking funds, and in 1993, Town Councils were required to contribute more money collected from residents into the sinking fund. Since 2017, Town Councils are required to contribute a minimum of 14% and 26% of their total S&CC and grants-in-aid received to their Sinking Fund and Lift Replacement Fund, respectively.

### Setting and Collecting S&CC

Town Councils continue to face the pressure of rising costs, whether due to the increasing cost of labour, utilities or the complexity of maintenance tasks. Teo Ho Pin, Coordinating Chairman of the PAP Town Councils from 2006 to 2020, explained why:

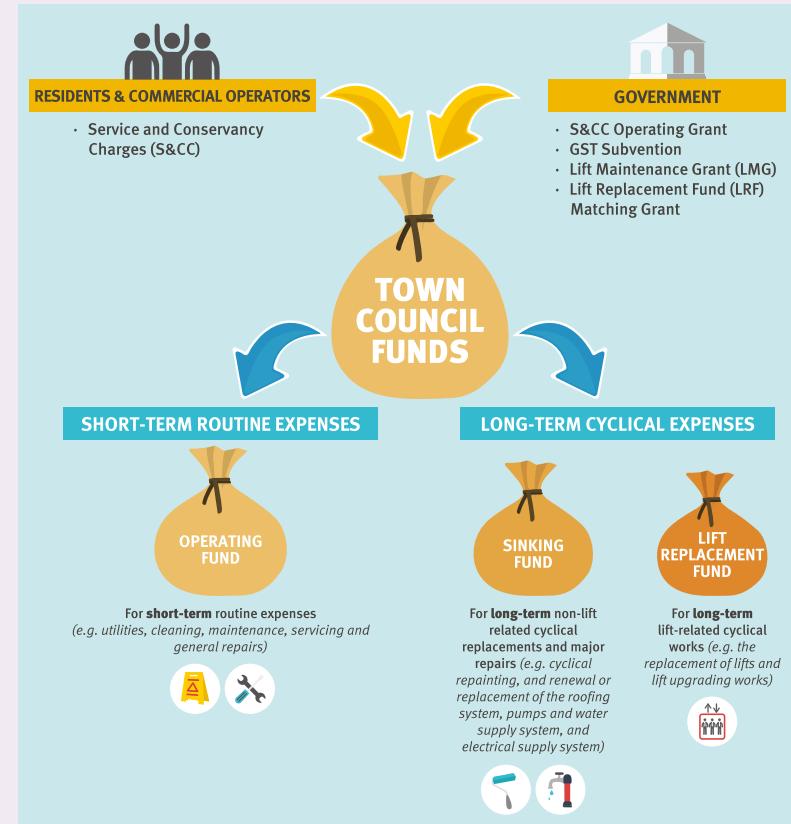
Over the years, you find that it's very hard to get cleaners, and we upgrade our cleaners, the salary has increased...Utilities is another major component. Over the years you look at oil prices, it's moving up. We see our bills keep on going up, especially for utilities. And as we have more lifts, there are more maintenance [costs], especially as you've got all the lifts stopping at every single landing, that increases the cost by almost double...even routine maintenance will increase. Then as you have more people using lifts, more people will abuse it, and repair costs will go up.<sup>70</sup>

Yet, one of the most difficult issues in the maintenance of public housing is convincing residents to pay more for estate management and maintenance. Under the Town Councils Act, Town Councils have the mandate to set their own S&CC rates, but it can be challenging to raise them to meet rising maintenance costs without facing resistance from residents. PAP-run Town Councils first raised S&CC fees in 1990, and then in 7-year cycles in 1997 and 2004. However, most TCs put off the fourth increase to 2014 and then to 2017 because of resistance from residents.

On a related note, conservancy fee arrears have been one of the biggest administrative and financial headaches. For example, in 1989, it was reported that the three Ang Mo Kio New Town Councils had about 7,400 residents owing them a total of S\$500,000 in arrears, while in Bedok, about 20% of the account holders were responsible for S\$500,000 in arrears to the Bedok Town Council.<sup>71</sup> In 1990, the Town Councils Act was amended to give Town Councils the powers to impose fees and penalties for late S&CC payments.

Town Councils thus face a delicate balancing act—while they seek to deliver good quality estate management, limits on increasing S&CC, as well as rising cost pressures, meant that a certain level of realism is required in the expectations of the quality of estate management. As Teo noted wryly:

You pay a certain amount of money you get a certain amount of services. So I think we have to be very realistic what is doable in a public housing to provide the maintenance standards based on the amount of contributions you paid for [in] S&CC, plus saving for the future for cyclical maintenance.<sup>72</sup>



22. Town Councils funding and expenditure.

## BUILDING A CULTURE OF EXCELLENCE

Even with the right policies and protocols in place, the real “software” that ensures successful estate management is its people. Since the early days of HDB public housing, systems were introduced to nurture a culture of discipline, integrity and responsibility amongst those involved in estate management and to drive constant improvements and innovation.

### **Building Capabilities in Estate Management**

From the early days, the HDB offered training programmes for its Area Officers, such as support for part-time studies, a trainee scheme for A-level holders, and sending trainee Estate Officers for professional qualification courses.

By the early 1980s, however, with a rapidly increasing number of public housing estates, the challenges of having enough workers for conservancy work began to appear. Measures to address this included reorganisation and mechanisation, which necessitated the reskilling of conservancy workers.



23. Estate management professionals undergoing specialised training.

Even today, it can be a challenge to find and keep talent in estate management, which can be a thankless job that is not particularly attractive to younger people. Adding to the challenge is that residents' expectations of the service quality of estate management staff continue to increase.

Some experienced professionals in estate management also raised the need for Town Councillors themselves, many of whom are residents living in the estate, to be trained to understand and provide guidance on estate management matters. Professor Yu Shi-Ming, who is an Associate Professor at the National University of Singapore (NUS) School of Design and Environment, recalled that when Town Councils were first established, the NUS's School of Building and Estate Management ran courses on Town Council management for grassroots leaders who could potentially become Town Councillors, with courses on topics such as financial management and estate management and maintenance. While some Town Councillors are trained professionals with expertise in areas such as estate and financial management, there may be a case for non-trained professionals who serve as Town Councillors to be equipped to understand the nuts and bolts of estate management so that they can effectively advise and give guidance to Town Council staff, which is often the Managing Agent.<sup>73</sup>

### **Managing the Performance of Estate Management**

All Area Offices provide suggestion boxes for residents to give feedback. Complaints and suggestions received at the Area Offices are subject to analyses and translated into key indices to monitor and evaluate performance.

In 1983, the HDB introduced the Towards Effective Area Office Management System (TEAMS) to instil discipline and some level of competition amongst the Area Offices. Every month, the TEAMS committee evaluates the performance of every Area Office in terms of routine functions and special projects. Weaknesses are identified for correction and improvement, while good performance and improvements made are highlighted for evaluation. There is an award system for good performance and extra efforts. Incentives are given for special efforts, productivity and initiative. Those with outstanding overall performance receive awards and commendations.

Chong Kim Chang, Former Deputy CEO of the HDB, described how TEAMS, by ensuring that no details were missed, helped to improve the overall standard of estates, which was quite low in those early days.

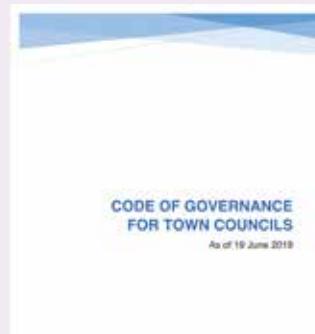
I remember saying in a briefing on TEAMS: “I can assure you that if we adopt this system, in a year or two, complaints from residents on poor maintenance standards will be reduced by many folds.” True indeed this was the case. That was because TEAMS itemised every aspect of estate maintenance, prompting staff to render attention to the progress of remedial works. It systematically motivated collective and individual efforts with quantifiable measurements for incentives.<sup>74</sup>

The HDB staff deployed to run the inspections under the TEAMS worked very hard to inspect all aspects of the estate to ensure that their reports would provide an accurate picture of the quality of each estate. Thomas Lim, who joined the Special Action Unit (SAU) in 1985, recalled:

One is building maintenance; one is conservancy, we also mark how clean the estate is, the blocks. Building maintenance practically covers everything you know from ground floor all the way up to the top floor. It also covers obstruction at the common corridor, how badly the corridors are being cluttered by the tenants—all these because they are fire hazards. So we also take down all these shortcoming defects. Whereas for conservancy, of course, we look for areas of neglect by the conservancy contractors, areas not cleaned, supposed to be clean but how come they are not cleaned, all those things you see. On our inspections, we also sought to spot potential killer litter from objects that residents hung outside their flats, or if they placed flower pots precariously on corridor parapet walls. Killer litter was a hot-button issue during those times.<sup>75</sup>

Today, Town Councils have their own mechanisms for tracking the performance of estate management and for seeking residents' feedback. For example, beyond tracking feedback and complaints, the Tanjong Pagar Town Council regularly conducts surveys amongst its residents, via a team of Service Ambassadors.

To manage the performance quality of its contractors, targets are also written into conservancy contracts—and these are moving from efforts-based targets (e.g., to clean the area a certain number of times a week) to performance-based targets.



**24.** The Code of Governance for Town Councils was introduced by the Ministry of National Development in 2020.

#### Governance of Town Councils

Besides performance management, the idea of having a governance scorecard for Town Councils was prompted by public concern over investment losses by some Town Councils. It had emerged in November 2008 that eight of the 14 PAP councils had invested S\$16 million in toxic financial products. A month later, amid calls for greater accountability, the government announced plans for a report that would measure how councils managed their estates and finances.<sup>76</sup>

In 2009, the MND introduced the Town Councils Management Report (TCMR), which would provide residents with objective information about key areas of estate management. The TCMR covers five areas: Estate Cleanliness, Estate Maintenance, Lift Performance, S&CC Arrears Management, and Corporate Governance.

The first report was published in 2010. However, this was not without controversy. Firstly, there was a perception of bias against opposition wards. Secondly, some residents questioned the accuracy of the grades awarded, since these differed from their experience on the ground. Thirdly, the report failed to assess how well councils managed their finances, which had been the trigger for a transparent scorecard in the first place.<sup>77</sup> The second TCMR was published in December 2010. In 2011/2012, there was a review of the TCMR, which included new indicators for more accountability.

To provide further guidance to Town Councils in their governance, the MND introduced a Code of Governance for Town Councils, which took effect from 1 April 2020. The objectives of the code are to enhance the effectiveness of Town Councils by sharing recommended governance practices, provide guidance to the Town Councillors to help them carry out their fiduciary duties and to improve the transparency of Town Councils' operations to build public trust and confidence. Town Councils are expected to publicly disclose their compliance to the Code from FY2020 onwards.<sup>78</sup>

## WORKING WITH MARKETS

Singapore's urban governance approach includes an emphasis on improving the efficiency of public service delivery by leveraging market forces where possible while avoiding the pitfalls of market failure. This is also the case in estate management.

