


chapter

LIVING GREEN



Living Green is about the greening of the environment within which all in Singapore live. It looks at all the ways NParks makes a City in a Garden possible.

In this eventful year, the National Parks Board (NParks) continued to partner stakeholders to enhance the people's quality of life by helping to create a City in a Garden for all. In this new millennium, NParks can only move ahead if it takes into account the people's growing knowledge and expectations of the Garden City. The aim is to combine quality green infrastructure with memorable recreational experiences that will give the public the experience of living, working and playing in a garden. Enhancing the Garden City not only creates an amenable environment for the people, but also contributes to Singapore's competitiveness in attracting foreign talent and investments to our shores. To that end, NParks' emphasis is on the sensitive management of amenities, green programmes and recreational activities within our hierarchy of more than 300 parks and nature reserves. In addition, the continued emphasis on deepening and expanding Singapore's greenery has continued unabated, with new programmes and research directions aimed at giving more identity to streetscapes and bringing greenery upwards onto the rooftops and walls of buildings, so as to complement Singapore's already extensive ground-level greenery.



PROVIDING NEW RECREATIONAL FACILITIES

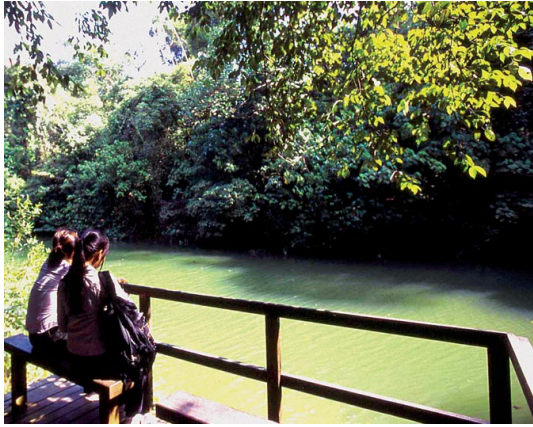
Among the parks that were completed last year was the 5-ha Marina South Promenade. This new waterside park enhances access between the promenade and Marina City Park, as well as the upcoming New Downtown. With the provision of footpaths and shelters at lookout points, visitors can now relax and enjoy the view along this 1-km stretch of reclaimed coastline.

In the midst of the busy central precinct, visitors can also look forward to a leisurely respite at Ann Siang Hill Park, now adorned with a timber deck and inviting swings. Besides providing a sheltered oasis for office workers, this pocket park also serves as a pleasant thoroughfare between Amoy Street and Ann Siang Hill.



Ann Siang Hill Park provides a sheltered green oasis in the midst of the busy office district.

Work on the development of a new neighbourhood park, Novena Park, and upgrading of the Surin Avenue Neighbourhood Park has commenced. Residents in the vicinity of these parks can look forward to outdoor venues for community bonding and play while enjoying the new and improved facilities such as a multi-purpose open space, play equipment, a fitness



Visitors soaking in the tranquility of MacRitchie while taking a break on the Prunus Trail, one of the six MacRitchie Trails.

station, a shelter and a foot reflexology path. With additional features such as a new roller-blading route at Surin Avenue Neighbourhood Park, residents will soon be able to enjoy a greater variety of recreational activities at their doorstep.

In a more scenic part of Singapore, NParks launched the MacRitchie Trails in June 2003. The six trails, a large portion of which skirts the MacRitchie Reservoir, vary in hiking grade and range of experience. Some, with their dramatic, yet peaceful views, are ideal for leisure walks, offering trail-users a first-hand experience of nature as it

meanders along the reservoir's shore. Other trails lead deep into the forest, providing nature lovers a glimpse of a cool, moist and intriguing world of animals, trees and birds.

Yet another trail, the Kranji Nature Trail, was opened to the public in September 2003. This 2-km green corridor linking Kranji Reservoir Park to Sungei Buloh Wetland Reserve serves to enrich the experience for park visitors, and showcases a rich and precious tapestry of habitats. Grassland, secondary forest, sandy beach and mangrove habitats present themselves for easy exploration and enjoyment. With its relatively tranquil location, visitors will find the trail to be a thoughtful, pensive experience, suffused with the unexpected scents of *Pandanus*, and the possibility of Brahminy Kite sightings.

