



GREENING SINGAPORE TOGETHER

ANNUAL REPORT 2023-2024





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GREENING SINGAPORE TOGETHER

2023 marks 60 years of greening Singapore, since 1963 when founding Prime Minister Lee Kuan Yew raised the idea of a Garden City. The year marks a call to celebrate the people who have made it possible — the members of our community.

This year, we launched new ground-up volunteer groups and commemorated old ones. Local and international partnerships with experts and residents propelled research on biodiversity and conservation. Harnessing the power of collaboration with stakeholders alongside continued investment into science and technology, we raised standards in the veterinary sector, landscape industry and biosurveillance research.

As a definitive part of our urban ecosystem, our community shapes nature, just as much as nature shapes the community.



CHAIRMAN'S MESSAGE

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Very early on, residents were already involved in tree planting events, but over the past six decades, the community's involvement has widened and deepened. They have taken on broader responsibilities to spearhead greening and conservation efforts, so as to co-create the high-quality living environment we now enjoy. This has resulted in the verdant greenery we see around us today and a sense of pride and national identity as one of the greenest cities in the world.

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In 2023, we commemorated 60 years of greening in Singapore. In 1963, founding Prime Minister Lee Kuan Yew planted a Mempat sapling in Farrer Circus, kickstarting our nationwide greening campaign.

Very early on, residents were already involved in tree planting events, but over the past six decades, the community's involvement has widened and deepened. They have taken on broader responsibilities to spearhead greening and conservation efforts, so as to co-create the high-quality living environment we now enjoy. This has resulted in the verdant greenery we see around us today and a sense of pride and national identity as one of the greenest cities in the world.

The importance and power of the community in transforming Singapore into a City in Nature, a key pillar of the Singapore Green Plan 2030, cannot be understated. Since 2020, over 683,000 trees have been planted with the help of over 100,000 members of the public, schools, agencies, and corporate entities, placing us well on track to plant one million more trees by 2030. This past year, we established the Nature Kakis Network to encourage greater participation in City in Nature initiatives by the wider community, developed by passionate volunteers at the local grassroots level. We have set up 18 chapters across the island, with over 140 appointed Nature Kakis reaching out to over 8,000 residents. The support of our 67,000 volunteers has also enabled us to carry out many more educational programmes, gardening events and habitat enhancements.

As we celebrate progress made on our shared greening journey, challenges posed by climate change will continue to keep us busy. NParks has pledged to forge a liveable future for Singapore by adopting sustainability practices, shaping sustainable and green infrastructure, as well as nurturing residents' interactions and relationships with nature.

This commitment to sustainability is ongoing; our core work in greening our environment means we have been enhancing Singapore's climate resilience all this time. For instance, sustainability was a core tenet in the development of Jurong Lake Gardens. In addition to its zero-waste buildings, the Gardens has many features like swales and bioretention basins that cleanse water runoff. At the newly opened Japanese Garden, a smart water management system utilises natural vegetation and soil microbes to clean and restore the water within the Garden, which can then be recirculated for irrigation.

As energy demands increase with continued development of green spaces and growing operational needs, NParks will enhance our sustainability efforts. To this end, beginning this fiscal year, we are publishing disclosures on our sustainability performance and seizing more opportunities to embed sustainability into the entire spectrum of our work.

Many of us have felt the restorative effects of being in and around nature. This is why NParks is working to ensure every resident can access

greenery easily. In 2023, we moved closer to that goal with the opening of three new Therapeutic Gardens across the island. The multi-generational KPMG Wellness Garden at East Coast Park and Woodlands Healing Garden within Woodlands Health Campus feature spaces for active play and tranquil nature-based interactions for users of all ages and abilities. Designed with sustainability and accessibility in mind, these gardens enable residents to harness our parks and green spaces to improve their physical and mental health.

Another significant achievement in this last year was the launch of the Cat Management Framework by the Animal & Veterinary Service, a cluster of the National Parks Board. Public flat owners can now keep up to two cats and enjoy improved traceability of their feline companions with an expanded licensing and microchipping scheme. Public health and animal welfare will also be better safeguarded with the science-based Trap-Neuter-Rehome/Release-Manage programme that has been extended to community cats. These measures were developed after extensive public consultation and surveys, and more efforts will go towards promoting responsible behaviour among the community to safeguard the animals in our neighbourhoods.

On the horticultural front, researchers, professional growers and enthusiasts from the region gathered for the 14th edition of the Asia Pacific Orchid Conference, which was held in Singapore for the first time in August 2023. Similarly, the 8th Global Botanic Gardens Congress was successfully

hosted in Singapore in August 2024, the first time the event was held in Southeast Asia. As the only global congress dedicated to botanic gardens, it was a good opportunity for this community to share knowledge and best practices in conservation, research, education and outreach, as well as plant collection curation. The Congress was held in conjunction with the 9th Singapore Garden Festival, which has returned in full force since the Covid-19 pandemic.

Looking ahead, science and technology continue to inform and improve all aspects of our work. Leveraging on innovation, we are embracing digitalisation. We piloted a new model for landscape management at the Bishan-Ang Mo Kio district that will improve operational precision and efficiency, along with the effectiveness of tree risk management. We also initiated the Biosurveillance Research Programme that builds on existing national efforts and interagency collaboration to enable early detection and warning of emerging disease threats.

We are immensely grateful for the support of our colleagues and the community at large, without whom our efforts would not have been possible. As we deepen our interactions with the natural environment, we will work closely together to transform Singapore into a cherished City in Nature.

Mr Loh Khum Yean

Chairman, National Parks Board

MEMBERS OF THE BOARD

(AS OF SEPTEMBER 2024)



Mr Loh Khum Yean
CHAIRMAN
National Parks Board



Mr Cheng Hsing Yao
BOARD MEMBER
(UNTIL 31 JULY 2024)
Chief Executive Officer
GuocoLand Group



Ms Shantini Ramachandra
BOARD MEMBER
(UNTIL 31 JULY 2024)
Managing Director
Alvarez & Marsal (SE Asia) Pte Ltd



Mr Musa Fazal
BOARD MEMBER
(UNTIL 31 JULY 2024)
Chief Policy Officer Advocacy & Policy
Singapore Business Federation Secretariat



Professor David Chan
BOARD MEMBER
(UNTIL 31 JULY 2024)
Lee Kong Chian Professor of Psychology
Director, Behavioural Sciences Initiative
Singapore Management University



Ms Tham Loke Kheng
BOARD MEMBER
Chief Executive Officer
Mediacorp Pte Ltd



Mr Gerald Tan
BOARD MEMBER
Executive Director
Business Selection, Reputational Risk and
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UBS Global Banking



Ms Nur Hidayah Abu Bakar
BOARD MEMBER
Dean, Faculty of Design
LASALLE College of the Arts