### **Development of the Estate Management industry**

Prior to the 1980s, the private sector had some experience in estate and township management from the management of private estates. Early players in the estate management industry included Property Management Private Limited, Colliers Goh and Tan Property Management, and Construction Technology and Resources Development Corporation.<sup>79</sup> However, at that time, these Managing Agents did not have experience managing public housing estates.

In the late 1980s, with Town Councils taking over the estate management function, the HDB set up its first subsidiary—EM Services—in 1988 to provide estate management capabilities and to ensure that the expertise and experience garnered by HDB officers would be used. The HDB seconded some of its estate management staff and inspectors to EM Services. In its first year, EM Services had a staff-strength of about 200, of which 90% were seconded HDB employees.<sup>80</sup>

### **Opportunity to Drive Greater Efficiency**

The pioneering staff at EM Services saw their incorporation as an opportunity to improve the efficiency of estate management. For example, Tan Poh Hong, Former Deputy CEO of the HDB from 2004 to 2009, who had been seconded to EM Services to set up its operations and marketing portfolio, recalled that staff were assigned to take on geographical responsibilities as opposed to operating in functional silos as in the Area Offices. New roles of property officers and property executives were created, with each now being responsible for specific areas within the estate and its variety of estate management and maintenance issues. She said:

*We could not stay entrenched in our own ways. Time is money. In the past under the Area Offices, we had many people stand in the same spot to look up and down and inspect various aspects, but actually one person is enough. How many people does it take to change a lightbulb?<sup>81</sup>*



25. The staff from EM Services in 1993.

Tan also recalled the development of an estate inspection system, which ensures that blocks are checked regularly. Subsequently, key performance indicators (KPIs) were introduced to track performance.

Seconded staff were given the option to return to the HDB after their secondment, but most opted to stay on as EM Services continued to do well. They had also been reassured that their previous years of service with the HDB would be counted towards their years of experience and be reflected in their pay and entitlements.

Additional training which, although similar to their roles under the HDB's Area Offices, required a more diverse set of knowledge and skills, both in hard and soft skills.

In 1989, to instil certain private-sector practices for greater competitiveness and efficiency, the HDB divested 25% of its share in EM Services to Straits Steamship Land (now Keppel Land).<sup>82</sup>

The first phase of Town Council contracts was won by EM Services. The Town Councils had perceived that EM Services had an edge over its competitors because it was staffed by experienced ex-HDB employees. This prompted complaints from the private sector.<sup>83</sup> To provide more competition, another estate management company, Esmaco Pte Ltd, was set up, with DBS Land holding the majority share.<sup>84</sup> The HDB seconded some of its staff to Esmaco, which was able to pick up some of the later contracts.

In 1989, the HDB set up Cleantech Services as a way of retaining the experience of the HDB's conservancy and landscaping workers.<sup>85</sup>

In 2003, Cleantech was sold to SembCorp (SembWaste), and in 2005, the HDB sold its share of Esmaco to its partner, PREMAS.



## CHAPTER 3

# PUTTING THE RESIDENT AT THE CENTRE

“

Whilst the Housing and Development Board can provide for these amenities, water, fish, rocks, shrubbery, elegance and beauty, they can only be maintained if new standards of behaviour are adopted, both by the people who live there and those who visit them. Bad social habits like pouring leftover soft drinks into these ponds, or tossing cigarette butts, empty cartons, do not make for gracious surroundings. A consciousness of beauty and a desire to maintain and improve the beauty of the neighbourhood must be part of the new way of life.<sup>86</sup>

”

**LEE KUAN YEW**  
Prime Minister (1959–90)

As Singaporeans moved from villages and other traditional low-rise housing into the modern high density, high-rise, Housing and Development Board (HDB) homes of the 1960s, it was crucial to help accustom residents to living in the new estates. Over the decades, as residents grew used to high-rise living, engagement shifted towards responding proactively to resident feedback and then to encouraging collective ownership of common areas.

Central to this narrative has been the coordination amongst government agencies and their ability to evolve and adapt to changing resident needs and demands.

## 1960s-1970s: Responsiveness, Visibility and Trust

Helping residents adjust to the needs of communal high-rise living was an important part of the early days of community engagement. Lifts, corridors, void decks, garbage disposal and parking—these were some aspects of HDB living that residents were educated on.

In the earlier days, pre-1989, before Town Councils were established, estate management fell to HDB Area Offices (see Chapter 1). Under the purview of the Area Offices, Estate Officers had to wear many hats, and community engagement and educating residents on HDB living formed a large part of their work. From the more fundamental functions of the job, such as walking around the blocks to find potential defects, to spearheading education campaigns, these aspects of estate management would help to engage the community. Area Offices prioritised three principles in their efforts to accustom residents to high-rise living. These principles were: responsiveness, visibility (understanding the ground) and building trust with residents.

A number of management staff comprised an Area Office, ranging from parking officers to maintenance inspectors to daily-rated employees who carried out many of the tasks of estate management. The entirety of an Area Office's work helped not only to increase their presence and visibility to ensure timely responses to maintenance issues and resident complaints, but also to understand how its residents were using common areas—what worked, what did not and what could be improved.

At the very beginning, as residents moved into the first HDB homes during the 1960s, concerns were more fundamental, such as figuring out how best to respond to resident complaints. There were also certain design elements of these buildings that were challenging or not always user-friendly

for ongoing maintenance. Chong Kim Chang, Former Deputy CEO of the HDB, remembers how the construction quality was not as high as modern standards and residents would complain about issues from the uneven flooring to the location of the faucets.<sup>87</sup> This prompted the HDB and the Area Offices to create a feedback loop to help improve the HDB's planning and upstream design. Such responsiveness to complaints demonstrated how the HDB was able to respond to faults and change the way it operated to help improve the design upstream to reduce maintenance issues.

Most of the residents in these first HDB homes were resettled from *kampongs* and worked as farmers or hawkers. The first flat types were small, designed to move people into safe shelter quickly. Many of these flats, ranging from 23 to 65 m<sup>2</sup>, would house families of at least six to seven people, and at night, it was common to see mats along corridors.<sup>88</sup> Common areas at the ground floor were filled with the wares of street hawkers, and families even reared animals or planted crops in the green patches between buildings.<sup>89</sup>

One of Chong's first roles in the HDB was running the Stirling Road Area Office, and he worked with the Member of Parliament (MP) of that constituency to try to bring more order and cleanliness to the estate. The staff of the Area Offices had the difficult task of clearing up and trying to help residents change their habits. They would give residents notice to clear their belongings by a certain date or risk confiscation. However, the Area Officers had to show sensitivity too, as many residents were very poor, and much of the clutter in the common areas was linked to their livelihoods and part of the few possessions they had. Meeting residents in person to build understanding and rapport was thus important and confiscation only used as a last resort.

It was also important to establish systems and mechanisms for residents to provide feedback or report maintenance issues. Area Officers would attend the local MP's meet-the-people sessions to find out what the resident concerns were. Chong recalled a method he developed with an MP to respond to complaints:

I was then an Area Estates Officer heading the Bukit Ho Swee Area Office. The Member of Parliament then was the late Mr Seah Mui Kok. After his weekly Meet-the-People Session, the Area Office would be flooded with letters of complaints and requests from his PAP Branch Office. After a while, I persuaded Mr Seah to adopt a simpler system—the Area Office provided exercise books for him and his PAP branch officials to record residents' requests and complaints on one side of [each page of the] exercise book. The exercise book would be collected the following morning. Before Mr Seah met his

residents the next week, the Area Office would note down actions taken and any explanations on the other side of the exercise book, ready for him to update the residents should they come.<sup>90</sup>



26. Former Deputy Prime Minister Goh Keng Swee conducting a Meet-the-People session in the 1960s.

In addition to responding to complaints, Area Officers developed the capacity to know the estate through visibility in the community and increasing their presence.

Tan Poh Hong, Former Deputy CEO of the HDB from 2004 to 2009, described this process as the “proactive surveillance” of estate management. An effective Area Office would have a good view of the whole estate through such methods. This presence and visibility ensured that Area Offices could find effective means for targeting behaviours, like littering, but also build trust by proactively knowing where issues might crop up. Tan added:

All [efforts of area officers to be more visible] shows that there's a lot of proactiveness on the part of the HDB. It wasn't just waiting for things to happen before you do anything. The daily inspections and surveillance give you a lot of food for thought, lets you know what is happening on the ground, or how people are using facilities and all that, right...and then you get to know the people well and then they see you and the inspectors and so on. So you can also build up a good relationship with people, the residents there, they'll tell you things and give you feedback.<sup>91</sup>

## 1970s-1980s: Evolving Sense of Community and the Emergence of the Residents' Committee

Traditionally, *kampongs*, though lower-density, were laid out in a way that facilitated community ties. Common play areas outside homes and close contact with neighbours helped to build ties and trust. With HDB blocks, the physical design of homes had changed. In the early days, because of the need to house a large population rapidly, the designs were basic and focused on providing safe shelter to families. Common corridors were poorly lit and there was a lack of play areas for children, which resulted in less interaction among neighbours. This was compounded by the fact that more people were working longer and later hours, further reducing these chances of interaction.<sup>92</sup>

Engaging the community for estate management thus involved contending with these new factors, and this would shape how community and citizen participation, in general, would evolve in Singapore. Chua Beng Huat, a sociologist who worked in the HDB in the 1980s, spearheaded a study on resettlement to understand how residents were adapting to new modes of living. He explained that to understand “community forming” in HDB estates, one needed to know the daily rhythms of the residents’ lives and how they used public spaces. Estate managers and grassroots leaders were essential nodes of such knowledge about the community because they interacted constantly with residents.<sup>93</sup>



27. Residents socialising in the common corridor, c. 1985.

## SHAPING BEHAVIOURS AND BUILDING CONFIDENCE ABOUT LIFTS

The HDB, through its Area Offices, had to proactively try to allay residents' fears of using the lifts in HDB estates and target specific unsociable behaviours. In the early days, residents, used to living in *kampongs*, were afraid that lifts would break down, or worse, plummet from a height. A survey in the 1970s found that most residents did not want to live higher than the 5th storey, and would prefer walking up the steps to their high-rise homes.<sup>94</sup> Besides these fears, unsociable behaviours such as urinating, littering and spitting in lifts were common. Area Offices had to find ways to target these bad behaviours, educate residents on positive behaviours while accustoming them to using lifts. This required a combination of proactive maintenance, education campaigns and punitive measures.

Lifts were prone to breakdowns during the early days and routine maintenance checks were of utmost importance. Servicing was carried out every two weeks and there were monthly and annual service checks on various parts of the lifts. A well-oiled system of lift maintenance evolved, ensuring that lifts were available, reliable and safe.