Under the ambit of the Parks and Waterbodies Plan, where an additional 1,040 ha of parkland will be provided by 2015 - sections of the Central Catchment Nature Reserve and 39 new parks would be developed, 16 existing parks would be extended, and 120 km of park connectors and some parcels of interim greenery will be created. These new additions will improve the distribution of parks in relation to regional population hubs. The new park areas will also capitalise on natural assets such as waterbodies, hills, wooded areas and nature areas.

Acting Minister for Community Development, Youth and Sports & Senior Minister of State (Trade and Industry)⁷, Dr Vivian Balakrishnan (centre), with CEO of The Hongkong and Shanghai Banking Corporation Limited, Mr Paul Lawrence (left) and Chairman of NParks, Prof Leo Tan (right), at the launch of Kranji Nature Trail.



⁷ Then Minister of State for National Development and Trade and Industry



BRINGING MORE VALUE TO EXISTING PARKS

The Singapore Botanic Gardens, the crown jewel of our parks, continues to remake itself, with exciting and unique features either planned or under development. These include the Evolution Garden, which will bring visitors through a journey back in time as they trace the emergence and evolution of plants and vegetation during the long years of Mother Earth's geologic history. It is due for completion in December 2004.



Meanwhile, the redevelopment of Tanglin Core at the Gardens is gaining momentum. When completed in end 2005, the Gardens will see the addition of a new library, herbarium, laboratories and facilities for botanical and horticultural education. Visitors to the Gardens will enjoy new public amenities, including additional car parking facilities, a new entrance plaza, and F & B outlets.

Towards the centre of the Gardens, the Ginger Garden was officially launched in October 2003. Within its compact grounds are more than 250 species of gingers and related plants. Ginger Garden's chief attraction, the ginger family, was chosen because of its largely South East Asian origins and its importance to Singapore's and the region's cultures and history. The Ginger Garden's lush landscape features a walk behind a waterfall, as well as the Halia Restaurant, a popular and romantic al-fresco dining establishment. The National Orchid Garden was enhanced with the upgrading of the Yuen Peng McNeice Bromeliad Collection, Fragrant Orchid Collection at Tan Hoon Siang Mist House and the introduction of the Cool House. The Cool House, a conservatory simulating a tropical montane forest, was opened to the public in January 2004.



top The Cool House allows its visitors to understand and appreciate the diversity, beauty, and fragility of the unique tropical montane forest ecosystem.

left The latest addition to Fort Canning Park, Raffles Terrace is part of NParks' efforts to enhance the park as a historical, cultural, educational and recreation hub for its visitors.

The public can now enjoy new facilities and attractions in Fort Canning Park. The 1-ha Raffles Terrace launched in October 2003, includes a two-thirds scale replica lighthouse, beautifully carved stone murals on the cascading and tiered terraces, and the Raffles House bungalow that is ideal for special occasions like weddings or anniversaries, and corporate functions. This building is sited at the same location where Sir Stamford Raffles, inspired by the panoramic view, chose to build his bungalow in 1823. With the

new terrace, the public can now enjoy improved access into the park from the Hill Street area, while at the same time being educated and delighted by the new attractions.

For the year in review, East Coast Park - the largest and most popular coastal park in Singapore - continues to be upgraded. This includes the widening of the cycling tracks and footpaths, improvements to existing facilities such as shelters, toilets and lighting, so as to meet increasing recreational needs of the public. When completed, visitors can look forward to using the lagoon area for recreation, and to a visual treat of attractive Bougainvilleas at the proposed Bougainvillea Garden.

In the nature reserves, NParks continued to balance conservation of nature with meeting the needs of public such as access, recreation and education. Nature lovers can now capture enthralling views of the nature reserves from the seven-storey Jelutong Tower which was opened in October 2003. Rising 22 m into the air, it has a small footprint, minimising disruption to the forest habitat, and yet allows visitors easy access and a bird's eye-view of the varied terrain surrounding the MacRitchie Reservoir. Visitors will be able, for the first time, to observe the different tiers of habitats in the dense, life-sustaining canopy of the rainforest. They will also find thoughtfully crafted educational signs describing what they are observing. Visitors can also look forward to mingling with nature atop the Tree Top Walk, a 150 m-long suspension bridge that is scheduled to open by the end of 2004.

