建設可持續發展房屋
Building for Sustainability

Building for Sustainability

Top: Comprehensive recreational facilities are provided in new estates such as Tin Ching.

Bottom: The recently completed Shek Mun Estate boasts a beautiful environment.

Heralding the close of the first decade in the new millennium, 2009/10 was a memorable year for the Housing Authority (HA), as we saw many of our pioneering and visionary design concepts, introduced in recent years, come to fruition.

The completion of 15 400 new flats in 10 estates – Lam Tin, Sau Mau Ping South, Shek Mun, Upper Wong Tai Sin, Choi Tak, Choi Fook, Mei Tung, Yau Lai, Chai Wan and Tin Ching – all helped to turn our vision into reality. Built upon our focused partnering strategies, increased public engagement, site-specific design, micro-climate studies and green initiatives, these estates reflect the success of our policies in action. Two large projects in particular, Sau Mau Ping South with its widespread greening and use of solar/wind-powered lighting and Lam Tin Estate with its extensive use of solar panels, demonstrate our commitment towards the establishment of greener estates as well as the greater use of renewable energy.

In the building of public rental housing (PRH) estates, a decisive factor is the availability of land, without which our development programmes would come to a grinding halt. We therefore not only work closely with the government to identify suitable sites for public housing development, we also liaise with relevant district councils, the local community and stakeholders to ensure an optimal balance in housing, community and ancillary facilities within the areas identified. As a result of these activities, we were able to secure planning approval for six new projects

Some 73 000 public housing units will be completed in the next five years.

during the year. Seven piling contracts and eight new building contracts were also awarded during this time.

In 2009/10, a total of 15 400 domestic flats were completed and some 7 100 square metres of space were added to our retail portfolio. Our present housing portfolio consists of around 703 600 PRH units in some 195 estates and courts. We expect these figures to grow rapidly as the 73 076 units currently under planning, design and construction come on stream in the next five years or so.

Driving Sustainability

To ensure the long-term development and success of the PRH programme, we must internalise the concept of sustainability – environmentally, socially and economically – into the planning, design and construction of our estates.

Environmentally, we make every effort to promote green habits and lifestyles, save energy, conserve resources and protect the natural environment in all our housing projects. Socially, our developments

Left: We seek to foster a sense of belonging, neighbourhood and care within the community.

Right: Our green initiatives aim to preserve and protect the environment while creating pleasant surroundings.

must be people-oriented. In addition to meeting the needs of residents, they must also foster a sense of belonging, neighbourhood and care within the community. Economic sustainability too is only possible if our developments are functional and cost-effective. As such, we must make the best use of our resources to ensure reputable public housing standards with the best value for money.

Environmental Sustainability

Our environmental initiatives are based on a dual approach. Firstly, using green design practices, materials and building techniques, together with the optimum use of existing resources, our aim is to preserve and protect the environment. Secondly, with the widespread greening of our estates, we seek to create green and pleasant surroundings that will contribute both to the natural environment and to the health and well-being of our tenants.

Our Comprehensive Micro-climate Studies

Our pioneering micro-climate studies are now used in the design and development of all our estates. Using computer simulations to look into a site's "micro-climate" – its airflow and wind direction, levels of sunlight, general views and noise levels, the development is then designed to ensure that buildings will make the best use of these natural features. Introduced in all new projects since 2004, these studies have been applied to about 36 projects so far, resulting in the completion of the first batch of these estates in the past couple of years. With the turning of these concepts into reality, we are working with consultants to measure the effectiveness of these design incentives and check the validity of our projections. Though the assessment is still in the preliminary stages, the initial findings appear to be in line with our original projections.

The Further Greening of our Estates

We also place a tremendous focus on the greening of our estates. Apart from its visual appeal, the greater use of vegetation promotes physical and mental well-being, cleaner air, quicker heat dissipation as well as better absorption of noise. Our current guideline is to allow at least one square metre of open space per resident, the planting of at least one tree for every 15 domestic units and a greening ratio of no less than 20% – 30% per development.

In addition to green and open spaces, we are adding more green surfaces wherever possible. New estates therefore see not only the greening of rooftops on low rise buildings and covered walkways, but also the installation of vertical green panels which provide greater visual appeal, better insulation and improved noise reduction. In a recent case, evaluations show that vertical green panels have helped to reduce the heat of the concrete wall behind it by up to 16 degrees Celsius.