Mr Lee Chee Koon
BOARD MEMBER
(UNTIL 31 JULY 2024)
Group Chief Executive Officer
CapitaLand Investment Ltd



Ms Eu Chin Fen
BOARD MEMBER
Chief Executive Officer
Fraser's Hospitality



Mr Benett Theseira
BOARD MEMBER
(FROM 1 AUGUST 2024)
Managing Director and Head of Asia Pacific
PGIM Real Estate



Ms May Loh
BOARD MEMBER
(FROM 1 AUGUST 2024)
Partner & Singapore Office Head
Albright Stonebridge Group



Mr Stephen Beng
BOARD MEMBER
(FROM 1 AUGUST 2024)
Head, ESG Strategy
Phillip Capital Management (S) Ltd



Ms Magdelene Chua
BOARD MEMBER
(FROM 1 AUGUST 2024)
Partner, Assurance
PricewaterhouseCoopers LLP



Mr Lim Shung Yar
BOARD MEMBER
(FROM 1 AUGUST 2024)
Senior Director
Leadership Development & Strategy
Public Service Division



Ms Hwang Yu-Ning
BOARD MEMBER AND
CHIEF EXECUTIVE OFFICER
Chief Executive Officer
National Parks Board

MANAGEMENT TEAM

(AS OF SEPTEMBER 2024)



Ms Kartini Omar

GROUP DIRECTOR
Parks Development & Design
Jurong Lake Gardens

Mr Ng Boon Gee

GROUP DIRECTOR
Fort Canning Park & Istana

Dr Kiat W Tan

ADVISOR TO NPARKS

Ms Hwang Yu-Ning

CHIEF EXECUTIVE OFFICER

Prof Tan Puay Yok

EXECUTIVE DIRECTOR
National Parks & Gardens & Community Cluster
GROUP DIRECTOR
Singapore Botanic Gardens

Dr Chang Siow Foong

DIRECTOR-GENERAL
Animal & Veterinary Service Cluster



Mr Chia Seng Jiang

GROUP DIRECTOR
Parks East

Ms Ang Wei Ping

GROUP DIRECTOR
Policy & Planning

Mr Oh Cheow Sheng

GROUP DIRECTOR
Streetscape

Mr Tang Tuck Weng

ASSISTANT CHIEF EXECUTIVE OFFICER
Park Management & Lifestyle Cluster

Mr Francis Lim

GROUP DIRECTOR
Corporate Services

Mr How Choon Beng

GROUP DIRECTOR
Wildlife Management

Dr Anna Wong

GROUP DIRECTOR
Community Animal Management
SENIOR DIRECTOR
Wildlife Trade



Ms Sophianne Mohd Araib

GROUP DIRECTOR
National Biodiversity Centre
Horticulture & Community

Mr Lim Liang Jim

GROUP DIRECTOR
Conservation
SENIOR DIRECTOR
International Biodiversity Conservation

Ms Tan Lai Kheng

SENIOR DIRECTOR
Lifestyle Business

Mr Tan Chong Lee

ASSISTANT CHIEF EXECUTIVE OFFICER
Corporate Development & Services Cluster

Mr Chuah Hock Seong

SENIOR DIRECTOR
Ops Process & Risk Management (CSP)
Ops Tech & Development (SS)

Ms Chua Yen Ling

GROUP DIRECTOR
Corporate Strategy & Planning
Parks West

Dr Chua Tze Hoong

GROUP DIRECTOR
Veterinary Health



Ms Lee Pin Pin

GROUP DIRECTOR
Communications & Community Engagement

Mr Lim Teck Lee

GROUP DIRECTOR
Industry / CUGE

Mr Kong Yit San

EXECUTIVE DIRECTOR
Jurong Lake Gardens

Mr Bin Hee Jum

GROUP DIRECTOR
Finance & Procurement

Dr Yap Him Hoo

DEPUTY CHIEF EXECUTIVE OFFICER
Professional Development & Services Cluster

Mr Tan Jun Chao

GROUP DIRECTOR
Parks Central

Dr Charlene Judith Fernandez

GROUP DIRECTOR
Professional & Scientific Services

The Management Team photos were taken at Singapore Botanic Gardens (Bandstand & Tanglin Gate) and Fort Canning Park (Gothic Gate & Fort Canning Green).
Not in picture: Ms Jessica Kwok, Group Director, Enforcement & Investigation and Industry Standards & Regulatory; Dr Thereis Choo, Senior Director, Singapore Botanic Gardens

ORGANISATION
STRUCTURE

(AS OF SEPTEMBER 2024)



*Internal Audit reports functionally to the Audit Committee



GREENING WITH THE COMMUNITY

Greenery strengthens Singapore's climate resilience and makes our living environment more conducive for everyone. With greening efforts for, by and with our communities, NParks continues to nurture our natural heritage for everyone in Singapore.

In 1963, founding Prime Minister Lee Kuan Yew planted a Pink Mempat (*Cratoxylum formosum*) to kickstart Singapore's greening journey. Today, Mempat trees in Singapore most commonly bloom in April or August after a prolonged dry spell followed by heavy rain.

Celebrating 60 Years of Greening Singapore

On 16 June 1963, founding Prime Minister Lee Kuan Yew kickstarted the nationwide greening campaign with the planting of a Mempat tree at Farrer Circus. In the early days of greening, the aim was to green up Singapore as quickly as possible, with the involvement of the community very early on through community tree planting events. Guided by Mr Lee's vision, Singapore evolved from a Garden City in the 1960s, to a biophilic City in a Garden in the 2010s. We integrated greenery into our urban landscape, safeguarded our nature reserves, enhanced ecological connectivity, and created a network of parks and park connectors to provide recreational opportunities.