Over in the west at Kent Ridge Park, a new elevated boardwalk was completed in November 2003. The 280 m-long aerial boardwalk, which gently meanders above undulating terrain and forested areas, allows visitors an easy link between the park and the museum called Reflections of Bukit Chandu. Being a handicapped-friendly structure, the boardwalk also facilitates barrier-free access to the hilly park. In line with NParks' naturalistic approach, the boardwalk is designed to blend in with the scenery, with indigenous plants and epiphytes planted along the walk.

Finally, with the redevelopment of Tiong Bahru Park, visitors can now enjoy new facilities such as a bird-singing corner, an adventure-themed playground and a fitness corner.



from top to bottom

Standing at a height of 22 m, the Jelutong Tower offers visitors a breathtaking view of MacRitchie Reservoir.

Blending in with its natural surroundings, the aerial boardwalk at Kent Ridge Park offers park visitors barrier-free access to the hilly park.



BRINGING PARKS CLOSER TO THE COMMUNITY

The Park Connector Network continues to enjoy increasing popularity as a venue for recreational activities. As of March 2004, 22 stretches of park connectors totaling some 55 km have been completed. Recent stretches completed include the Whampoa Park Connector Extension and the Kallang Park Connector Link. There is on-going construction of another 6.9 km of park connectors. To improve the connectivity of the network, NParks will be developing more crossings to allow for seamless travel.



The Whampoa Park Connector is part of NParks' network of park connectors aimed at linking major parks and nature areas.

NParks aims to build 170 km of park connectors by 2015. The completed network will link parks from coast to coast (e.g. Pasir Ris Park to East Coast Park) and also link towns and regions to the Central Catchment Nature Reserve. They will provide a valuable service to park users and residents, who can not only enjoy the growing linkages between parks, but also use the park connectors as shortcuts to other amenities in their neighbourhood.



BUILDING ON OUR GARDEN CITY AMBIENCE

Our Garden City continues to bloom, and its current luxuriant state has been nurtured through more than 40 years of effort. This success was due to unwavering political will and Singapore's committed approach towards greening. From the manicured beauty of the Istana grounds and the verdant greens of Fort Canning Park, to the sheltering Rain Trees that line our highways, NParks' work is about bringing greenery out of the abstract realm of "nature" into the everyday lives of Singaporeans in order to enhance their quality of living. This intricate network of roadside trees, nature reserves, park connectors and a hierarchy of differentiated parks forms the fertile foundation upon which our Garden City thrives.



Roadside trees and shrubs form the backbone of the Garden City.

For the year under review, NParks planted some 860,000 trees and shrubs. At the same time, the Tree Replacement Programme continued apace with the removal of 411 trees and their replacement with 926 more suitable ones. This programme is aimed at systematically replacing unsuitable species such as the *Andira inermis* (Cabbage Tree) that has branches prone to breakage with hardier ones such as *Xanthostemon chrysanthus* (Golden Penda) and *Mimusops elengi* (Bunga Tanjung).

At the heart of the operations that maintain our Garden City ambience are the Plant Introduction Unit (PIU) and the Pasir Panjang Nursery (PPN). The PIU plays a key role in increasing species biodiversity in our parks and roadside plantings. During the year, it introduced some 630 new plant species and varieties for assessment. Promising new introductions included



top *Abelmoschus moschatus* (Musk Mallow), one of the new plants introduced by NParks.

left To enhance our Garden City, NParks planted some 860,000 trees and shrubs this year.

the *Szgium gratum*, a towering 20 m-tall coastal tree. Another interesting specimen is the showy *Abelmoschus moschatus* “Mischief” (Musk Mallow), commonly found throughout Asia. This free-flowering and compact shrub has bold hibiscus-like flowers in red and pink.

Native orchid species were re-introduced to trees along various roads in Singapore. These involved three species, *Grammatophyllum speciosum* (Tiger Orchid), *Bulbophyllum vaginatum* and *Bulbophyllum membranaceum*.