From 1971, the Essential Maintenance Service Unit (EMSU), which evolved from the Emergency Repairs Unit, assumed responsibility for an around-the-clock elevator rescue service.<sup>95</sup> Prior to the EMSU's work, lift rescues were left to the lift providers, who were sometimes unreliable.



28. Some of the first vehicles from the Essential Maintenance Service Unit, c. 1975.

Efforts made to avoid the perception of vertical slums included education campaigns targeted at unsavoury lift behaviours such as urinating and vandalism. In 1978, the HDB, in an effort to discourage such behaviours, piloted a closed-circuit TV system integrated into the TV antenna of a

building, which allowed residents to watch their lifts from their TVs. In 1988, another pilot project involving urine detectors was launched in Tampines, Ang Mo Kio and Kallang. These detectors could detect urine, which would trigger a controlling device that would trap the perpetrator in the lift. The detector would send an alarm to the EMSU's headquarters, which would then send a rescue team and the police.<sup>96</sup>

Furthermore, ensuring lift safety was crucial. To this end, the HDB introduced an Automatic Rescue Device in 1979, which automatically brought passengers to the nearest landing in the event of a fault. The HDB also equipped 4,800 lifts with a telemonitoring system (TMS) in 1982 to deter crime and lift misuse. Information from the TMS would be escalated to the EMSU, which would then contact the police or EMSU team members for follow-up actions. The TMS could also detect unauthorised stops, instances of lift doors being forced open, trapped passengers, and faults in the Automatic Rescue Device. An Anti-Crime Device, which sounded a siren if an attempt was made to jam the lift between floors, served as a deterrent for crime.<sup>97</sup> These efforts went some way in persuading residents that high-rise living was safe.

In recent years, as infrastructure ages with time, lifts in HDB estates face higher risks of developing mechanic faults. Lifts, like all mechanical equipment, have a finite lifespan and will deteriorate with time due to wear and tear. As a result of such wear and tear, aged lifts may experience a higher number of breakdowns and more faults. Moreover, a few high profile incidents that took place in 2016 and 2017 generated much concern from the public over the safety of lifts. These incidents—Involving both lifts installed in HDB estates as well as lifts and escalators found in public spaces—had caused heightened awareness among both the general public as well as the media to issues surrounding lifts and escalators.

The Building and Construction Authority (BCA), which regulates lifts, has also worked more closely with Town Councils to raise the quality of lift maintenance through more frequent audits and tightening the safety standards for lifts.<sup>98</sup> The BCA is also working with local education institutes to develop training courses and certificates to upskill the workforce, and the government has recently adopted a progressive wage model that helps workers grow their salaries as they acquire skills and improve productivity.<sup>99</sup>

Over time, the continued commitment to lift maintenance has built confidence in the reliability of lifts in public housing estates.

One major institution that emerged at that time to respond to the changing nature of communities was the Residents' Committee (RC). Many RCs were established to foster community bonds between residents in HDB estates. Initially, pre-pilot schemes were set up in Marine Parade and Bedok in the late 1970s, followed by pilot schemes in 1978 in Ang Mo Kio, Boon Lay, Kolam Ayer, Toa Payoh and Bukit Merah.<sup>100</sup> These RCs were to "provide a better channel of communication with the authorities" that would allow for swifter responses to problems in the HDB estate such as lift faults and poor corridor lighting, provide a "better sense of security and protection from crime, vandalism, drugs and other anti-social activities", and promote a "sense of neighbourliness and racial harmony among residents through sports, social, cultural and other activities".<sup>101</sup> The RCs also "help[ed] to organise activities for residents and work[ed] with government agencies to improve the living environment in the neighbourhood".<sup>102</sup> Following the success of these RCs, they were extended to other HDB estates as well.

RCs operate only within zones demarcated within their respective constituency and are in charge of only a few HDB flats. Each RC is run by people from the blocks within a zone and consists of 6 to 30 members, depending on the zone's size.<sup>103</sup>

While the RCs' primary aim was to build community bonds and promote neighbourliness, it proved a positive tool for estate management too—RCs were seen as integral tools to ameliorate the inevitable externalities of high-rise dwellings, such as noise pollution.

Ang Mong Seng, former MP for Bukit Gombak and Hong Kah GRC, started his career as an Assistant Estate Officer in Toa Payoh in 1977 and became an RC member in the Boon Lay Constituency. To illustrate how his RC served a grassroots role in helping residents, he recalled the time when blackouts were common across Singapore in the 1960s and 70s.

*So the RC, the first job we go and buy a lot of candles, and store them in all the RC members' houses...So when blackouts occur, all the RC members take out their candles, go and light them up and put them in the staircase...because there is no power supply, the lift cannot be used, so we light all the candles in the lift and the staircase down, help the resident come back...to go back.<sup>104</sup>*

This type of proactive engagement by the RC helped to establish them as trusted members of the community, and they started to play a critical bridging role in bringing the HDB and Town Councils closer to residents. For example, during various estate renewal programmes, the RC would work with the Town Council and the HDB to help secure the necessary resident support.<sup>105</sup>



29. A children's art carnival organised by a Resident Committee, c. 1980.

RCs also formed part of an ecosystem of community-based or "grassroots" organisations. From as early as the 1960s, the Citizens' Consultative Committees (CCCs) were formed.<sup>106</sup> They fall under the purview of the People's Association (PA), which is the grassroots organisation overseeing neighbourhood grassroots activities and organisations for the government. The CCCs' main role is to "promote good citizenship; disseminate information and relay public feedback on government policies and actions; direct and carry out projects and activities at the constituency and national level; and make recommendations on the provision of amenities and facilities in the constituency".<sup>107</sup> On this last function, they have control over the Community Improvement Projects Committee funding, which is a fund from the Ministry of National Development for improvement projects in HDB estates such as covered walkways and cycling tracks. However, given they fall under a political party, CCCs have recently run into some controversy in constituencies not controlled by the People's Action Party (PAP). In response to the above, CCCs have to take into consideration projects put up by any MP, regardless of political affiliation.<sup>108</sup>

### New Challenges, Methods and Tools

Following Singapore's first 10 years of independence, sufficient flats were built quickly enough for more than half of Singapore's population to be housed. As waiting lists for new flats fell while the rate of building kept pace, it provided an opportunity for the HDB to focus more on improving the quality of flats in newer estates. This was motivated in part by the rising living standards and expectations of Singaporeans in the 1970s and 1980s. Newer flats were equipped with "bigger and higher ceilings, attached bathrooms and better quality finishing and included 5-room double-storey maisonettes and executive apartments".<sup>109</sup> Apart from the interior of newer HDB flats, the architectural design of HDB flats themselves was modernised. The cookie-cutter designs of previous HDB estates were eschewed in favour of more unique architecture and colour schemes, to create a stronger sense of space and community for the residents in the estate.<sup>110</sup>

These new design elements, for example, segmented corridors and centralised chutes, had implications for estate management and how agencies engaged with residents. As mentioned in Chapter 2, many design elements were adapted for greater efficiency and productivity in estate management. However, what may seem to be easier to maintain sometimes ended up being a greater challenge due to inconsiderate resident behaviour. Teo Ho Pin, Coordinating Chairman of the PAP Town Councils from 2006 to 2020, gave the example of the centralised chute system.

The HDB also [adopted] the common chute, centralised chute system. Now, we thought that is productivity, right? But ended up a lot of residents either damaged our CRC [centralised refuse chute], they step until the pedal cannot work, or they are too lazy, they put their rubbish at every hopper. So instead of collecting it from [the] downstairs one-bin chute, one area, you collect from every single floor! Every single floor! The worker has to go to every single floor to pick up the rubbish, break into small pieces, put into the hopper and throw it, you know? They said that [this] is how we [increase] productivity. It's not productivity, what. It's more work! Then neighbours fight each other. This one inconsiderate, you put all your organic waste food, all drip all over the floor, when you carry, you drip everywhere, [make] the whole corridor [smelly], only four of us, then there's one culprit.<sup>111</sup>

Such experiences highlighted the ongoing need for the HDB to engage residents through education to encourage positive behaviours and punitive measures to stamp out inconsiderate behaviours.

One of the earlier attempts at disseminating information about living in HDB flats was the Residents' Handbook. From 1980 onwards, residents were given copies of these handbooks<sup>112</sup> to keep them "informed of current rules and regulations and to provide helpful advice in fostering happy community living" in its "high-rise high density developments".<sup>113</sup> These handbooks included important information, such as a listing of facilities and services (i.e., the 24-hour EMSU hotline number) in the estate to help new residents transit smoothly into a new environment. Most importantly, these Residents' Handbooks also included information and pointers on social etiquette in dense housing environments, on issues ranging from noise nuisance to killer litter.



30. A Residents' Handbook showing the proper use of lifts.

Today, these handbooks are no longer distributed. Instead, the HDB has released a pared-down version of the handbook called the *Home Care Guide*, which advises homeowners on the maintenance and repairs of fixtures and fittings within their home, such as air-conditioners, windows, etc.<sup>114</sup> Advice on social behaviour and etiquette is no longer given.

Another interesting effort was the following competition. As part of the nationwide Keep Singapore Clean campaign, in 1995, the Cleanest Block Competition and Cleanest Estate Competition was officially launched islandwide. These pitted estates against each other in a friendly competition to vie for the cleanest estate award. In 2000, the organisers even considered including social behaviour as a criterion in the competition—points would be deducted for unsavory behaviour like the dumping of bulky garbage in common areas.<sup>115</sup> This campaign was eventually scrapped in 2003, as the competition was limited and did not really engage the residents. Replacing it was the Singapore's OK—Our Town Sparkles programme. Commensurate with the changing consciousness of Singaporeans, this programme

emphasised awareness raising and appealed to the community's sense of collective ownership over their estates. Blocks that passed a cleanliness test were awarded a sparkle sticker, and residents could nominate their own blocks as long as their blocks had at least five nominations.



31. Then Prime Minister Goh Chok Tong presenting an award certificate for the cleanest block competition in 1995.

## 1980s–2000s: Town Councils and Meeting the Changing Aspirations of Residents

With the emergence of Town Councils, estate management was further decentralised, providing them with new avenues and opportunities to meet and engage their residents.

One of the main goals of the creation of Town Councils was to allow residents to participate more actively in decision-making concerning the upkeep of their estates. Town Councils worked with RCs and other grassroots organisations to better understand their residents' needs, resulting in more channels for residents to provide feedback about their neighbourhoods.

As the design of HDB estates also evolved to include more common facilities, Town Councils could work more proactively to find ways to complement existing facilities to suit resident needs, which included covered linkways, lighted signboards and barrier-free access. Eventually, attention also shifted to new playgrounds, fitness corners and multi-purpose courtyards.<sup>116</sup> The illuminated signboards on HDB blocks and car parks made the estates easier to navigate at night. In addition, covered

linkways connected various drop-off points, for example, from bus stops to HDB blocks.