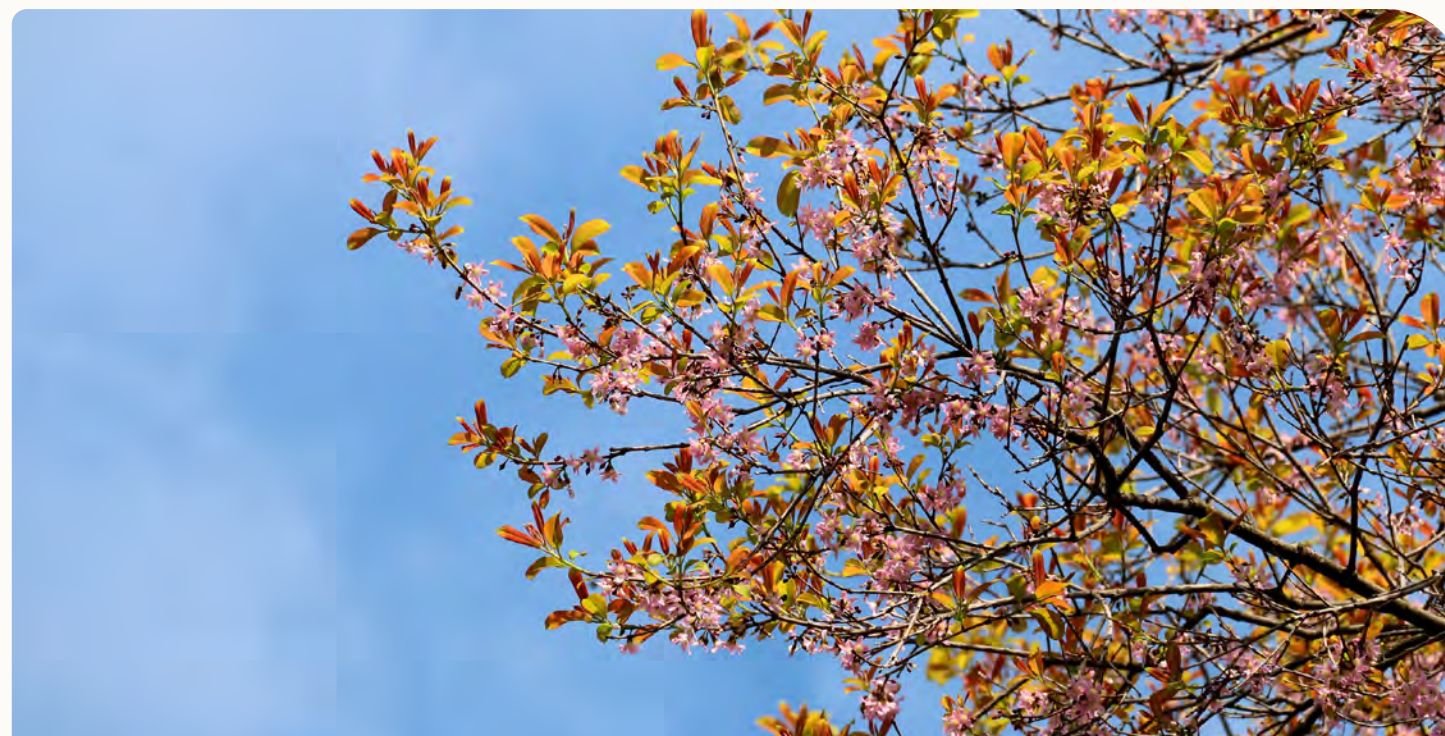


Then Deputy Prime Minister and Minister for Finance Lawrence Wong plants a tree together with residents during the opening of Villa Verde Park extension in November 2023.

In 2020, together with the launch of the Singapore Green Plan 2030, a whole-of-nation movement to chart Singapore's sustainable development, the OneMillionTrees movement was launched, to plant one million more trees by 2030 and to transform Singapore into a City in Nature.

Trees improve physical, mental and social well-being while enhancing climate resilience. As of March 2023, over 683,000 trees have been planted throughout Singapore with the help of the community since the commencement of the OneMillionTrees movement. In addition, over 400 volunteers were trained and will help to support tree planting activities.

Mr Kong Yit San, Executive Director Jurong Lake Gardens, has worked to realise Singapore's journey from Garden City to City in a Garden and now City in Nature. He speaks about how early greening efforts were tightly interwoven with the development of modern Singapore. Greenery served to elevate Singapore's international standing, but above all, greenery was for the people and helped to provide a high-quality living environment for all.



Native to Singapore, the Pink Mempat (*Cratoxylum formosum*) is loved by many Singaporeans for its beautiful light pink flowers, which look like cherry blossoms.

Gaining Community Support for Greening

The Nature Kakis Network was launched in May 2023 to encourage greater greening participation among the wider community. NParks supports Nature Kakis in developing City in Nature-related initiatives at the grassroots level by providing training and workshops on topics such as nature conservation, local biodiversity, gardening, therapeutic horticulture, and community animals. In the reporting year, 18 Nature Kakis Network chapters were established across the island, with each receiving seed funding of up to S\$5,000 from the Garden City Fund. The chapters have since organised over 120 events for more than 8,000 participants to engage in nature-related activities.



Punggol West and Punggol Coast Nature Kakis conduct a guided nature walk for residents at Coney Island Park, one of the many activities the Nature Kakis have organised to bring more residents out to enjoy nature.



Scan to meet the Nature Kakis



A group of Youth Stewards for Nature conducts a guided walk at Thomson Nature Park, as part of its project on developing a guide on how others can curate their own nature walks.

Sprouting Stewardship in the Young

To spark interest in greening Singapore among the young, NParks has provided all Primary 3 students with a plant starter kit for the past 11 years. This is part of the Every Child a Seed programme tailored to complement the Primary Science syllabus, with an emphasis on the part students can play in shaping our City in Nature. In 2023, students also received an updated plant journal featuring new activities designed to help them understand Singapore's journey, in commemoration of 60 years of greening efforts.

With the full resumption of physical activities after the Covid-19 pandemic such as learning journeys, in-person school talks and plays, and teachers' training, NParks reached out to over 200,000 students, educators and teacher trainees in the past year. Riding the digital wave of education, concerted efforts were taken to align the development of online resources with the school curriculum set out by the Ministry of Education.

These resources, programmes and engagements allowed educators and students alike to become more familiar with the importance of conserving our native biodiversity and behaving responsibly towards animals around us, planting the seeds of nature stewardship in them.

For youths, the latest iteration of the Youth Stewards for Nature programme saw close to 120 youths lead 16 projects in the scopes of greenery, animal management and nature appreciation, over a six-month period. These included conducting public guided walks and therapeutic horticulture programmes, tracking the movement of wildlife and designing digital outreach content to promote nature appreciation among the young.

Previewing the 9th Singapore Garden Festival

In anticipation of the ninth edition of the Singapore Garden Festival, a free-to-attend Prelude event ran from 14 to 17 March 2024 at Takashimaya Square on Orchard Road. Members of the public were treated to a vibrant show of flowers, with the largest showcase of Ikebana floral displays in the Festival's history, as well as celebrity and heritage orchid displays.

It was announced at the Prelude that, besides the customary awards and competitions featuring leading floral designers around the globe, the Festival will feature the Singapore Gardeners' Cup which celebrates community gardeners islandwide.



The Singapore Garden Festival Prelude highlights included the MarketPlace booths, free floral workshops and Floral Fiesta, a live floral arrangement competition.

Revisiting Singapore's Green Roots

Since it was established in 1859, the Singapore Botanic Gardens has become an important centre of science, research and plant conservation. This past year, visitors also had the opportunity to learn more about Singapore's green roots through a variety of exhibitions and programmes.

The Singapore Botanic Gardens Heritage Museum reopened on 26 June 2023, refreshed with new interactive exhibits that trace the Gardens' rich heritage, including stories of key figures who contributed towards building the Gardens to its current status as a leading tropical botanical institution and a UNESCO World Heritage Site. Its opening coincided with the 2023 edition of the Heritage Festival and was part of the commemoration of 60 years of greening in Singapore.