We are extending this concept into our construction sites with the use of vertical green hoarding and green roofs on temporary offices. This practice was implemented in some nine construction sites during the year.

Top: At least one square metre of open space per resident will be provided in our new developments.

Bottom: The greening of the covered walkway rooftop adds more green surface to Sau Mau Ping South Estate.

We are also experimenting with this ongoing greening in a number of ways. We are, for example, trying out different plant species on rooftops and green panels to find the most attractive and easy-to-care-for plants, in addition to exploring the greater use of open space. In the former case, we have identified two species for rooftop greening that need minimal watering to survive the dry season. In the latter, Sau Mau Ping South was completed with an additional hectare of open space. The inclusion of sky gardens or communal terraces is also being explored and is currently being piloted at Kwai Luen Estate, which is expected to be completed at the end of 2010/11.

These green initiatives embrace our tenants as well. Driving the greening message into their homes and daily lives, we continue with our Action Seedling programme. First launched in 2007, Action Seedling involves our tenants, contractors as well as the local community in the greening of our estates. In partnership with our contractors, seedlings are given out to participants, who look after them until the plants are mature enough to be transplanted into the planters and gardens of new estates. During the year, residents, students and community organisations in seven estates helped to look after over 15 000 seedlings. At the same time, the set up of "community gardens" in new estates, including Kai Tak Phases 1A and 1B, as well as Tung Tau Estate Phase 9, will give our tenants the chance to exercise their gardening skills with the cultivation of their own plants and vegetables.

A Healthier and More Hygienic Living Environment

The SARS epidemic, which raged through Hong Kong in 2003, highlighted the need for improved hygiene and better ventilation in the territory's densely-populated living environment. A significant building improvement to emerge in the aftermath of that crisis was the introduction of our "common W-trap" drainage system for the discharge of waste water. Developed in conjunction with the City University of Hong Kong, the system was designed to address the problem of "dried-up" floor drains, which was identified as a cause for the spread of SARS. With Phase 3 of Yau Lai Estate becoming the first development to see its implementation in Hong Kong, all our new estates now include this new and healthier feature.

Further initiatives include the implementation of twin water tanks enabling the uninterrupted supply of water to tenants when the roof tanks are being cleaned, as well as the dual supply of electricity to lifts so that one bank of lifts can provide services while the other is being maintained and tested. Tenants also enjoy free wi-fi services at ground-floor lift lobbies and outdoor areas in our PRH estates, while rooftop parapets, enabling the better accommodation of gondolas, enhance the safety of workers.

Improperly disposed rubbish is not only unhygienic, it also smells unpleasant and is unsightly. Refuse collection installations in our new estates therefore include modern garbage compactor systems with sealed storage bins, as well as bio-chemical deodorisers inside enclosed refuse rooms. At the same time, "mail-box" type rubbish bins are being installed on each floor of our pilot Eastern Harbour Crossing site Phase 5 to make it easier to separate recyclable household waste at source.

Greener Construction Techniques

In building green estates, we employ numerous green construction techniques that help preserve the environment and conserve resources. In addition to making the best use of natural lighting and ventilation, we also use eco-friendly and durable materials to maximise the quality and life-cycle of our developments.

Our innovative green building techniques range from modular design, the extensive use of pre-fabrication to hard-paved construction, all contributing towards better quality, greater safety as well as less noise, waste and pollution. We took a major step in reducing construction waste during the year, placing a focus on the recycling and re-use of materials in existing estates upon their redevelopment. Fence walls from old estates were retained; benches were made of recycled steel from demolished hoarding and recycled concrete, as in the case of Lam Tin Estate; and stone benches from the old garden in Sau Mau Ping have been preserved for use in the newly redeveloped estate.

More significantly, building waste is increasingly being recycled for construction use. During the year, about 1 700 tonnes of recycled aggregates from the demolition of Wong Chuk Hang Estate were used as backfill at Tung Tau Estate Phase 9, while 180 metres of rock core was used in the outdoor areas of Choi Wan Estate. Recycled rock fill was also used as backfill in Upper Ngau Tau Kok Estate. A further innovation is the use of marine mud at our construction site in Kai Tak. After the mud has been strengthened and stabilised, it will be used as backfill and for the production of paving blocks. Work is also in hand to include recycled glass as aggregate in paving blocks.