As neighbourhoods became more diverse and unique in terms of design and identity, common areas were enhanced differently—some had amphitheatres, others had multi-purpose hard courts. These enhancements allowed community groups and activities, spearheaded by grassroots organisations, to emerge all around HDB blocks. This was reflective of the Town Council's capacity to meet the changing "needs and aspirations of the residents".

Town Councils also signalled another major shift—the role of the MP. Through Town Councils, local authorities now had greater jurisdiction in the estates they represented. Thus, the quality of the estate in some ways served as a report card for local politicians. Methods for obtaining resident feedback soon evolved, as house visits by MPs became a common sight across all HDB estates. During these visits, MPs are accompanied by either Town Council members or representatives from the Managing Agent, to ensure that resident feedback is acted on promptly.<sup>117</sup>

The HDB also works with Town Councils to implement many major community-driven upgrading efforts. From as early as the 1980s, differences between old and new estates were noticeable, and so a number of programmes were launched to help renew estates and ensure their liveability was maintained (see Chapter 1). A major component and driver for the various programmes through the years was rejuvenating community ownership over their estate through avenues to garner feedback on what residents wanted to see in their neighbourhoods.<sup>118</sup>



32. Engaging residents during the Neighbourhood Renewal Programme.

Community engagement through the various estate renewal programmes also evolved with changing times. This has ranged from more passive forms of community engagement to more proactive community engagement for recent projects like BOND!@Bukit Panjang and Tampines Changkat.

Across all renewal projects by the HDB, an agreement threshold level is fundamental to kick-starting projects. Before securing such an agreement, the HDB will set up a working committee to brainstorm ideas for designs with grassroots advisers, designers, architects and residents. From these sessions, a number of feasible and creative ideas are chosen, and straw polls are conducted to identify the most popular items. The upgrading packages are then finalised for the residents to cast their votes for. Throughout the process, different pros and cons that will arise throughout the upgrading process are presented to residents to help them better understand what they are signing up for.

However, as government agencies created more room for resident participation, and as residents have become more vocal in their views, community engagement has gone even deeper. In more recent projects such as BOND!, the main aim was to get residents involved in the planning and design of their neighbourhood. This included residents participating in design clinics, workshops and walking conversations with various professionals to see how their everyday experience in their neighbourhoods could be enhanced through the design of common spaces. With a greater say in how their estates were upgraded, residents would feel a greater sense of ownership and community.<sup>119</sup>



33. A series of murals located outside the Ang Mo Kio Town Council, capturing the essence of *kampong* life during Singapore's early days.

## 2000s-Present: Technology and Engaging the Majority

Harnessing communication tools has played a big role in how residents and Town Councils work together in estate management. Various Town Councils are using increasingly savvy ways to communicate with busy residents. Simon Koh described the evolution of methods:

*The only way we can communicate with residents [in the] early days [of the] Town Council was [through] community events, newsletters, notice boards, flyers, and so on. As it evolves, we have dialogue sessions and coffee sessions with them to talk to and communicate with them. When we want to do projects, we meet them to get their feedback. Right now, we still have that. When we have any upcoming NRP [Neighbourhood Renewal Programme] or upgrading projects, we have dialogue sessions to show them our plans and then they come in to give their feedback. In the last few years, in fact, when [work on the] Pinnacle started, we started to see more and more moving towards social media, starting with blogs.<sup>120</sup>*

Nowadays, chat groups for residents moving into newly built HDB homes help them communicate and share tips and information about their new neighbourhood, and in doing so, facilitate nascent community bonds. So useful are such groups in helping to relay information that even Town Council members join them.<sup>121</sup>



34. Residents participating in My Block Sparkles, an annual competition aimed at encouraging residents to keep their estates clean.

However, not all residents have a desire to participate in such community forums; in fact, most residents constitute the silent majority in estates. Some Town Councils have found ways to engage such residents. For example, the Tanjong Pagar Town Council Service Ambassador programme consists of Town Council staff walking around the neighbourhoods to talk to residents to find out if they have any issues with their estate. Resident feedback is collected and tracked over time to better understand trends and emerging preferences.<sup>122</sup>

While the Town Councils have taken on various functions in engaging the community on estate management matters, the HDB continues to play a role in engaging the community, especially when it comes to new precincts and in promoting good neighbourly relations. The HDB formed a Community Relations Group to oversee its various community engagement efforts.

Initially, the HDB organised Welcome Parties 10-18 months after residents moved into their new homes, as a means of welcoming and allowing them to mingle and get to know their new neighbours and grassroots leaders (GRLs) serving them on the ground. Since 2017, this has been replaced by MyNiceHome roadshows, which are conducted 3-6 months before the completion of the first block in each new precinct. The roadshows help homeowners-to-be familiarise themselves with their new living environment and also equip them with useful information on HDB living such as renovation tips. In addition, it provides a much earlier touch point, as compared to Welcome Parties, for residents to meet their future neighbours, Advisers and GRLs. It also allows the HDB to engage residents on issues that they might encounter with their new flats.



35. MyNiceHome roadshows help residents learn about their new homes and estate.

Recent initiatives have also gone a step further to give residents the platform to see their ideas come to fruition in their neighbourhoods.

- i. Build-a-Playground was piloted in the Canberra neighbourhood in Sembawang, where residents worked with the HDB to conceptualise, design and build their own playground.
- ii. The Cool Ideas for Better HDB Living initiative engages the community to co-create innovative solutions to solve daily living issues and enhance the living environment in HDB towns. Ideas are solicited through both online calls for ideas and hackathons to crowdsource creative solutions within the community.
- iii. Recognising the increasing number of entrepreneurs and owners of Small and Medium-Sized Enterprises (SMEs) among HDB residents, the Cool Ideas Enterprise initiative was launched by the HDB with support from Enterprise Singapore. This initiative co-funds, develops, testbeds and pilots innovative solutions by SMEs within HDB estates.
- iv. The Lively Places Fund encourages residents and stakeholders to initiate community-driven place-making projects; projects have included outdoor classrooms for crafts, public education efforts and even public spaces that have been enlivened.
- v. The Good Neighbour Award, as part of the larger kindness movement in Singapore, lets residents nominate exemplary neighbours who have gone the extra mile to show kindness to other residents.<sup>123</sup>

The emphasis on co-creating and seeking ideas out from residents marks a new wave of resident engagement, characterised by greater community ownership.



36. The Adventure Playground@Canberra, Singapore's first playground designed and built by the community.

Besides these proactive methods of engaging residents, traditional routes of giving feedback are still at residents' disposal, including hotlines and feedback apps (see Chapter 4).

Putting residents at the centre has always been the main driving force for all government agencies and local bodies involved in estate management. Certain principles have been fundamental to this narrative, and policies and programmes are most effective when they are tangible to the everyday life of residents and adapted accordingly as residents needs and aspirations change.

Shaping behaviours necessary for high-density, high-rise living has involved a careful and well-thought-out approach to include education and punitive measures, not just to keep common areas maintained but also to ensure that people feel a sense of ownership over their whole estate and thus enhance the living environment. This capacity of agencies, local bodies and residents to think about estates being not just private spaces for living but as important public spaces for all has grown and led to the continued success of Singapore's public housing.

## CHAPTER 4

# INNOVATING INCREMENTALLY AND SYSTEMICALLY

“

Innovation has always been part of the HDB's DNA. In fact, the HDB's *raison d'être*, its reason for existence, is to be innovative.<sup>124</sup>

”

**LAWRENCE WONG**

Minister for National Development (2015–20)

## Improving Estate Management through Innovation

Innovation has been an indispensable part of estate management in Singapore's public housing system.<sup>125</sup> Since 1960, stakeholders in estate management—from the Housing and Development Board (HDB) to its private contractors—have had to grapple with issues such as managing limited resources, providing a quality living experience, and responding to residents' evolving demands. To address these myriad challenges, innovation was an important tool. But how exactly did these challenges motivate the HDB and private firms to innovate, and how was innovation successfully executed? This chapter takes a look at some possible answers and lessons.



37. Workers make use of high-powered equipment to wash and clean HDB common spaces and infrastructure.

## Innovating to Optimise Resource Allocation

From the outset, innovation was motivated by the need to optimise limited resources. By 1986, the HDB and its contractors were managing more than 550,000 flats across Singapore. As more flats were built, demand for estate management naturally surged.<sup>126</sup> The scale of the HDB's estate management programme—already labour-intensive by nature—thus had to be expanded significantly. Yet the labour supply in key estate management sectors such as conservancy was lacking. Despite an attractive monthly wage of S\$500,<sup>127</sup> an entrenched stigma surrounding the industry discouraged most Singaporeans from becoming cleaners.

Thus, the HDB had to somehow bridge the gap between labour demand and supply in estate management. Moreover, as Singapore's economy advanced, there was a growing realisation that the labour crunch in the conservancy sector was unlikely to be fully resolved. Thus, innovation, which allowed the HDB to stretch its limited resources without hiring more workers, emerged as a solution. To this end, several groups were established to spearhead innovation.

One group was the Mechanisation Unit. Among other responsibilities, it was tasked with procuring mechanised equipment for use in conservancy and landscaping.<sup>128</sup> The Unit regularly called for tenders from the private sector, for machines such as scrubber dryers, which were eventually incorporated into the HDB's nation-wide operations. Mike Chan, then group director of the Housing Management Group, explained: "You have an army, a team of about seven or eight cleaners just for one block. If we introduced some machines to help them to wash the corridors, that will be wonderful."<sup>129</sup> Essentially, through innovation and mechanisation, fewer resources were required for each task. Unutilised resources could then be reallocated, allowing the HDB to do more with less.

That said, the plan to adopt innovations in mechanised equipment had its critics. Some sections of the National Trades Union Congress (NTUC), adamant that this would lead to conservancy workers being retrenched, resisted mechanisation. To assuage the NTUC's concerns, the HDB promised that workers would only be redeployed or promoted as it mechanised its operations.<sup>130</sup> With this assurance, a pilot trial was started in 1981 in Ghim Moh estate, where the HDB deployed four high-pressure washers, two walk-behind sweepers, and a ride-on sweeper for cleaning and conservancy.

The pilot was immensely successful and showed that innovation could indeed enable the HDB to optimise its resources. With the walk-behind and ride-on sweepers, which sucked up litter as they were pushed along a pavement, one worker could clean 2,000 parking lots per day. In contrast, four workers were required to manually sweep the same number of lots.<sup>131</sup> According to newspaper reports, S\$78,000 was saved in total, and manpower demand fell by 26.5%.<sup>132</sup> With this affirmation, the innovation and mechanisation drive was expanded to other HDB estates.

In the 2010s, beyond manpower savings, the HDB Greenprint programme also rejuvenated existing HDB estates (Yuhua in 2012 and Teck Ghee in 2015) with sustainable features that improved resource use in areas like waste management, energy and water conservation, and space usage. Features that were introduced included the dual bicycle rack to optimise space required for bicycle parking, rooftop greenery that reduced ambient temperature and community parklets as a conducive space for get-togethers to promote community bonding and encourage community ownership of common area spaces.