Visitors also had the chance to appreciate nature at the Botanical Art Gallery, located in the Gallop Extension. For example, visitors to the *Tropical Forest Sceneries: Singapore & Beyond* exhibition were immersed in sceneries of changing forests in Singapore, from verdant abundance and grandeur, to deforestation, and finally to reforestation and restoration.

Over at the Centre for Ethnobotany, visitors to the *Rainforest Remedies* exhibition learnt about the diverse ways plants have historically and traditionally been used by regional communities to heal.

In collaboration with City Developments Limited (CDL) and Ocean Geographic, NParks launched the third edition of the Climate Action Exhibition series with *Melting Ice, Sinking Cities: An Urgency to Change the Present and Save Humanity*. It ran from June 2023 to March 2024 at the recently refurbished CDL Gallery. Visitors virtually journeyed to the Antarctic and witnessed the effects of global warming on glaciers and communities, gaining insights into the interconnectedness of nature and humans.



The *Blumentanz / Flower Dance: An Experimental Animation* exhibition at the Botanical Art Gallery treats visitors to animations and AR-enabled images using over one hundred plants that tell the heartfelt story of a woman in love. Through these exhibitions, visitors can witness the inspiring beauty of nature.



The Singapore Botanic Gardens is close to heart for a certain couple who grew up, worked, and fell in love here. **Scan to watch the blooming of their love story.**

Learning About Singapore's Urban Transformation

NParks, together with the Housing Development Board (HDB), Ministry of National Development (MND) and PUB co-organised the *From Mudflats to Metropolis* exhibition across five locations in Singapore from September to November 2023. It showcased the values our founding leaders held as they planned and developed Singapore, through key milestones in our urban transformation journey and significant contemporary efforts to enhance our living environment.



The time tunnel within the *From Mudflats to Metropolis* exhibition unfolded the decades-long story of how Singapore housed and brought clean water to the nation, grew into a Garden City and has transformed into a city great for living, working and playing.

Greening the Digital Landscape

NParks continues to engage the community in the digital landscape, growing our presence online. As of March 2024, we have 171,000 fans on Facebook, 67,600 followers on Instagram, over 51,900 fans on X, 23,100 subscribers on YouTube, 14,700 followers on LinkedIn, 14,200 followers on TikTok and 10,200 subscribers on Telegram.

A new podcast titled *That's Wild* was launched, featuring staff and guests from the nature community. Listeners can tune in to conversations about "boring sponges" and "rewilding", and pick up a new skill in identifying bird calls — all part of conservation efforts to transform Singapore into a City in Nature.



Our Streetscape colleagues explain to the camera how Singapore's planting palette for the streets has changed over time, from monoculture planting of evenly spaced trees to multi-tiered forest-like planting of native trees and shrubs.

The online community was also given a behind-the-scenes glimpse of the inner workings of NParks, through the NParks Portraits video series. From ringing birds in the middle of the night for research to training dogs to detect the scents of illegally traded wildlife products, viewers gained a better understanding of the hardware and science that go into our work.

In February 2024, we released a second edition of our Spotify Playlist, *Park Beats: A Love Letter from NParks*. Classic oldies and modern pop love songs serve as a complementary auditory companion to anyone's walk or picnic in our green spaces.



Scan to listen to Park Beats



Mature trees are part of our natural heritage and serve as important landmarks in our City in Nature. **Mr Tee Swee Ping**, a retired arborist who now serves on NParks' Heritage Tree Panel recounts his chance discovery of a mature *Margaritaria indica* in 2012, a new genus and species record for Singapore Flora.





Among the new facilities at Lakeside Garden is Singapore's largest skate park, which was designed in close consultation with community stakeholders. Measuring 17,000 m², it also includes a parkour park and bouldering wall, all situated amidst recreated forest habitats interspersed with wetland pools.

Sustainable Lakeside Living

On 1 April 2023, NParks completed the development of Lakeside Garden, one of three gardens within the 90 ha Jurong Lake Gardens, offering a host of green spaces and facilities for the community to enjoy nature-based recreational experiences.

Sustainability is at the heart of the development of Jurong Lake Gardens. Footpaths were constructed from carbon dioxide mineralised concrete. During the production of this concrete, industrial waste carbon dioxide is permanently embedded into it, thereby making the footpaths a carbon sink. Beyond physical infrastructure, the Gardens exemplifies nature-based solutions, including vegetated detention ponds that provide a lush landscape for park users in the SkatePark @ Lakeside Garden. The water harvested in the detention ponds can be used to irrigate the northern section of Lakeside Garden if needed, allowing the Gardens to conserve water.



Villa Verde Park extension transforms the unused space under the Kranji Expressway into a shaded green activity and recreational node.

Residents Get On Board with Greening Enhancements

In November 2023, NParks opened a 1.3 ha extension to Villa Verde Park, marking the completion of enhancement works. NParks consulted residents as well as members of the Friends of the Parks and Friends of Rail Corridor communities in the design process, resulting in an area that boasts naturalistic features, horticultural therapeutic spaces and spots for social interactions. One resident, who is also a doctor at Ng Teng Fong General Hospital, provided guidance in studying and selecting the equipment for the fitness corner and adding ground markings to guide self-directed physiotherapy exercises. These exercises were designed with input from the Physiotherapy Department of the hospital.

Connecting More People to Nature

The completion of another 8 km of Park Connectors brought the total length of Singapore's Park Connector Network to 387 km, taking us closer to our goal having 500 km of Park Connectors by 2030. Park Connectors continue to enhance recreational connectivity across the island and bring people closer to nature.

In February 2024, NParks announced the completion of the 18 km Eastern Corridor, a curated network of Park Connectors that links up parks in

eastern Singapore. This offers the community more nature-based recreational experiences as well as enhanced connectivity between Pasir Ris Park and East Coast Park. Using the Park Connectors, residents in the east can now easily get to Tampines Eco Green to birdwatch or enjoy a variety of activities at East Coast Park without ever getting in a motor vehicle.

In southwest Singapore, 13 parks, including HortPark, Labrador Nature Park and West Coast Park, will be enhanced over the next few years. Each will have its own unique thematic identity and features for expanded recreational activities for all ages. More Park Connectors and enhanced parks will bring us closer to the goal of having every household live within a 10-minute walk of a park.



Park Connectors and parks are continually being enhanced to integrate nature into recreational activities for the community.

Enjoying Our Parks

Dance, Dance, Retro was the theme of the 18th edition of NParks Concert Series in the Park: Rockestra®, held in Fort Canning Park as part of the Heritage Festival 2023. Designed to get people to enjoy our green spaces, it was a night full of grooving, shimmying and boogieing to retro hits performed by local musicians and bands.