Cement is essential to construction work. Its production, however, generates large volumes of carbon dioxide. The production of one tonne of cement generates almost a similar amount of carbon dioxide. Seeking to reduce our carbon footprint, we are using pulverised fuel ash (PFA) and ground granulated blastfurnace slag (GGBS) to partially replace the use of cement in concrete structures and concrete precast façades respectively.

All our new buildings are classified as energy-efficient buildings as they meet energy efficiency requirements under Hong Kong's Building Energy Codes. Taking this commitment further forward, we are playing a leadership role with the implementation of additional energy saving initiatives. Apart from making the best use of energy efficient lighting, for instance, we have installed motion-detecting sensors to heighten illumination in public areas where necessary. We have also introduced advanced lift control systems that require less energy for their operation. Our

use of renewable energy has also gained additional momentum with the completion of Sau Mau Ping South and Lam Tin Estates – the former boasts a hybrid wind and solar powered outdoor lighting system, while the latter sees the significant use of grid-connected solar panels.

Top: One of our innovative green building techniques is the extensive use of pre-fabricated façades.

Bottom: Grid-connected solar panels are installed in Lam Tin Estate.

Hybrid ventilation systems, using both natural ventilation as well as artificial air conditioning cooling mechanisms, are expected to save energy in our new shopping centres, including the "Domain" at Yau Tong and our new malls at Choi Tak and Yau Lai. At the same time, dual flushing systems, water-saving faucets and rainwater harvesting systems, all currently under trial, will help to conserve water. Looking forward, we are also studying the management and reduction of carbon emissions in the life-cycle of our developments through a Carbon Estimation Programme.

Social Sustainability

Ensuring the social sustainability of our estates, we build not only with bricks and mortar, we must also build with our hearts, creating homes where residents feel happy and secure within communities that provide the necessary social facilities, networks and support for a richer and fuller life.

Engaging the Community

To this end, we work in close collaboration with various government bureaux and departments, district councils and non-governmental organisations to hear what the community has to say as well as to foster a greater understanding and acceptance of our activities. We also maintain a dialogue with our stakeholders in the planning and design of new developments through a variety of proactive community engagement programmes. During the year, a series of consultations, workshops and forums were conducted with regard to the redevelopment of Lower Ngau Tau Kok Estate and the housing development projects at Tuen Mun Area 18, Anderson Road and Kwai Chung Area 9H.

In line with our commitment to "design, implement, complete, validate and refine", we conduct residents' surveys and post-completion reviews. During the

Top: Local residents participate in a workshop on the cultural spine at Lower Ngau Tau Kok Estate.

Middle: The design of the display panels along Woh Chai Street in Shek Kip Mei has incorporated ideas gathered from the community.

Bottom: The sculpture of "infinity" at Lam Tin Estate is a product of community engagement.

year, 10 post-completion review workshops were held, gaining feedback not only from residents but also from our building partners, audit teams and the Independent Checking Unit, to review and refine our designs and processes. User feedback and technical audits also help us to assess our specifications for construction materials, the need for technology improvements, as well as the performance of "green" materials in recently completed projects.

Community engagement has proven to be particularly valuable in our efforts to foster a sense of identity for new estates based on their heritage, history and location. The involvement of Ngau Tau Kok residents, for instance, led to the establishment of a cultural spine with heritage features within the estate upon its redevelopment. Further preserving the estate's heritage, a book on its oral history was published in partnership with the Hong Kong Sheng Kung Hui Welfare Council. Titled *Memory & Affection – The Years Together in Lower Ngau Tau Kok Estate*, the content and pictures depict life as it used to be at the estate, evoking the tremendous sense of affection and community held by residents both for their homes and their neighbourhood.

Similarly, an exhibition gallery and the external areas at the new Kai Tak housing project will depict the local history and heritage of the site as Hong Kong's former airport, together with the history of public housing in Hong Kong. In the redevelopment of Shek Kip Mei Estate, ideas gathered from the community participation workshop are being integrated into the design for the streetscape which will be decked with display panels, artworks and an exhibition area to evoke the memory of this birth place of public housing.

This engagement within the community is visible in other ways as well. Much of the artwork in our estates, for instance, involves the efforts of the

Left: The common areas of our estates facilitate social interaction within a harmonious neighbourhood.