The introduction of sustainable features in existing estates will be extended to more HDB towns with the HDB Green Towns programme, introduced in 2020. The Green Towns programme is a 10-year plan to make every HDB town more sustainable and liveable by 2030, with three main aims of reducing energy consumption, recycling rainwater and cooling HDB towns.

- To harness more clean energy, the HDB will be rolling out solar panels on 70% of the HDB blocks islandwide to achieve a solar PV capacity of 540 MWp by 2030. Smart LED lighting will also be installed at all common areas of HDB estates to further reduce energy consumption. The system is equipped with sensors and smart analytics to enable predictive illumination, fault detection, and analytics on space usage. Since 2005, various energy efficiency initiatives introduced by the HDB have achieved a 10% reduction in energy consumption in HDB towns, and through this programme, the HDB aims to reduce it by a further 15% by 2030.
- To recycle rainwater, the HDB will pilot the Urban Water Harvesting System at four existing estates to reduce the use of potable water by more than 50% for activities such as washing of common areas and irrigation.
- To cool HDB towns and improve thermal comfort for the residents, the HDB will pilot cool coatings across several neighbourhoods. Urban farms, extensive greenery, or community gardens will be introduced to the top decks of Multi-Storey Carparks. The HDB targets to reduce ambient temperature by up to 2°C through this initiative.



38. HDB Greenprint Initiatives: Dual Bicycle Rack & Community Parklets for residents in Yuhua (top), and a focus on green revitalisation (bottom).<sup>133</sup>

#### Tapping on Vernacular Knowledge

Crucially, innovation in estate management was not just implemented based on a top-down approach. It was executed systemically; meaning knowledge from all levels—including vernacular knowledge—was tapped. In this regard, the HDB implemented several schemes to promote ground-up innovations, starting with staff at its Area Offices. Owing to their proximity to housing estates and residents, these staff knew which gaps in estate management could be bridged by innovation. This act of co-opting staff with knowledge of the situation on the ground was an important success factor in the HDB's innovation drive.

One way to tap on Area Office staff was through the Quality Control Circles (QCC) scheme implemented in 1982.<sup>134</sup> In each Area Office, staff members were divided into different QCCs that were encouraged to innovate to solve specific issues in estate management, such as cleaning works or refuse collection. QCCs from different Area Offices would then be challenged to come up with good solutions; those with the best innovations were recognised at annual conventions,<sup>135</sup> featured in newspapers, and had their innovations implemented across all HDB estates. In just three years, 165 QCCs were established across all Area Offices, creating a substantial pool of collective knowledge and innovative ideas for the HDB.<sup>136</sup> Some are outlined on the next page.

### **Woodlands Area Office:**

QCCs from the Woodlands Area Office were prolific innovators. Between 1983 and 1988, no fewer than four of its QCCs won prizes at the annual National QCC Convention.

In 1985, a QCC named Creative won a prize for its refuse collection trolley. Responding to complaints by cleaners about the difficulty in manoeuvring existing rubbish trolleys, Creative designed a lighter model that combined aesthetics with ease of steering. Their invention, aptly named “A1 trolley”, had repositioned wheels to improve balance and was coated with anti-rust paint to prevent unsightly corrosion. For the price of S\$85, which was half the price of the existing rubbish trolley, Creative saved the HDB hundreds of thousands of dollars<sup>137</sup> when it was deployed for rubbish collection across all housing estates.

Another QCC, Creative Circle, was recognised in 1987 for its water-saving innovation. The creators had noticed that during block washing, the high-powered hose was left running whenever cleaners went to turn off the main water supply at a higher floor. To address this wastage, Creative Circle invented a stop-valve for the hose, which would allow cleaners to control the water flow without operating the main water supply.<sup>138</sup> Although the cost savings from this innovation were not as significant, there was a symbolic impact—Malaysia had threatened to cut off Singapore’s water supply in 1986, and this innovation sent an important message that water should not be taken for granted by anyone in Singapore.

### **Jurong East Area Office:**

In 1988, a QCC halved the time (from 15 to 7.5 minutes) of lift rescue operations for a mere S\$0.23. The innovation, simple as it sounds, involved painting lift cables with different colours at regular intervals. With this invention, if the lift car was trapped between, say, the 5th and 6th floor, the rescuer at the lift motor room would then hoist the lift car until he could see the colour on the lift cable denoting the 6th storey lift landing.<sup>139</sup> Before this innovation, rescuers had no indication of the height of the trapped lift car and thus could not quickly hoist it to a lift landing for passengers to alight.

To sum up, two lessons can be drawn from the HDB’s QCC scheme. Vernacular knowledge of those close to the ground is a valuable resource that should not be overlooked, and friendly competition can boost the quality and rate of innovation. Among the Area Offices and QCCs, pride and financial rewards were at stake, providing staff with a greater incentive to innovate.

## Working with Markets: Incentivising the Private Sector

As part of a systemic approach to innovation, innovation was also encouraged amongst private companies in the estate management and conservancy industry.

### **Encouraging Firms to Adopt Technology**

Despite the obvious need to encourage the private sector to adopt new technologies, the HDB had by the 1980s realised that the high costs involved were prohibitive for many private companies. As such, only cheaper machines such as high-pressure washers (S\$4,000 to S\$8,000) were adopted, whereas pricier ones like ride-on sweepers (S\$12,000 to S\$18,000) had a low uptake.<sup>140</sup> Consequently, some aspects of conservancy, such as sweeping, remained heavily dependent on manpower.

To mitigate this, the HDB introduced an Interest-free Financing Scheme in 1981 to encourage greater adoption of existing innovations. The loans under this scheme could only be spent on mechanised equipment and were meant to ease the strain on a contractor’s cash flow when he purchased machines. The loans ranged from 2.5% to 20% of the contract sum, depending on the contractor’s performance.<sup>141</sup>



39. High-tech waste disposal machines have made estate management significantly more efficient.

To contractors, this scheme offered respite from a frustrating dilemma. On one hand, the HDB required them to provide a minimum number of workers for each conservancy task. Falling short of this number meant they would be penalised. On the other hand, the manpower crunch in the services industry during the 1980s created an employee's market. Thus, to hire conservancy workers, contractors had to fork out high wages and compete with other firms. The appeal of the HDB's interest-free loans was thus obvious—they could meet the HDB's cleanliness standards without endangering their financial health. With cash flow issues resolved, more private firms could finally adopt existing innovations in their conservancy tasks for the HDB.

However, interest-free loans were only useful for private companies that were already open to innovation and mechanisation. For the remaining firms, the HDB's Special Action Unit had another solution—the Merit Star Scheme. Originally introduced in 1973<sup>142</sup> for construction companies, the Scheme was extended in late-1985 to cover conservancy and refuse collection contractors.<sup>143</sup> Under this scheme, a contractor's level of mechanisation contributed to his total score alongside other factors like performance. Based on this score, up to five merit stars were awarded. Each earned the contractor a 0.5% price advantage in future tenders for HDB contracts.

For example, if a five-star contractor and a zero-star contractor submitted equal bids, the former's bid would be assessed at a value 2.5% lower than what was submitted. The latter's bid would be assessed at its original value. Assuming both contractors were of equal quality, the contractor with five merit stars would be awarded the contract by virtue of his "lower" bid. Under this scheme, contractors that mechanised held a significant advantage in winning HDB contracts over those that did not. Given that the HDB was a major client in the conservancy industry, most contractors were pushed to leverage technology for economic survival. Through these schemes targeting both willing and less willing private companies, the HDB had secured their commitment to leverage innovation in the 1980s.

#### Innovations from the Private Sector

Besides utilising existing innovations, private firms themselves also innovated. In recent years, one example is the eco-burner. Before this, Chinese residents would burn incense and joss sticks in traditional burners during Hungry Ghost Festivals. This generated regular complaints from residents as the smoke and ash produced not only affected the air quality in HDB estates but also dirtied the residential environment. In response, the first eco-burner was introduced in Nee Soon Town in 2014 to regulate the fumes and ash generated during burning, and thus create a more liveable estate.

This process of innovation by the private sector was also iterative—firms that supplied the eco-burners solicited feedback from residents and used these insights to improve their designs, culminating in an eco-burner that now produces half the amount of smoke and just 3% of ash compared to traditional burners.<sup>144</sup>



40. An eco-burner, the result of innovation from private firms.

#### Partnering the Private Sector

The HDB has also partnered the private sector and Town Councils on the SolarNova programme, to help them manage the cost of estate maintenance. Under the programme, solar photovoltaic vendors install solar panels, which then power the common services with clean and renewable solar energy, helping Town Councils to save on their energy bill. Town Councils do not have to pay for the upfront cost of the solar panels and only pay for the solar energy that they use, at a preferential rate below the retail electricity tariff rate.

Beyond HDB rooftops, the SolarNova programme also aggregates demand from government agencies for economies of scale. The programme helps to build up the scale and capabilities in the solar industry, which translates to wider-scale implementation of solar technology and cost savings. As more clean energy is generated, this helps to reduce carbon emissions and mitigate the effects of climate change for Singapore.



41. The HDB has been actively implementing the SolarNova programme to install solar panels on public housing rooftops.

#### **Continued Support for Research and Development**

As part of continuing efforts to support innovation, the Ministry of National Development (MND)—the HDB's parent ministry—launched the Cities of Tomorrow (CoT) programme in 2017. To facilitate this, the MND and its agencies have committed S\$150 million to fund research to address the myriad challenges cities will face, and estate management falls under its "resilient infrastructure" pillar of focus. The aim is to create a city that is robust, flexible and well-maintained and has reliable and cost-efficient infrastructure. This involves research into solutions that reduce building defects and manpower dependence in estate management, such as predictive analytics, automation and robotic technologies. The fund, given out in the form of R&D grants, has been well received—since 2017, 75% of grant applications submitted involved private companies.<sup>145</sup> Moving forward, the MND has pledged greater support for private sector innovations, either through collaboration with public agencies or test-bedding innovations in public sector projects.

#### **Looking Beyond Our Shores**

Since 1960, the HDB has engaged international consultants and tapped on their knowledge to improve Singapore's public housing delivery. Adopting such an open attitude from the outset enabled it to keep abreast of innovations worldwide and eventually develop tailored solutions for Singapore's estate management needs.



42. Tampines GreenCourt, a public housing project constructed using the innovative Prefabricated Prefinished Volumetric Construction (PPVC) method.