At the PPN, more than 720,000 plants were propagated to cater to NParks planting needs. These include the *Orchidantha maxillarioides*, *Xanthostemon youngii* (Red Penda) and *Lophanthera lactescens* (Golden Chain Tree). During the year, PPN also published ‘1001 Garden Plants in Singapore’, a quick pictorial reference of more than 1,200 species and varieties of plants available locally. Serious gardening enthusiasts would find its comprehensive coverage especially useful and enriching while the more casual reader would well be drawn by the attractive illustrations and pictures towards a greater interest in the subject. At the same time, the on-line version of the e-plant reference was also updated to reflect the latest information, providing an easily accessible database for the public to use.

To build on the Garden City ambience, NParks commissioned the Streetscape Greenery Masterplan (SGMP) to position streetscape greening as an extension of the identity of the area that a road spans. This blueprint spells out planning and design guidelines aimed at co-ordinating efforts between the various agencies to ensure that streetscape greenery, a key asset of our Garden City is further enhanced in the face of greater urbanisation. An Implementation Committee has been formed to translate the various SGMP proposals into practical guidelines. To ensure broader implementation across Singapore, the committee is actively working with partners like the Housing Development Board (HDB) and the Land Transport Authority (LTA) to study the integration of greenery. Together with HDB, NParks will implement the first SGMP demonstration planting at Punggol Town in end 2004.

In addition, NParks worked with the Urban Redevelopment Authority (URA) on the green aspects of the 2003 Master Plan. Through this joint effort, the four gazetted nature reserves have been reflected in the Master Plan. They are the Bukit Timah Nature Reserve, the Central Catchment Nature Reserve, Sungei Buloh Wetland Reserve and Labrador Nature Reserve. Other nature areas containing representative natural habitats were also recognised and safeguarded in the Special and Detailed Controls Plan, which stipulates that any development within or around these nature areas will require consultation with NParks, with the possibility of ecological studies being required.



LOOKING SKYWARDS

While the SGMP concentrates on optimising greenery on the horizontal plane, skysrise greenery aims to bring greenery upwards onto and into our buildings, where people work and live. As part of this on-going skysrise greenery initiative, NParks assisted URA in reviewing building guidelines to encourage more vertical greenery. Some of the guidelines that were eased included those for floor-to-floor height controls, height controls for terrace floors, planter boxes and rooftop pavilions.



NParks partnered HDB on this pilot rooftop greening project, at Edgefield Plains in Punggol.

In May 2003, NParks also partnered HDB on a joint one year green roof pilot project at an existing HDB multi-storey car park in Punggol. The project aims to test the applicability of green roof technology under local conditions, identify suitable plants and evaluate environmental benefits. Once successful, green roofs can be applied to both existing and new developments in Singapore to achieve the City in a Garden vision.

NParks is also collaborating with the Building and Construction Authority (BCA), HDB and the National University of Singapore (NUS) to study the severity and causes of the urban heat island effect in Singapore, and to understand the contributions of greenery in mitigating the urban heat island effect. Another study team from HDB, Jurong Town Corporation (JTC), NParks and NUS are developing the Green Plot Ratio concept that will help quantify greenery within buildings and developments. The team has completed a preliminary study and is working towards further development of the concept as an application tool. The proposal will be tested at JTC's one-north development in Buona Vista.



CONSERVING HERITAGE TREES AND ROADS



Since the Nominate-a-Heritage Tree Scheme was launched as part of the Heritage Trees Scheme's outreach programme, some 280 nominations have been received and evaluated by the Heritage Trees Panel. To date, the panel has selected some 100 trees to be designated in the next batch of Heritage Trees.

The Heritage Trees Scheme's sister programme, the Heritage Roads Scheme, has seen 55 roads proposed as Heritage Roads. NParks is working with various authorities, such as LTA, the Singapore Land Authority (SLA) and URA, on obtaining approval for these roads. Concurrently, the legislative amendments to the Parks and Trees Act to conserve the trees along these Heritage Roads are slated to be ready by late 2004.



top The Terap Tree (*Artocarpus elasticus*) at Fort Canning Park has been conserved as a Heritage Tree for future generations.

bottom This luxuriant tree-lined road at Upper Thomson is one of the 55 roads proposed to be conserved under the Heritage Roads Scheme.