Right: The multi-sensory information system for the visually impaired is a feature of our Universal Design.

local community. Continuing this engagement, neighbouring schools have been involved in preparing designs for the vertical green panels at Yau Lai Estate Phase 4 as well as the painting of wall murals on the hoarding at our Tung Tau project.

In Lam Tin, a central sculpture entitled "infinity" was created with the community. Made of bamboo dim sum baskets, the sculpture reflects life within the estate based on the concepts of food and the family, life and social interaction. Yet a further facet of this "art in action" is the stylish Chinese calligraphy used to depict the names of new estates. The calligraphy at Lam Tin Estate was done by the famous artiste Andy Lau, who previously lived in the estate, while the characters at Sau Mau Ping South Estate were also styled by a previous resident.

Adopting Site-specific and Universal Design Principles

The adoption of site-specific designs allows the optimal use of a site's unique location and features to meet residents' needs. Coupled with Universal Design principles as well as barrier-free access, our estates are designed to provide "socio-spatial equity" for everyone. In simpler terms, our estates are designed to provide a safe, inclusive and accessible environment for everyone within the community – from the old and the young to the physically and visually impaired.

As a first step, the common areas of estates are planned to facilitate social interaction within a harmonious neighbourhood. Secondly, facilities such as lifts and escalators, access ramps, footbridges and elevated walkways, audio visual and multi-sensory information systems, tactile paths as well as safety features in the home, all contribute to a safer, healthier and more inclusive environment. At a minimum all our new estates comply with requirements under the Building Department's Barrier Free Access Design Manual, while recommended provisions are also incorporated into the design wherever possible.

Our Universal Design provisions have required a shift in our own thinking and mindset. Rather than providing traditional children's playgrounds, for example, we have found ourselves making the shift to the provision of recreational spaces and facilities that meet the needs of all ages and abilities. Similarly, new shopping centres will act as leisure and entertainment hubs, catering not only to shoppers but also for the diverse needs of children and the rest of the community.

Economic Sustainability

We continue to achieve economic sustainability through functional and cost-effective design, sound procurement practices, the maximisation of resources, the most efficient systems, as well as the latest technology.

To optimise land use and the fair allocation of facilities, we recently completed an extensive research on parking requirements in PRH estates. As a result, lower parking standards were devised in collaboration with other government departments and incorporated in the Hong Kong Planning Standard and Guidelines. From mid-2009 onwards, parking facilities in our new estates are provided in accordance with these updated parking standards and with reference to local district conditions.

We are pleased to report that according to building tenders received in 2009 and recent input from our cost consultants, superstructure costs for our developments appear to be around 32% lower than similar structures in the private sector. During the year, however, the cost for capital works in the market continued to rise, reflecting the need to update our cost yardstick in the face of this increasing trend. As a result, the budgets for a number of capital works projects were adjusted accordingly.

Quality Systems and Processes

We received a significant boost to our quality management system during the year, with our development and construction works making its successful migration to ISO 9001:2008 in 2009. Maintenance works was not far behind, completing its transition in early 2010. After obtaining ISO 14001 certification, our Development and Construction Division also introduced European Foundation for Quality Management (EFQM) Excellence Model principles into its management. This move will help to align objectives in a more holistic manner while also improving work efficiencies.

We have also fine-tuned our practices to maximise efficiency. A major innovation was the introduction of virtual 3-D models for design visualisation in the early stages of design conception. Made possible by advancements in design software, the use of Building Information Modelling (BIM) allows multi-disciplinary co-ordination at the initial design stages, avoiding excessive co-ordination and unnecessary re-work at the later construction stages.

Further innovations include the piloting of new Pakt-in-place piles to reduce noise and vibration, and the application of Radio Frequency Identification (RFID) in precast concrete façades and other building components to facilitate the monitoring of materials on site.

Leading-edge Procurement Practices

In view of the scale and scope of our operations, we have been able to lead the way in establishing and driving a number of leading-edge procurement, quality and safety applications. Partnering continues to play a core role in these practices as we work hand-in-hand with our contractors to establish common goals as well as the best contracting and ethical practices. This partnering concept is particularly evident in our New Integrated Procurement Approach, which uses a hybrid "design and build" model in conjunction with the more traditional "design-tender-build" method. This new approach, currently being

used at our Kai Tak Site 1B development, encourages innovations in design with specialist input from our skilled and experienced contractors, while at the same time maintaining our standards and quality controls.