For instance, the Japanese firm Fujitec was invited to open a lift-manufacturing factory in Singapore early in the HDB's building programme. This benefitted Singapore and the HDB in three ways: (i) with a local factory, Singaporean and Japanese engineers could collaborate to customise a lift model that met Singapore's unique needs, rather than blindly copying a foreign design, (ii) local engineers would benefit from the transfer of technical knowledge from Japanese engineers, and (iii) employment opportunities were created with the opening of a new factory. Besides Fujitec, consultants from the Japan International Cooperation Agency (JICA) were engaged to guide the HDB's general mechanisation programme. In fact, items such as battery-operated rubbish collection carts were developed by the HDB with JICA's advice. Hence, engaging with its international counterparts, who were more experienced, provided the technical foundation for the HDB to innovate.

Beyond this, the HDB leveraged existing innovations from German and American companies to enhance its estate management delivery. Some products co-opted into the HDB's operations include the high-pressure washers and ride-on sweepers developed by Klenco (German) and Tennant (American), respectively. Although some of these products were eventually phased out due to resident complaints about the noise they generated, they were nonetheless helpful in guiding the design of the HDB's future innovations.

## INCREMENTAL INNOVATIONS: THE HDB RUBBISH CHUTE

### Rubbish Chutes and Waste Management

Out of sight, out of mind—most people would rather not think about how household waste is managed. However, examining the history of the HDB rubbish chute reveals lessons in how iterative design and incremental innovations in waste management can contribute to an efficient and clean housing estate.

Before 1960, Singapore Improvement Trust housing blocks had already been fitted with rubbish chutes to facilitate waste disposal. Each household had an individual chute hopper. Such a design had its advantages. Unlike in other cities where residents in high-rise blocks had to take their rubbish to designated containers at street level, residents could dispose of their waste without the inconvenience of leaving their flats or waiting for scheduled collection times.<sup>146</sup>

When the HDB took over as the housing authority, it preserved the individual rubbish chutes and introduced a battery-operated cart for waste collection. This was motivated by the need to stretch its resources amidst a manpower shortage in the conservancy industry. With the battery-operated cart, which could carry four bins at once, workers simply needed to swap full bins with empty bins before driving the cart back to a central collection compound. This collection method resulted in a 30% increase in productivity, which meant that the HDB could expand the scale of its waste collection without hiring more workers. A hundred of these carts were deployed to service about 100,000 flats by 1985.

In 1989, driven again by the need to optimise limited resources, the HDB redesigned HDB blocks such that there would only be one communal rubbish chute hopper per floor. This reduced the total number of rubbish collection points per block from five to one and raised productivity by sixfold. Thus, even with 1,500 tonnes of waste generated daily in the 1980s, the HDB was able to cope with fewer workers deployed for rubbish collection.

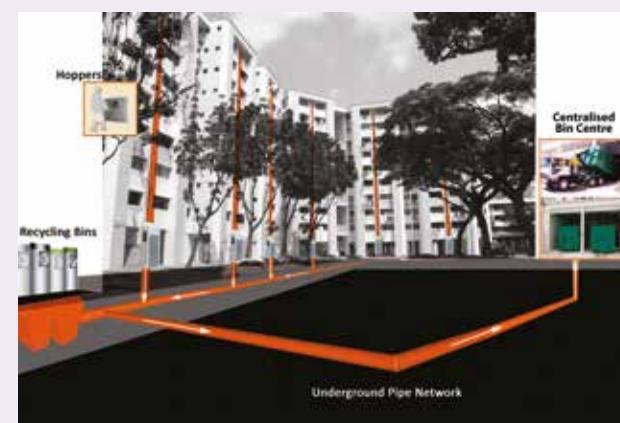
However, the communal chute revealed an unforeseen behavioural problem—squeamish residents, unwilling to touch the handles of the communal chutes, tended to leave their rubbish outside the chutes rather than throwing them in. As a result, more manpower was required to manually collect rubbish from every floor, threatening to erase savings from previous innovations.

This motivated the HDB to invent a no-touch lid in 1994. Instead of pulling the hopper open with their hands, residents would only need to step on a foot pedal to open the hopper.<sup>147</sup>

In the 2000s, the HDB adjusted its innovations to complement the National Recycling Programme launched by the National Environment Agency in 2001.<sup>148</sup> A separate, dedicated chute for recyclables was introduced in 2006 to reduce the inconvenience of recycling. Before this innovation, residents had to bring their recyclables down to a recycling bin on street level<sup>149</sup>—a stumbling block in recycling efforts. Thus, to facilitate recycling, since 2014, all new HDB Built-to-Order (BTO) flats have been fitted with dual chutes.<sup>150</sup>

Increasing domestic waste due to population increase continues to spur the HDB to innovate in the face of limited manpower resources. In 2014, the HDB tested the Pneumatic Waste Conveyance System (PWCS), a manpower-lite waste collection system that transported rubbish by vacuum. Originally introduced in 1998, the PWCS had earlier been withdrawn due to high construction and operating costs. In 2014, improved technology enabled the implementation of the PWCS. Unfortunately, issues of noise, stench and chokes due to indiscriminate disposal sometimes arose. Even as selective new estates in Punggol Northshore, Bidadari, Tampines North and Tengah are being fitted with the PWCS from 2018,<sup>151</sup> innovative thinking and implementation will no doubt be deployed to pre-empt and overcome these operational and behavioural issues.

Staying nimble and pursuing incremental innovations have improved the HDB's waste management system since the 1960s. Despite the challenges inherent to innovation, the revival of the PWCS in 2014 shows the importance of iterative design and remaining responsive to external conditions.



43. The  
Pneumatic  
Waste  
Conveyance  
System.

## Towards a New Estate Management: Reactive, Preventive, Proactive and Predictive

Today, the overarching term used to describe the HDB and its contractors' approach to estate management is usually "proactive". However, this was not always the case. In its nascent years, the HDB's strategy was primarily reactive; a predictive-preventive strategy was added later. These are explained below.

The HDB and its contractors' initial approaches to estate management were reactive. In other words, facilities were only repaired after they have broken down. For this reason, repair frequencies were ad hoc and irregular. The Essential Services Maintenance Unit's protocol exemplified this approach. Repair teams were only dispatched upon a resident's request or after an elevator has already malfunctioned. This reactive approach presented two problems: (i) residents would inevitably have to endure service disruptions from time to time, affecting their confidence in the HDB's ability to provide a quality residential experience, and (ii) each ad hoc repair trip was expensive to conduct. Mike Chan, Deputy CEO (Estate) of the HDB, offered an interesting anecdote: "If you want to replace the lighting, you got to get the term contractor to get the crane, and to get the crane you must pay certain amount of money. It costs almost a thousand dollars just to replace the bulb in the car park!"<sup>152</sup> Hence, a new strategy that focused more on prediction and prevention was adopted.

The rationale behind this strategy was that if the HDB and its contractors could predict when a service would fail, it could prevent a real failure by maintaining the service preemptively. This way, inconvenience to residents could be minimised. For example, predictive-preventive maintenance was used to enhance the performance of the water tank valves in residential estates. Upon realising that the failure of the spring controlling the valve could be predicted, the HDB set about replacing the springs before any actual failure, thus preventing water leakages and service disruptions to residents.<sup>153</sup> Moreover, repairing numerous services in one go rather than dispatching repair teams on an ad hoc basis would result in time and transport savings.

Finally, to leverage improved technology in the late 20th and 21st centuries, the HDB added proactive maintenance to its estate management strategy. This was a way for it to collect and utilise data to better anticipate when services would fail. Several platforms were created by the HDB and its partners to facilitate this transition. For instance, the Integrated Estate Management System, developed by Surbana Jurong, is currently used to "monitor, relay and analyse information to facilitate estate management".<sup>154</sup> In 2016, a dashboard named "Smart Cities in a Box" was also set up between

Surbana Jurong and Microsoft to enable more in-depth data analysis. The HDB itself started developing a Smart Hub in 2016 to serve as a central repository, where data could be analysed to improve its residents' living environments and deploy resources sustainably.<sup>155</sup> The HDB has also begun exploring how drone technology can be utilised in proactive maintenance, such as to detect defects in building structures and facades.<sup>156</sup>

To be clear, the shift from one strategy to another did not mean that the original strategy was completely forsaken. Although the primary approach today is proactive, reactive and cyclical maintenance continues to play a key role. For instance, it would be impossible to predict when a coat of paint would peel. As such, the HDB and its contractors can only repaint a wall after its original paint has peeled. Thus, if there is one takeaway, it is that each approach has its intended use and target, and a combination of approaches should be preserved even as more are introduced.

## Innovating to Improve Responsiveness to Residents' Expectations

As Singaporeans become more tech-savvy, smart methods of connecting with HDB residents and tapping on their vernacular knowledge have to be innovated. Moreover, their demands have also evolved—residents now expect greater accountability in how their estates are managed.



44. Existing towns are rejuvenated under programmes such as Remaking Our Heartland, a Neighbourhood Renewal Programme focused on innovative design ideas.

Consequently, stakeholders at all levels of Singapore's public housing system have introduced smart initiatives to facilitate feedback and communication channels with residents. For instance, some Town Councils launched an app named iTown@SG in 2013. This app allowed Town Councils to tap on the 3.06 million residents living in HDB estates as a network of "eyes on the ground" to detect faults and breakdowns.<sup>157</sup> Moreover, residents would also be updated via the app after the reported faults had been fixed, thus improving the Town Council's responsiveness and accountability to residents. The Municipal Services Office developed a similar app named OneService, although it is used at the municipality rather than town level and redirects complaints to the relevant agencies rather than fixes them itself. Through these innovations, those involved in estate management have raised their level of responsiveness and accountability to their residents.

## Innovating for Greater Sustainability

The HDB Greenprint that was developed in 2012 as part of the HDB's "Roadmap to Better Living in HDB Towns" to bring sustainable living into existing HDB estates was a result of a successful co-creation among the HDB, residents and Town Councils. For the pilot at Yuhua, the HDB employed a three-pronged approach to engage the community, raise awareness of green features and provide more autonomy to residents in managing a cleaner, greener and better living environment. Using the Greenprint Fund, residents co-created with the HDB on Green Solutions, such as a community parklet and hobby farming. The HDB also partnered the Town Council and consulted the Adviser, PA and grassroots leader to implement Green Solutions such as automating refuse collection with the PWCS, tapping on the rainwater harvesting system to clean HDB blocks and outdoor LED street lighting for greater manpower and energy savings.

Separately, the HDB has been looking into linking estates with a network of sensors. These sensors will capture real-time information on estate services, on which innovative solutions could then be developed to optimise maintenance cycles and pre-empt problems. For example, with data collected by sensors, we can better understand the usage patterns of common amenities such as lifts and lights. Changes in these patterns could signify potential problems well before they arise. These facilities or fittings can then be checked, and any problem identified can be resolved promptly, with minimal disruption to services. Sensors deployment has begun at the Punggol Northshore district and will progressively be rolled out in the HDB's new developments.