Throughout the weeklong festival, family-friendly activities such as craft workshops, treasure hunts and guided walks brought the history and legacies of Fort Canning Park and the Singapore Botanic Gardens to life.



Attendees at the NParks Concert Series in the Park: Rockestra® enjoy a night of nostalgia served by local musicians with a side of arcade games and classic diner dishes.

Approaching New Heights with Skyrise Greenery

With skyrise greenery being successfully adopted as an integral urban greening approach for our built environment, NParks launched the fourth edition of the *Skyrise Greenery* e-bulletin. This online resource highlights exemplary skyrise greenery integrations and progressive greenery typologies in buildings and developments. This is part of NParks' ongoing and active engagement with agencies, developers, building owners, estate managers and the industry to raise the standards and awareness of sustainable skyrise greenery implementations.

In the past year, another 38 ha of skyrise greenery was added, bringing the total skyrise greenery footprint in Singapore to 193 ha.

Research findings on enhancing green roof efficiencies were also shared in an article in the E-bulletin. It found that co-locating green roofs with solar panels helped increase photovoltaic system energy yields while lowering ambient temperatures, which further improves the survivability and growth of shade-tolerant plant species. This study was part of a collaboration between NParks, the Building and Construction Authority and the National University of Singapore.



What started out as an innovative way to maximise the use of underutilised land is now a permanent fixture across Singapore, known as Park Connectors. Mr Yeo Meng Tong, Associate Director of the Centre for Urban Greenery & Ecology (CUGE), is a landscape architect who was part of the team that pioneered the idea of the Park Connector Network shares how it was conceptualised and how it has evolved in our City in Nature.



More Benefitting from Therapeutic Horticulture

In the reporting year, NParks opened three new Therapeutic Gardens at Yishun Pond Park, Sembawang Park and Sun Plaza Park.

They meet the diverse needs of the community, including seniors, hospital outpatients and children. The Therapeutic Garden in Sembawang Park, in particular, features a wheelchair-accessible Forest Classroom. Children’s senses are engaged as they play and interact in a lush natural setting, fostering improved mental well-being and a better appreciation of Singapore’s biodiversity. The garden at Yishun Pond Park was built in close consultation with Khoo Teck Puat Hospital, with enhanced landscape features that bring about restorative effects to visitors’ mental and physical ailments.

Further up north, Woodlands Healing Garden, opened in December 2023, is the first park purpose-built for healing, and the latest addition to Singapore’s 14 therapeutic gardens. The 1.5 ha garden is integrated with Singapore’s newest hospital Woodlands Health. It was designed in close consultation with the hospital for features which can best provide visitors and patients with a variety of nature-based experiences for mental, emotional and physical healing and restoration. The Garden was recognised with an Award of Excellence at the Asia Pacific Landscape Awards 2023.



Nature Playgardens are built from upcycled natural elements such as rocks, wood, tree stumps and logs. The uneven play surfaces encourage imaginative play and build up motor skills in children.



Designing parks for the ageing population was one of the ideas raised by participants at the SGfuture engagement series back in 2016. The 14 Therapeutic Gardens around Singapore today are established based on best practices and evidence-based design principles relating to therapy for improving mental well-being.

Playing in Nature

Six of Singapore’s 32 Nature Playgardens were completed in the past year. They can be found at East Coast Park, one-north Park, Sembawang Park, Villa Verde Park, Yishun Pond Park and Woodlands Healing Garden. Nature Playgardens support child development, learning and well-being, as demonstrated in a collaborative pilot study by NParks and the Singapore University of Social Sciences. The findings of the study, *Nature Playgardens for Children’s Well-being*, were shared with early childhood educators at the Early Childhood Development Agency’s Early Childhood Celebrations & Conference 2023.

Community Gardening in Bloom

Through the Community in Bloom programme, NParks facilitated the establishment of over 80 community gardens in 2023, adding to the over 2,000 such gardens across the island. We also launched 220 new Allotment Garden plots in addition to more than 2,400 existing plots in parklands islandwide. These are part of NParks’ efforts to make everyday gardening more accessible to Singaporeans.

NParks has also embraced digitisation to support community gardening efforts. A new gardening portal, GardeningSG, was launched on 4 November 2023. The website streamlines information and resources from NParks’ current website into an accessible one-stop online portal. Offering programmes and a comprehensive range of horticulture resources tailored to Singapore’s tropical climate, it helps gardeners of all experience levels troubleshoot and acquire new skills and information.



Scan to explore gardening resources on GardeningSG



Flowering trees bring a pop of colour to our streetscapes and facilitate the movement of small animals like birds and butterflies across the island.



Scan to hear about how we are rewilding our streets

Greening the Streets

As part of NParks’ Rewilding Plan, which was initiated in 2021 to introduce more naturalistic landscapes across Singapore, NParks has rewilded 12 sites this financial year, including Halus Nature Way and Tanah Merah Coast Road. A total of 39 sites have been rewilded, surpassing the original plan for 32 sites.

Another 20 km of Nature Ways in Ang Mo Kio, Queensway, Tampines and Woodlands were completed in 2023. This brings the total length of Nature Ways in Singapore to 210 km. In this same period, NParks planted over 16,000 trees in industrial estates, which now have over 117,000 trees planted.



Students of Teck Whye Primary School do a spot of gardening in their school garden — one of many ways that schools help to promote awareness of nature.



COMMUNITY IN CONSERVATION

Strongholds of ground-up community initiatives and participation have supported NParks' continued efforts to conserve and protect native biodiversity, showing how the community is core to conservation.

The *Nervilia singaporensis* is a critically endangered native orchid species that is part of NParks' Species Recovery Programme. It was one of three species of native orchids that were successfully propagated for the first time this past year.

30 Years of Leading Conservation Efforts

2023 marked 30 years of community stewardship and conservation at Sungei Buloh Wetland Reserve. Initially earmarked for agrotechnology, the prawn ponds were first discovered by a group of avid bird watchers as a roosting and feeding site for migratory birds. Fast forward 30 years, the Reserve is part of the larger 400-ha Sungei Buloh Nature Park Network, comprising complementary wetland habitats that support migratory waterbirds along the East Asian-Australasian Flyway.

As part of the celebrations, NParks announced a slew of volunteer-led programmes and activities across the Sungei Buloh Nature Park Network. This included a special commemorative exhibition showcasing archival images of the Reserve in its early years and old bird ringing paraphernalia. Since the beginning of 2024, the public has also been able to enjoy specially curated programmes at the reconstructed Cashin House within Lim Chu Kang Nature Park, including guided tours and nature photography.

Following community suggestions, NParks partially retained and converted the former Main Bridge in the Reserve into a new lookout platform overlooking Sungei Buloh Besar. The popular birdwatching spot provides visitors with a prime vantage point to observe wildlife in their natural habitat.