Driving quality in our operations, our Performance Assessment Scoring System (PASS) maintains its pivotal role in monitoring and measuring the performance of our building, building services and piling contractors. Based on our efforts to ensure the prompt payment of wages to workers in recent years, a new Corporate Score has also been introduced to assess the contractor's levels of corporate social responsibility with regard to site safety, environmental performance, payment of wages to workers, etc. In addition to the price, both PASS and Corporate Scores are taken into consideration in the awarding of contracts under our Preferential Tender Assessment System, Two-envelope and Three-envelope Tender Systems.

Creating measurable standards of quality among our contractors and workers, we require a 100% rate in trade tested workers in 32 out of 34 trades in all our new and current contracts, while all building and piling works contractors are also required to hold ISO 14001 and OHSAS 18001 accreditation. These requirements not only lead the way in helping to raise quality benchmarks within the industry, they also drive a greater awareness of safety, corporate and social responsibility among our contractors.

Left: Our development and construction works are subject to stringent quality standards.

Right: The tendering approach of Kai Tak Site 1B development encourages innovations in design with specialist input from contractors.

Enhancing Site Safety

We continue to enhance our site safety practices in our ongoing efforts to lower the accident rate and achieve zero fatalities in our operations. This commitment begins at the very start of a project, with the contractor's previous safety and accident record being taken into consideration in tender evaluation of the contract. Once on board, both contractual controls and our Integrated Pay for Safety, Environmental and Hygiene Incentive Scheme encourage contractors to improve their health, safety and environmental practices on site.

Top: Site safety is our topmost priority.

Bottom: The annual Safety Forum is held to drive home site safety messages.

Hand-in-hand with these initiatives, the Housing Department Site-Safety Sub-committee, consisting of members not only from the HA but also from the government, contractors' associations and workers' unions, meet regularly to enhance safety awareness, quality practices and greater safety initiatives. In addition, the regular seminars and workshops organised in conjunction with our contractors, as well as the annual Safety Forum held in July 2009, helped to drive home this safety message.

Seeking to achieve an accident rate of no more than 15 injuries per 1 000 workers in our new works contracts, the rate in 2009 stood at 9.4 per 1 000 workers, down from the rate of 16.1 in 2008. This figure also compares favourably with the overall industry figure of 54.6 per 1 000 workers. We have implemented 34 ongoing and new safety initiatives in our action plan for 2009/10.

"Safety First" is not only an integral part of our work, it is embedded into our corporate DNA. With "ZERO accidents" as a performance goal, we are making every effort to provoke vigilance on all fronts. In conjunction with other industry stakeholders, we have signed the Safety Charter 2010, pledging our commitment to safety planning and design. We have also received a number of community and industry awards in recognition of our safety achievements in the building and construction industry. During the year, the Lighthouse Club presented us with the first runner-up prize (Client-Developer Category) in the Safety Leadership Award, reaffirming our continuous efforts to initiate and maintain safe leadership practices which have had a positive influence on the entire industry.

Building for a Green Future

In recent years, a number of major estates have been completed, turning our green and sustainable living concepts into reality. The first of these – Kwai Chung Estate which was completed in 2008/09 – fulfilled our attempts to build a sense of community using sustainable design, building and living practices. Also meeting these objectives, Upper Ngau Tau Kok, Sau Mau Ping South and Lam Tin Estates have more recently been completed.

Upper Ngau Tau Kok Estate saw its occupation in May 2009. It consists of 4 584 flats in six residential blocks, housing 12 200 people. Sau Mau Ping South Estate with its five New Harmony Blocks and 3 995 homes, and Lam Tin Estate consisting of four 40-storey blocks and 3 036 units were completed during the year, with tenants moving in from June 2009.

Site-specific and Modular Design at
Upper Ngau Tau Kok

The use of site-specific design combined with extensive micro-climate studies in all three developments have helped to maximise the natural features of the sites in question, enabling the better use of daylight and natural ventilation. In Upper Ngau Tau Kok for example, blocks were located to both maximise the sea views and minimise traffic noise. At the same time, a "wind corridor" between the blocks improves airflow within the estate. Coupled with these benefits, cross-ventilated corridors and specially located "air vents" help to increase the natural ventilation in flats, dry clothes and disperse cooking exhaust.