45. The Tengah housing estate raises the benchmark for public housing with innovative concepts like the Forest Corridor.

## Conclusion

When you are in estate management, you are not only managing the flats, you are actually managing the people who stay in the flats. And if you care for the people and you want to solve people's problems, the right place to go is estate management.<sup>158</sup>

— Seng Joo How, Former Chief Estates Management Officer, HDB,  
CEO, CPG Facilities Management Pte Ltd

From 1960, the HDB, its partners and its contractors were motivated by a resident-centric philosophy in their delivery of estate management. Innovations were made and incorporated to improve their responsiveness to residents and enhance the living experience in HDB estates while keeping a watchful eye on external economic conditions. In this endeavour, several principles have served the HDB and its partners well—promoting ground-up initiatives, learning from other countries, working with the private sector, and a commitment to innovation. That said, new challenges are emerging on the horizon, including a greying resident population and ageing building infrastructure, as well as demands for a stronger community voice in estate management. To meet these challenges, stakeholders in estate management need to remain steadfast to innovation and keep abreast of up-and-coming technologies like predictive analytics and robotics.



## CHAPTER 5

# CONCLUSION: CHALLENGES AND OPPORTUNITIES FOR ESTATE MANAGEMENT IN THE YEARS AHEAD

## Estate Management is More Than Just Maintenance

For high-rise public housing around the world, estate management is the crucial piece that ensures that buildings and even towns maintain their longevity over the decades. In Singapore, the emphasis on estate management from the construction phase through to upgrading plans has kept Housing and Development Board (HDB) towns and homes attractive, well maintained and user-friendly. This long-term planning vision has guided the HDB's approach to estate management over the years.



46. Well-maintained public spaces for community interaction, health and wellness are central to estate management.

This is, of course, no accident. From its inception, the HDB ensured that systems were in place in each HDB town through its Area Offices for effective estate management. In the early days, an efficient system for organising manpower, guided by the HDB's leadership and feedback loop, kept HDB estates clean and liveable, an important factor for building trust amongst the resettled Singaporeans. In the 1980s, the introduction of Town Councils, with its decentralised governance of towns, helped to create more distinct identities and encourage greater community ownership over estates. It also accorded greater flexibility for local councillors to respond to local challenges and resident needs. Concurrently, the HDB continued to keep estate management at the forefront of its plans for new towns, regenerating old towns and rejuvenating middle-aged ones. Innovation, from its simplest forms like new sweepers to pioneering waste management systems, has also ensured that estate management has kept up with the times. Of course, central to this narrative has been the ability and willingness of agencies to engage with residents and evolve methods and approaches to match changing needs.

## Looking Ahead

As Singapore contends with an ageing society, changes in manpower and skills in estate management, climate change and greater public involvement, public housing and estate management have to keep up. Given these factors, human-centred design and innovation have become central driving forces behind the conceptualisation and execution of estate management for both the HDB and Town Councils and their Managing Agents.

### Challenges for Estate Management: Governance, Accountability and Transparency

Governance and the policy frameworks that guide how estates are run emphasise decentralisation, accountable and efficient use of resources, resident participation and the importance of political leadership. These were also the values that underpinned the move towards Town Councils. Thirty years since the move to Town Councils, have these objectives been met, and how will governance need to evolve to keep up with the changes outlined above?

While Town Councils appear more nimble in their ability to respond to resident feedback, for example, in the use of app technology, there appears to be much room for individual estates to develop more unique and stronger identities. The hope at the inception of Town Councils had been that, with stronger ties to their estates, communities would have greater ownership to care for shared public spaces. However, for the most part, this positive trend has yet to take root in the majority. Most Singaporeans do not identify strongly with their neighbourhoods. In new towns, however, agencies have worked together to offer more features; this includes green technology and unique architecture and design to give a more distinguishing sense of place. The burgeoning of resident-initiated online groups over Facebook and WhatsApp, and HDB-led initiatives to engage the community through events like the MyNiceHome Roadshow might also contribute to strengthening identity within estates.

Emergent resident behaviours and habits, as well as new typologies of high-density public housing projects may also present new challenges for estate maintenance. For example, increased infrastructure usage will result in higher costs, and without proper planning the infrastructure could be easily overloaded.

The public has also demanded greater accountability from those involved in estate maintenance. For example, in tandem with the speed with which residents use social media to identify maintenance faults, issues need to be fixed in a timely and transparent manner. There are now also more avenues for providing feedback, i.e., meet-the-people sessions, apps, hotlines,

visits to Town Council offices, and social media. Agencies have adopted longer-term thinking to address this and have developed plans to motivate and incentivise staff to proactively respond to feedback, and to use predictive data to create upstream solutions. In recent years, maintenance challenges have also become more visible and dangerous. From 2016 to 2019, there have been over 90 cases of falling debris across all older buildings (including HDB blocks) in Singapore. Similarly, as lifts age, they face a greater risk of developing faults. The issue is not that maintenance is not carried out, but that standards and processes have to change as buildings age. A related challenge is an ageing maintenance workforce and thus the need to professionalise. These challenges have prompted new regulations on the quality and quantity of maintenance as well as investments into the workforce to ensure that wages and training improve.<sup>159</sup>

Furthermore, there is increasing scrutiny on the use of public funds from both regulatory bodies and the public, especially in the activities of the Town Councils and Managing Agents. The government has updated laws to grant Town Councils greater powers to investigate regulatory breaches and has also provided a new code of governance for Town Councils.<sup>160</sup> Political leadership also has a significant role; towns that do well have strong leadership and greater presence in the community.

Another consideration for the future is how the HDB, Town Councils, grassroots committees and Managing Agents can continue to develop their symbiotic relationships. The HDB works closely with Town Councils, so it needs to take into consideration the impact of the HDB's plans on the way Town Councils manage estates. For example, when the HDB introduces new technologies such as light emitting diode (LED) lights or the Pneumatic Waste Conveyance System (PWCS) piloted at the Yuhua estate, they work closely with Town Councils to conceive all of the downstream implications, such as costs, manpower and resident feedback, before deciding how and when to roll out an innovation.<sup>161</sup> How can Town Councils work more efficiently with Managing Agents, especially as the tasks of estate management become more costly and intense? Managing Agents and Town Councils also face ongoing challenges with manpower, as young people are not attracted to careers in facility management. It seems that some of the answers to these challenges lie in technology and community resilience.

### Leveraging Technology

As a developer and master planner, the HDB adopts a comprehensive research and development (R&D) roadmap to align R&D efforts with its commitment to create sustainable, well-designed and community-centric towns through six focus areas: (i) Planning, (ii) Space Creation and Infrastructure, (iii) Design, (iv) Construction, (v) Operation and

Maintenance, and (vi) Community, which underpin the urban development process. Each area has a clearly defined intended outcome, which guides the identification of urban solutions and technologies that the HDB can adopt to best achieve their deliverables. Information and communication technology and Smart applications are extensively applied as enablers to reinforce the technical capabilities. Unveiled in 2014 and expanded in 2017, the Smart HDB Town Framework maps out how the HDB will introduce smart initiatives across five key areas: Smart planning, Smart estate, Smart environment, Smart living and Smart community. These areas provided a means of organising ideas and solutions and developing a holistic plan of action.

The systems approach to technology guides how the HDB works with the private sector, which is also constantly innovating and hoping to test ideas out in HDB estates. Research plays an important role in driving technology adoption, ensuring that the HDB is proactively using data in the design of their towns, and choosing the most appropriate technologies to be adopted both for new towns and for retrofitting old towns with new technology.<sup>162</sup>

Yet seemingly "simple" issues, for example, waste management or lights for common areas, do not necessarily have simple technological solutions. Human behaviours are not always quick to adapt to new technologies, for example, as we saw in the case of the Pneumatic Waste Conveyance System or the development of centralised recycling chutes, where some residents were slow to change their habits, causing issues for estate maintenance. Water, waste and energy are also interconnected parts of the sustainability model, and it is important to ensure that technologies adopted do not add burden on water and energy resources. Furthermore, with increasing uncertainty due to new environmental and social stressors, for example an ageing population and increased temperatures, the sensitive and sensible adoption of technology will have an even bigger role to play in helping ameliorate the impacts of high-rise living.

Looking ahead, foundations have been laid for building a more predictive-preventive approach to estate management. The HDB's Smart Hub allows it to see patterns in resident behaviours and find solutions for estate management, even upstream in the planning of new towns. Er Dr Johnny Wong, Group Director of the HDB's Building & Research Institute, outlines this future:

Now, if I collect all this data, I can do two key things. Firstly, I can monitor what's happening in the estate better. And if I can package this information in a way that's easily accessible by the town councils, it may be able to help them with the estate management. That data can also allow me to understand how the town is functioning and

what needs to be improved. So that's monitoring and improving. The other way is that, while I collect all this data, I can actually use it for my urban plans...that's urban analytics, to find out how I can do better. What's the root problem? What's the community side of the house? For example, Smart lighting, although it's a technical thing, now I'm able to use it to explore the usage of public spaces.<sup>163</sup>

The HDB has also continued to invest in research to help HDB towns keep up with future environmental challenges. For example, it set up a collaboration with the SP Group to study the potential of developing Tengah into a first-of-its-kind Smart Energy Town, and with Evonik to develop concrete with better heat insulation.<sup>164</sup>

Managing Agents have also adopted programmes to help monitor the various estate operations. For example, EM Services has developed GOfm, a platform that allows them to collect and group data into three categories: operational, performance and predictive data. The hope is that each of these data sets can help to improve overall work performance.<sup>165</sup> There is also a need to invest in artificial intelligence that can analyse the data and find ways to read it that will bring new insights about how an estate is performing.

The manpower question is also an important undercurrent when thinking about technology as a solution for estate management challenges. Tony Khoo, CEO of EM Services, describes the need to attract younger people to the profession who have a background and interest in engaging with the community and skills in analysing vast amounts of data that they now collect. There is also an increasing emphasis on the non-technical aspects of the job—relationship building with residents. This requires almost a completely different set of skills, and EM Services is piloting an initiative to have specialists in resident engagement. For the remaining workforce, upskilling is key. Training and Professional Conversion Programmes offer workers from sunset industries, for example, in manufacturing or oil and gas, the chance to train as lift technicians. These ongoing efforts help to ensure that the industry maintains professional standards while also attracting and retaining the right talent.<sup>166</sup>

Ultimately, the success of technology adoption is closely linked to how all those involved in estate management can bring residents onboard, hence the continued importance of community engagement.