Over the last 10 years, Eco-Link@BKE has transformed into a lush forest. Only native plants and shrubs are planted on the ecological bridge to simulate a natural environment akin to the habitats on both sides of the bridge.



Cashin House has been repurposed to include a visitor gallery and open spaces for seminars and workshops, serving as a community node for the Sungei Buloh Wetland Reserve.



Scan to learn about migratory birds in Singapore's only wetland reserve

10 Years of Bridging Biodiversity

Built in 2013 and the first of its kind in Southeast Asia, Eco-Link@BKE is an ecological bridge reconnecting the forests of the Bukit Timah and Central Catchment Nature Reserves that had previously been separated by the Bukit Timah Expressway. By connecting once-separated populations of Singapore's native species, their habitat is expanded and intra-species interactions diversified. This ecological connectivity safeguards Singapore's rich biodiversity by strengthening the genetic pool of native species towards long-term resilience.

Native vegetation planted on the bridge has since grown into a verdant forest, attracting a wide array of biodiversity. Around 100 fauna species were recorded using Eco-Link@BKE between 2018 and 2021, with 31 of them being recorded for the first time. The bridge restores nature into our urban landscape, helping transform Singapore into a City in Nature.

Connecting Singaporeans to Ubin's Natural Heritage

As part of the 12th Ubin Day, NParks announced the completion of the third and most comprehensive edition of the Singapore Red List. Over 7,300 species found in mainland Singapore and offshore islands, more than double that of the second edition, were assessed, including species from seven new taxa that were assessed for the first time.

For example, the conservation status of the Lesser Asian False Vampire Bat (*Megaderma spasma*) was downlisted from Critically Endangered to Endangered in the third edition. In consultation with the Friends of Ubin Network, NParks constructed bat houses around Pulau Ubin to supplement existing roosting sites, contributing to the gradual recovery of the bat population.

About 40 school principals and policymakers from the Ministry of Education were invited to Ubin to participate in a learning symposium. This was an opportunity for them to discover the island's potential as a living and learning classroom, so as to better connect present and future generations with Pulau Ubin's biodiversity, culture and history.



31 species of fauna were recorded on the Eco-Link@BKE for the first time between 2018 and 2021, comprising 14 butterfly species, 13 bird species, three mammal species and one reptile species. In October 2023, the Critically Endangered Raffles' Banded Langur (*Presbytis femoralis*) was seen using the bridge for the first time.



Scan to see the different ways wildlife travel around Singapore



To end off the learning symposium on Pulau Ubin, students from ITE College East shared with Minister for National Development and Minister-in-charge of Social Services Integration, Desmond Lee, and other participants on how they had benefitted from interdisciplinary and experiential learning on the island.

The Friends of Ubin Network also commenced discussions for future projects following the completion of the first tranche of The Ubin Project. Engaging with stakeholders and the public, the discussions will shape plans for the continued preservation and enhancement of the island. Such efforts ensure that everyone can continue to enjoy the rustic and natural charm of Pulau Ubin and the rich natural heritage of our City in Nature.



Mr Wong Tuan Wah, who has committed his career to local conservation efforts recounts early conservation milestones in Singapore. Celebrating 30 years of conservation and community stewardship in Sungei Buloh Wetland Reserve in 2023, he reflects on how we have worked with the community to safeguard and steward our natural heritage.



Achieving Success in Flora and Fauna Conservation

Botanists at the Singapore Botanic Gardens have discovered and described nearly 80 new species from Singapore and the region. Much of the research was done in collaboration with researchers from across the region, including the description of a new *Begonia* from Timor Leste by an international team from Singapore, Indonesia and Timor Leste.

Besides discovering new species, NParks continues its existing work under our Species Recovery Programme. Our efforts in species recovery of native plants include the propagation of over 6,000 plants across 14 species. Three of these species were successfully propagated for the first time, including two critically endangered native orchid species, *Nervilia singaporensis* and *Dienia ophrydis*. To date, more than 3,800 plants across 31 species have also been introduced into various nature reserves and parks across Singapore as part of the Programme.

In the area of fauna species recovery, NParks successfully bred the Swamp Forest Crab (*Parathelphusa reticulata*) in captivity — a global first for this nocturnal and secretive species endemic to Singapore — and subsequently released second-generation crabs at a nature park in June 2023. By 2030, NParks will implement species recovery plans for 100 plant and 60 animal species.

Looking ahead, the Straw-headed Bulbul Working Group co-chaired by NParks and Nature Society Singapore has developed a comprehensive Action Plan for the recovery of the Straw-headed Bulbul

(*Pycnonotus zeylanicus*), a globally critically endangered species. The Bulbul has been heavily poached and trapped across Southeast Asia for its distinctive and melodious song, but its population in Singapore has remained relatively stable. Constant vigilance against poaching and habitat enhancement efforts are required to stabilise and grow its population. Singapore is now the world's stronghold for such conservation efforts.

In July 2023, some 120 hatchlings of the critically endangered Hawksbill Turtle (*Eretmochelys imbricata*) emerged from their nest along East Coast beach. Singapore is home to a population of nesting Hawksbill Turtles that return to our shores yearly to lay eggs.



Hawksbill Turtles are one of two species of sea turtles that call Singapore home. To improve the hatchlings' chances of survival, a turtle hatchery was set up on Small Sister's Island in 2018 to provide a safe environment for the turtle hatchlings to incubate in, hatch safely, and make it out to sea.



Scan to see Hawksbill Turtle hatchlings making their way down the beach



Since its discovery in 1990, the Swamp Forest Crab has only been found in the Nee Soon Swamp Forest and some peripheral streams. Conservation efforts for this species began in 2018 with the objectives to breed it in captivity and introduce them into more streams. From the capturing of adult crabs to the release of second-generation crabs, these species recovery efforts can take several years to bear fruit.

As part of larger regional conservation strategies, select Hawksbill Turtles that come to our shores are tagged with a satellite tracker. This enables NParks to study the movement of the turtles that swim from Singapore and down south to Indonesia and the Riau Islands. The data will help guide regional conservation efforts.

Celebrating Citizen Scientists

The community plays a key role in both species research and the development of green spaces. NParks will be using data collected from over 1,100 citizen scientists between 2015 and 2019 under the Community in Nature and Garden Bird Watch initiatives, to guide the planning and design of the city's green spaces. The consolidated findings showed a positive correlation between regularly shaped urban green spaces and water bodies, and bird diversity in Singapore's urban green spaces. The study analysed data of close to 70,000 bird sightings consisting of 184 species, from 384 points across 64 sites surveyed.



The Mangrove Whistler (*Pachycephala cinerea*) was common in the 1970s in Singapore but is now a rare resident here. Most recently, a sighting of the bird's fledgling at Changi Bay Point indicates the species' first recorded breeding on mainland Singapore in over 70 years.



Visitors to the Festival of Biodiversity learn about a variety of butterflies and moths through specimens displayed at the festival booths.