MAINTAINING THE GARDEN CITY...

RAISING PROFESSIONAL STANDARDS IN THE ARBORICULTURE AND HORTICULTURE INDUSTRY

To ensure that green living continues for the people of Singapore and to sustain the Garden City's competitiveness, the expertise must be there to maintain and improve our Garden City. To this end, NParks is raising the professional standards of the industry through skills development, training and the hiring of locals for horticultural and landscaping jobs.

Improving the efficiency and efficacy of our tree management operations to meet the high expectations of the public remains our key focal point. As part of NParks' continuing programme to build up arboricultural skills in Singapore, we conducted the 2nd International Society of Arboriculture (ISA) Arborist Certification Programme in February 2004. As certified arborists, tree-care practitioners will be better equipped to carry out their work with greater professionalism, practising the research-based principles and industry standards advocated by the ISA for the arboriculture community. They will help to sustain a healthy, safe and aesthetically pleasing tree population in our Garden City.

As part of NParks' commitment to upgrade local arboriculture expertise, 12 participants in the course came from various organisations that are involved with arboriculture work, like the Agri-Food and Veterinary Authority, Singapore Garden City Pte Ltd, EM Services Pte Ltd, Sentosa Leisure Group, Civil Aviation Authority Singapore and Mao Sheng Quanji Construction Pte Ltd. With an estimated 70 ISA-certified arborists in Singapore, an application has been filed with the ISA to form an affiliate chapter in Singapore. This professional chapter will provide focus in regional arboricultural training, education and networking.



NParks has an active tree management programme to maintain our Garden City.

Just as our professional arborists need to upgrade themselves, so do workers in the local horticultural and landscaping industry, so as to better serve the public. As part of efforts to raise horticultural and landscaping standards, NParks led the Landscaping/Horticultural Industry Skills Standards Committee to identify job competencies, establish work performance standards as well as to certify skills acquisition as part of a National Skills Recognition System (NSRS).

NSRS certification will ensure consistency in the quality of service provided by certificate holders. At the individual level, it will validate workers' skills against benchmarked standards. The NSRS certification will ensure that local workers' skills and standards keep pace with the changing needs of our Garden City's maturing green estate. It is only with a developed horticultural and landscaping industry that our Garden City can continue to enjoy its unique competitive edge over other cities, as well as provide continued comfort and pleasure to Singapore's increasingly environmentally conscious and discerning populace. To that end, NParks would be setting up a dedicated section to focus on efforts to upgrade industry standards for the Garden City.



The public can help sustain and add value to our Garden City through the Garden City Fund.



MAINTAINING THE GARDEN CITY...

TAKING A STAKE IN OUR GARDEN CITY

The Garden City belongs to all residents - and the newly launched Garden City Fund (GCF) is the platform through which the public can take a personal stake in sustaining the Garden City efforts. While the government will continue to fund basic green infrastructure, the GCF is meant to encourage Singapore's residents and corporate citizens to support and sustain the Garden City initiatives. Through the GCF, the public can have another avenue to enjoy and influence the continuing evolution of the Garden City. On the other hand, sponsors to the GCF will have the satisfaction of seeing their contributions going towards value-added programmes, amenities and facilities, as well as research and education - all of which will benefit the public.



MARKETING THE GARDEN CITY BRAND ABROAD

As our Garden City matures, NParks intends to help develop Singapore's local landscaping and horticultural industry by leveraging on NParks' valued brand name and winning contracts abroad. NParks' new subsidiary, Singapore Garden City Pte Ltd (SGCPL), was formed to provide an avenue for the provision of higher value-added greenery services such as master-planning and other landscaping and horticultural skills to overseas markets. Through strategic partnerships with other Singapore agencies and companies, NParks hopes to encourage the local horticultural and landscaping industry to expand abroad, while at the same time helping other Singapore-based infrastructure partners win international projects. To that end, SGCPL is currently participating in a BCA-led consortium that has secured a township master-planning contract in Zhejiang province in China.