## Community Resilience

As environmental and social challenges like climate change and ageing impact HDB homes, a community's resilience and ability to adapt to these changes is central to encouraging collective ownership over shared spaces. The HDB launched the New Urban Kampung Research Programme in 2017 together with the Singapore University of Technology and Design, to better understand how people use public spaces and how design can help enhance interactions in common spaces. The hope is that with better understanding of what people do in public spaces, agencies would be able to nudge residents towards more neighbourly behaviours and gradually create cultural shifts, for example, not littering. The second goal is to find patterns in people's behaviours to help identify common interest groups and design public spaces for them, which may not be evident just by walking around towns. As an example, could dog walkers or running groups be large groups in some towns and could facilities be planned and designed to better accommodate these interests and improve their quality of life?<sup>167</sup>

For Town Councils, fostering community resilience is an important part of their everyday jobs too. Town Councils, together with grassroots bodies, have an increasingly important role to play, especially in engaging younger residents in community-led initiatives. Yet the public is also demanding a greater say in how their estates are run and so engagement mechanisms have to keep up. Presently, some analysts argue that community engagement does not go deep enough, as evidenced by the way residents complain about their estates.<sup>168</sup> With an ageing population, estates that were designed for a younger population would also have to be updated to meet the changing needs of the elderly. Longer planning horizons, upstream public education and helping residents learn to take charge of addressing problems are thus critical. Whatever the challenges that lie ahead, the emphasis on community-centric management, which has always been at the heart of how HDB estates are run, will continue to be a mainstay.

## POST-SCRIPT

The preceding chapters have taken the reader on a journey that involves not only the building of high-rise towers to house hundreds of thousands of families, but also the nurturing of vibrant communities, each with cherished common spaces and shared memories.

The Housing and Development Board (HDB) and Town Councils are close partners in this journey. This has taken the joint effort of generations of planners, architects, engineers, project managers, and facilities managers. The cycle of plan, design, build, maintain and upgrade characterises Singapore's approach to public housing—a cycle that requires not only an abundance of technical expertise but long-term commitment from the government, as well as strong support from citizens, to remain in constant motion.

New challenges are emerging all the time. As our estates age, coordination and collaboration between government agencies, the private sector and the community become increasingly crucial in our efforts to maintain quality towns and homes.

A spirit of innovation and a constant willingness to reinvent ourselves are also key to the way forward. Aside from maintenance, we continue to rejuvenate our estates to ensure that they meet the aspirations of current and future generations of Singaporeans. To do this, the HDB has spearheaded several key programmes such as the Home Improvement Programme (HIP), which resolves common maintenance issues in older flats, and the Remaking Our Heartland (ROH) programme, where larger-scale rejuvenation efforts are initiated to inject vibrancy into our towns and estates. The HDB has also launched the HDB Green Towns Programme to make our towns more environmentally sustainable and liveable.

With the community at the heart of our planning efforts, the HDB has launched the New Urban Kampung Research Programme to encourage more collective ownership over shared spaces, and more importantly, to ensure that such spaces are better designed and more responsive to resident needs. It is thus crucial for the government, the private sector and the community to continue working together to foster closer communities and to keep our estates liveable.

At its heart, estate management is about the government working with communities across generations. This ranges from the upstream efforts of the HDB to prioritise design for maintainability, and efforts by Town Councils in cyclical and regular maintenance, to efforts by agencies to rejuvenate our homes and neighbourhoods. These mechanisms and programmes will help our public housing towns and residents thrive amidst the many challenges—changing demographics and manpower needs, as well as ageing infrastructure—of the coming decades. We hope that Singaporeans will continue to work with us in improving our estates, neighbourhoods, and towns, so that they can remain vibrant places in which to live, work, and play.

**Sim Ann**

Senior Minister of State,  
Ministry of Communications and Information &  
Ministry of National Development

## TIMELINE

### THE HOUSING AND DEVELOPMENT BOARD: KEY MILESTONES IN ESTATE MANAGEMENT

**1927**

The Singapore Improvement Trust (SIT) is set up to improve Singapore's infrastructure.

**1936**

The SIT builds affordable housing and sets up Area Offices to deal with estate management.

**1960**

Formation of the Housing and Development Board (HDB). It inherits the SIT's system of Area Offices for estate management but expands the work of each office.

**1960-1965**

The HDB launches its first 5-year building programme to rapidly build low-cost housing to break the housing shortage problem. These first flats were simple and functional, given the need to rehouse settlers quickly.

**1964**

Toa Payoh is developed as the HDB's first comprehensively planned and built town.

**1966**

Sets up the Emergency Repairs Unit to carry out repairs for electrical and sanitary fittings and provide after office hours support.

**1970s**

Focuses on enhancing the quality of the living environment through landscaping town centres and the introduction of town gardens.

**1970**

Begins to outsource some of its conservancy and landscaping works to contractors because of a labour shortage.

**1971**

Sets up the 24-hour Emergency Maintenance Service Unit (EMSU), which replaces the Emergency Repairs Unit.

**1973**

Introduces around-the-clock lift rescue under EMSU.

**1974**

The EMSU expands to include haulage of building materials and debris removal service.

**1975**

Introduces the Licensing of Renovation Contractors' Scheme (now referred to as the Directory of Renovation Contractors).

**1976**

Creates the Special Action Unit to monitor the performance of Area Offices through frequent maintenance checks.

**1978**

Launches pilot schemes for Residents' Committees in Ang Mo Kio, Boon Lay, Kalam Ayer, Toa Payoh and Bukit Merah to foster community bonds and promote a greater sense of ownership over common areas.

**1980s**

Builds newer towns like Bishan and Pasir Ris with much higher-quality flats than those built in the 1960s.

**1981**

Introduces mechanisation for its conservancy works and launches an interest-free Financing Scheme to encourage its contractors to adopt mechanisation.

**1982**

Sets up the telemonitoring system in lifts to help deter crime and lift misuse.

**1983**

Introduces the Towards Effective Area Office Management System to standardise estate management functions, identify weaknesses and strengths as well as provide some competition amongst its Area Offices.

**1986**

Launches the first Town Council pilot in three precincts in Ang Mo Kio.

**1988**

Sets up EM Services as a subsidiary to make use of the expertise and experience of HDB officers, as Town Councils take on estate management functions.

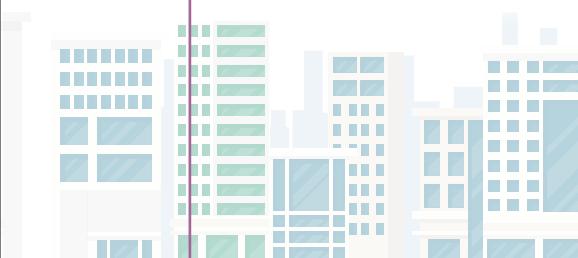
**1989**

Forms Town Councils in phases to decentralise estate management, so as to allow local participation to create more distinct estates.

Transforms HDB Area Offices into Branch Offices, which will provide lease and tenancy administration services and management of HDB car parks, markets and hawker centres.

**1990**

Launches the Main Upgrading Programme (MUP) to improve precincts, blocks and flats, to ensure that public housing would be on par with newer better-built estates.



**1993**

Launches the Interim Upgrading Programme. It covers younger flats that were not eligible for the MUP, with improvements only to the block and precinct.

**1995**

Implements the Selective En bloc Redevelopment Scheme, which allows the government to optimise land by redeveloping older flats and rehousing existing residents nearby, where possible.

Introduces the Estate Renewal Strategy, which consolidates its various upgrading programmes.

Islandwide launch of the Cleanest Block and Cleanest Estate Competition; its intention is to promote cleaner estates.

**1995-1998**

Introduces the Spalling Concrete Repair Assistance Scheme to address spalling concrete.

**2001**

Introduces the Goodwill Repair Assistance Scheme, which remains running to this day, to address both spalling concrete and ceiling leaks.

Launches the Lift Upgrading Programme, which will provide lift access to every floor in older housing blocks with no full lift access.

**2003**

Launches the Singapore's OK-Our Town Sparkles programmes to promote more awareness arising from common estate management challenges. These programmes replace the Cleanest Block and Cleanest Estate Competition.

**2007**

Launches the Home Improvement Programme (HIP) to address common maintenance problems such as spalling concrete and replacement of pipe sockets with new clothes drying racks.

Launches the Neighbourhood Renewal Programme to focus on block and precinct improvements spanning across two or more neighbouring precincts. Also includes active engagement with residents to seek feedback on neighbourhoods through dialogue sessions and town hall meetings.

Launches the Remaking Our Heartland (ROH) programme for Punggol and Yishun Towns and Dawson Estate in Queenstown, which will undergo comprehensive rejuvenation.

**2009**

Introduces the Town Councils Management Report, which would give residents information about their Town Council's performance in key areas of estate management.

**2011**

Launches the ROH programme for East Coast, Hougang and Jurong Lake.

**2012**

Introduces the Enhancement for Active Seniors (EASE) programme under the HIP and EASE (Direct Application).

**2013**

Selected Town Councils launch the iTown@SG application to help residents report faults directly to them.

**2014**

Sets up the Municipal Services Office to coordinate and simplify the process for citizens to give feedback and for agencies to act quickly on municipal issues.

Introduces the Smart HDB Town Framework to encourage the use of Smart technologies in the planning, development and management of HDB towns.

**2015**

Launches the ROH programme for Toa Payoh, Woodlands and Pasir Ris.

**2017**

Organises the MyNiceHome roadshow to help residents moving into new estates learn more about their estate and how to maintain their homes.

The Ministry of National Development establishes the Cities of Tomorrow programme to fund innovation for the myriad challenges that cities will face. This includes well maintained and reliable infrastructure for public housing.

Launches the New Urban Kampung Research Programme to better understand how people use common spaces, to support better estate planning.

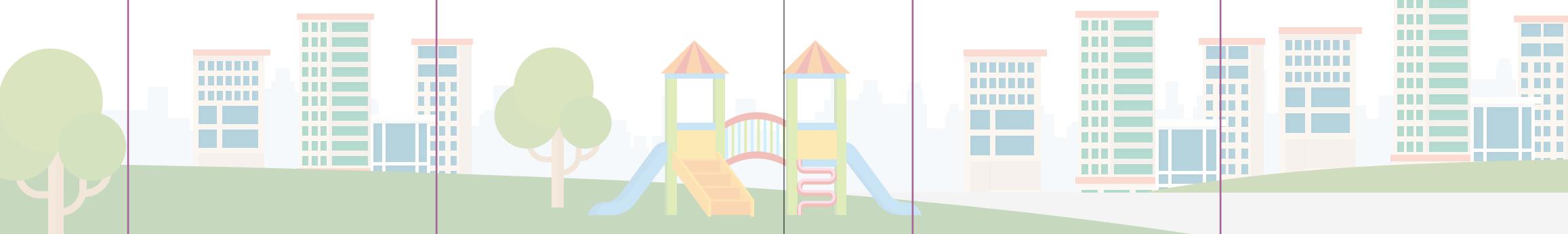
**2018**

Commissions the first Pneumatic Waste Conveyance System in new Build-To-Order flats.

**2020**

Introduces a new set of guidelines for Town Councils which includes best practices to help enhance their accountability and management.

Launches the ROH programme for Ang Mo Kio, Bukit Merah, Queenstown and Choa Chu Kang.



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