The Community in Nature Biodiversity Watches are important avenues for the public to collaborate in data gathering and scientific research about the resident numbers of target species. In the past year, more than 1,400 citizen scientists surveyed over 100 sites for sightings of birds, dragonflies, butterflies and herons.

To further celebrate and encourage community participation in the conservation of Singapore's natural heritage, NParks organised the annual Festival of Biodiversity in collaboration with the Biodiversity Roundtable. Themed *From Agreement to Action: Build Back Biodiversity*, the Festival was the culmination of a month of activities and events commemorating the International Day for Biological Diversity and the need for the community to safeguard our biodiversity. Attendants learnt more about how they can support conservation efforts through participation in nature-related events, including festival booths, exhibitions, talks, guided nature walks and biodiversity-themed art-and-craft workshops. The 12th edition of the Festival was held on 27 and 28 May 2023 at Heartbeat@Bedok.

Coming Together as One against Diseases

The One Health concept recognises the interconnectedness of human, animal and environmental health. The Covid-19 pandemic demonstrated how diseases, especially zoonotic ones, cause ripple effects when it comes to other parts of the ecosystem. NParks led and coordinated the One Health Zoonotic Disease Prioritisation exercise, which culminated in a workshop from 19 to 21 April 2023 at HortPark.

The workshop aimed to use a multi-sectoral, One Health approach to prioritise zoonotic diseases. It was attended by almost 100 participants from the Ministry of Health, National Environment Agency, NParks, PUB and Singapore Food Agency, as well as experts from various biological fields, Institutes of Higher Learning and the industry, with facilitators from the US Centers for Disease Control and Prevention. Participants discussed various zoonotic diseases and scored them against criteria they developed during the workshop. This allowed One Health agencies to prioritise a list of zoonotic diseases in Singapore for joint action and collaboration.



Consistent efforts are needed to strengthen Singapore's biosecurity against disease risks that can arise from climate change, human and wildlife interaction, and transboundary movement of animals into Singapore.

Ensuring Better Pet Shops

The Animal & Veterinary Service (AVS), a cluster of NParks, oversees the regulation of pet shops. On 1 November 2023, AVS implemented an additional licensing condition for pet shops, mandating that they may only exhibit or sell cats from AVS-approved sources, or those imported in accordance with import requirements. This measure will ensure the protection of animal health and welfare, as well as enhance the traceability of animals which is crucial for disease prevention and mitigation. This regulation serves to elevate standards in animal and public health.



The deployment of the Video Analytics System is part of NParks' larger Science & Technology Masterplan to save time and costs on the ground while retaining operational efficiency.

Tapping on Technology in the Pet Sector

To complement regulation of the pet trade, AVS spearheaded projects to enhance operational efficiency in regulation oversight. To expand the use of technology for pet shop inspections, it worked with the Government Technology Agency (GovTech) to deploy a Video Analytics system to count birds in pet shops, as well as build on the success of virtual inspections for the export of ornamental fish. The pilot test saw the smooth inspection of eight outlets in September 2023, and positive reception from stakeholders. NParks plans to expand virtual inspections to other pet shops. This will save time and costs in these inspections.

To speed up and smoothen the process of live animal importation and trade facilitation, AVS expanded the automated approval system for live animals into the country via TradeNet®, Singapore's National Single Window for trade declaration. The automation allows live animals with a valid AVS import licence to be automatically granted approval for entry. These improvements have helped to streamline customs clearance and operational efficiency at the border while still upholding high levels of biosecurity and animal traceability, guarding against the introduction and threat of harmful animal diseases that may enter Singapore.

Living Better with Feline Friends

A new Cat Management Framework is in the pipeline to improve the management and welfare of cats in Singapore. AVS will implement a two-year transition period for pet owners and fosterers to ease into these changes. Under this framework, cats will be allowed to be kept in Housing and Development Board (HDB) flats, with up to two cats (and one dog of an approved breed, as per



Senior Minister of State, Ministry of Communications and Information & Ministry of National Development Tan Kiat How interacts with cats and cat owners at the 24th edition of Pets' Day Out.

the current limit) for each HDB flat, and up to three cats or dogs, or a combination of both, in private premises. From 1 September 2024, cat owners are allowed to keep all their existing cats if they license and microchip them, and ensure a safe environment for them, within the transition period.

The Framework was announced at the 24th edition of Pets' Day Out, held at East Coast Park in May 2023. This is a regular platform for animal welfare groups, businesses, veterinarians and pet lovers to come together to share their love for animals and promote responsible pet ownership.

The community was extensively involved in developing this Framework. A public survey was conducted in September 2022, seeking feedback on AVS' proposed measures to expand the licensing and microchipping scheme to include pet cats, extend the Trap-Neuter-Rehome/Release-Manage programme for free-roaming dogs and community cats, and offer new engagement and outreach programmes promoting responsible cat ownership, adoption and community cat caregiving. Focus group discussions with cat owners, non-cat owners, community cat caregivers, cat fosterers and rescuers, veterinarians, representatives of animal welfare groups, and relevant agencies were also held to ensure that a diverse range of views was considered.

The survey, conducted as part of the larger Forward Singapore movement, garnered over 30,000 responses and revealed strong public support for AVS' proposals.

Improving Veterinary Standards in Singapore

We are working on the establishment of a Veterinary Council to regulate professional standards and practices to provide better support for the growing veterinary sector. The number of licensed veterinarians has almost quadrupled since 2006.

To ensure the safe and continued improvement of increasingly diverse veterinary practices in Singapore, the multi-stakeholder Council will comprise a mix of members from both public and private sectors. Different stakeholders are essential in developing and upholding standards across a range of issues, from the recognition of qualifications of veterinary nurses and technicians, to putting in place professional development requirements for veterinary paraprofessionals.

To set up the Council, NParks is also studying other overseas veterinary boards, including the Veterinary Practitioners Board of New South Wales in Australia and the Royal College of Veterinary Surgeons in the UK. When established, it is expected to support some 2,500 veterinary professionals.

Monitoring Antimicrobial Resistance in Aquaculture

Part of AVS' work involves overseeing ornamental fish farms as part of the larger aquaculture industry in Singapore. In December 2023, together with the Food and Agriculture Organisation of the United Nations and the Singapore Food Agency, AVS published the regional guidelines for monitoring and surveillance of antimicrobial resistance (AMR) in bacterial pathogens from aquaculture. The guideline was officially launched in February 2024.

Development of AMR may occur due to the improper use of antimicrobial drugs. This can compromise food security, food safety and animal welfare, which in turn affects aquatic animal health, as well as the livelihoods and sustainability of aquatic species and fisheries. As the first of its kind, the guidelines aim to help countries improve the quality, quantity, and overall cohesiveness of initiatives on AMR surveillance in aquaculture, to address issues concerning the emergence and spread of AMR in the important regional aquaculture sector.