Upper Ngau Tau Kok Estate also brought our modular flat designs to life. Building on our functional and cost-effective design principles, this standardisation not only improves quality and maximises efficiencies, it also reduces construction time and construction waste in view of the higher levels of mechanisation and prefabrication techniques used. The recycling of waste, the effective life-cycle costing of typical building materials, the greening of slopes and covered walkways, as well as the preservation of mature trees, all contribute to this green picture.

The Greening of
Sau Mau Ping South

Sau Mau Ping South Estate was planned as a "green" estate in every aspect. It has a higher ratio of greenery than other estates in view of its additional hectare of open space and extensive slopes.

Enabling tree preservation, soil nails with concrete grillages were used for the first time in our activities at this estate – the process enables slope stabilisation without the need to remove existing loose soil and existing trees, resulting in a saving of 114 trees on the slopes of Sau Mau Ping. The stablised slopes were then turfed and planted with over 4 100 indigenous trees and shrubs. These plants were chosen not only for their greening features, but also for their ecological balance, to attract butterflies and dragonflies, for instance.

Emphasis has also been placed on vertical greening, as well as the extensive greening of the rooftops of low-rise buildings and covered walkways. Apart from the green roof on the refuse chamber of the estate, Sau Mau Ping South boasts the longest green covered walkway among all our estates. Furthermore, landscaped areas include theme gardens such as "Fragrant Court" and "Rainbow Garden", as well as a multi-purpose lawn, which provides an ideal leisure and play area for residents of every age and ability, as well as for parent-child activities.

Based on its micro-climate studies, the site's design achieved an average wind speed of 3-5 metres per second at the central pedestrian passage, which works well for the generation of wind power. Making use of this wind, a vertical wind turbine and six solar cum wind hybrid powered lighting systems were installed at the estate to save non-renewable energy, generating the electricity for LED outdoor lighting in an area of about 850 square metres. This initiative not only saves energy but also raises residents' awareness of the use and benefits of renewable energy.

Saving Energy at
Lam Tin

Renewable energy also forms the focus for Lam Tin Estate with its grid-connected photovoltaic (PV) system. The system's solar panels are mainly installed on roofs where there are no obstructions from the surroundings to maximise the strength of the sun's rays. With an estimated production of 43 000 kWh of electricity a year, equivalent to the consumption of 11 typical Hong Kong families, the electricity generated will be used for general facilities, such as lighting, lifts, pumps, etc, within the estate.

To increase both awareness and knowledge of renewable energy among residents, a number of PV panels have been installed on the transparent skylight of the covered walkway where there is high pedestrian traffic. These glass panels together with real-time data displays, including the current and cumulative rate of electricity production as well as its associated benefits to the environment, provide a major point of interest within the estate.

As in all our new estates, greening plays an important role in Lam Tin's development and operations. Twenty trees were saved from the old estate and a further 1 070 new trees were planted, bringing total green areas within the estate to 26%. Vertical green panels have been installed on west facing walls to protect homes from the hot afternoon sun, and green roofing has been provided on the car park, podiums of domestic blocks as well as the roofs of the covered walkways.

Universal and People-oriented Design Practices

In all three estates, universal and people-oriented design practices have prevailed. Facilities include play areas for children, fitness areas for the elderly as well as active and passive leisure areas for residents of all ages. At the same time, barrier-free access, better lighting, as well as audio and visual facilities provide a safe and inclusive environment for the old and the young, the physically and the visually impaired, within the community. Covered walkways, lifts and escalators ensure easy access both within the estate and to retail, community and transport facilities in the neighbourhood. Additionally, commercial and social amenities provide a focal gathering point for events and celebrations while also creating a sense of community.

Looking Forward to a Greener Future

We expect to extend our green practices even more widely. Green environments absorb heat, dust and noise, just as trees reduce carbon dioxide and improve air quality. When mature, we expect the trees planted in Sau Mau Ping South alone to absorb 125.6 tonnes of carbon emissions a year. We are also working with consultants to include plants with a greater ecological value in our future landscaping designs. Our recycling measures and the greater use of recycled materials are significantly reducing construction waste, while a carbon reduction plan will put a defined structure into place for the reduction of carbon emissions. Our new estates are thus seeing an increasingly green face – our Kai Tak Site 1B project is a prime example. In addition to its many green initiatives, it is also being developed with a green "Homes in the Park" theme.