Reflecting on the 60 years of greening Singapore, **Dr Chang Siow Foong**, Director General of the Animal & Veterinary Service (AVS) shares how far we have come as an urban ecosystem – greenery, animals and the community in a City in Nature. With AVS becoming a cluster of NParks, this has helped to sharpen the science-based approach to managing animals in Singapore, and emphasise how the community plays a key role in upholding animal welfare.



NURTURING SCIENCE, TECHNOLOGY AND INNOVATION TOGETHER

NParks enables synergistic knowledge-building through conferences and expert collaborations within and across borders as it continues to support progress in environmental science and technology.



The Slaty-breasted Rail (*Gallirallus striatus*) is one of over 4,500 newly included species in the 3rd Edition of the Singapore Red List. Released in 2023, this is the most comprehensive list to date, and will guide the planning and prioritisation of habitat restoration and species recovery efforts in Singapore.

Celebrating Orchids, Sharing Knowledge

Singapore hosted the Asia Pacific Orchid Conference (APOC) for the first time in August 2023, co-organised by NParks and the Orchid Society of South East Asia. A triennial international orchid event, APOC is the largest gathering of orchid researchers, professional growers and enthusiasts in the Asia Pacific region and comprises a scientific programme as well as an orchid show. APOC aims to facilitate the exchange of knowledge, practices, and trends in orchid cultivation, science, and conservation.

The orchid show component of this 14th APOC featured over 8,000 orchid plants from nearly 1,000 species and hybrids and attracted over 50,000 visitors. It consisted of competitive orchid plant and orchid landscape displays from various participating countries, as well as special displays such as Floral Fashion, by students from the Nitec in Floristry course of the Institute of Technical Education (ITE) Central.

The Conference theme of *Diversity, Conservation, Culture* was exemplified in the diversity of orchid species and hybrids on display, promoting research and academia in the *Orchidaceae* family and celebrating a growing culture of orchid appreciation amongst all visitors.



21 competitive landscape plots featuring orchids from around the Asia Pacific region transformed the Singapore EXPO into a stunning flower field. The Singapore Botanic Gardens' award-winning plot showcased how orchids are a part of Singapore's heritage.



The *Dendrobium Margaret Thatcher* was one of the stunning orchids featured in the award-winning display by the Singapore Botanic Gardens. Orchids such as these highlight the Gardens' role in orchid diplomacy between Singapore and other nations.

Symbiotic Science for Coral Reef Protection

The Marine Climate Change Science Programme is a S\$25 million research initiative led by NParks and funded by the National Research Foundation within the Prime Minister's Office of Singapore. Through collaboration among government agencies, research institutes, and industries, it aims to advance marine conservation research and safeguard the island's coastal and marine ecosystems as we transform Singapore into a City in Nature. Two projects, by the National University of Singapore (NUS) and Nanyang Technological University, were awarded under the most recent grant call and are part of efforts to understand the role of coastal and marine habitats as nature-based solutions amidst climate change projections.

In line with these research efforts, NParks supported the 5th Asia-Pacific Coral Reef Symposium organised by NUS, which facilitated collaboration and knowledge exchange among the region's scientific community, promoting integrated approaches to address the challenges facing coral reef ecosystems in the region. Over 800 participants from some 40 countries participated in 39 thematic sessions and 11 workshops, with the avenue to share knowledge and expertise and forge greater collaboration for international conservation efforts.



Coral reefs sustain high biodiversity and are important habitats for other marine organisms. They also protect the shoreline from wave erosion.



Scan to hear about the "boring" sponges in Singapore's waters



To strengthen partnerships with the industry, the Centre for Urban Greenery and Ecology (CUGE), a division of NParks, regularly organises programmes and workshops to upskill industry professionals on the latest digital trends and eco-friendly strategies in the landscape industry.

Levelling Up the Landscape Industry

At the Green Thumbs Conference in 2023, NParks announced the implementation of a new model of greenery management for parks and streetscapes that leverages digital tools and technology, culminating from over three decades of research and partnership with the landscape industry. The event, co-organised with the Landscape Industry Association of Singapore (LIAS), was a platform for over 300 industry partners, students and professionals in the industry to learn best practices in arboriculture, horticulture, and playground safety. Collaborations with the landscape industry have been crucial in Singapore's greening journey and in its efforts to transform into a City in Nature.

The new greenery management model will first be rolled out in the Bishan-Ang Mo Kio district, in partnership with a contractor appointed via an open tender system, to enhance productivity in landscape operations as well as attract and train up local talent. The partnership will tap on digital tools to synergise operational work, such as Maven 2, a centralised platform for greenery management and the Remote Tree Management System, which collates tree data using LiDAR technology.

Beyond greenery management, CUGE also launched new workshops for staff and industry participants, such as the Designing Therapeutic Horticulture Programmes for Children with Special Needs, Playground Safety Management, Design and Assessment with the Contemplative Landscape Model, and Animal Movement Analysis Workshops.



Many experiments were undertaken to result in the prevalent urban greenery we see in Singapore today. **Mr Chuah Hock Seong**, Senior Director for Ops Tech & Development (Streetscape), is a trained horticulturalist who helped realise Singapore's early vision of a Garden City. He speaks about how the Centre for Urban Greenery and Ecology (CUGE) has worked alongside the landscape industry to green up Singapore.



Improving Greenery Management with Digital Tools

NParks continues to build on its foundation in science and technology as well as research and development. In the reporting year, we announced plans to enhance the greenery management of parks and streetscapes through enhanced digital tools.

NParks' adoption of technology is integral to its digitalisation roadmap, enhancing productivity through data-driven solutions. By collecting and consolidating information for predictive management, digitalisation elevates the capabilities of staff and operational efficiency, supporting Singapore's greening efforts in its transformation into a City in Nature.



Remote Tree Management System (RTMS) and Internet-of-Things (IoT) sensors are some digital tools that will be integrated into Maven 2, a centralised platform for greenery management to enhance tree inspections and monitor park amenities.

Supporting this digitalisation push is a S\$7.5 million grant under the Landscape Sector Transformation Plan, aimed at boosting productivity and facilitating technological transformation in the landscape and animal sectors. The grant will help defray costs for landscape companies and nurseries investing in new digital solutions.

Rewarding Green Excellence with LEAF

In 2023, 16 parks and developments were recognised for landscaping excellence under the Landscape Excellence Assessment Framework (LEAF). Rifle Range Nature Park, one of the buffer parks to the Bukit Timah Nature Reserve, received top honours for its enhancement of ecological connectivity and for being Singapore's first net-positive energy Nature Park, where solar panels harvest more energy than the park's operational energy consumption.

LEAF serves to encourage exceptional landscape design, construction, and management that integrates nature into the urban landscapes, one of the key thrusts of transforming Singapore into a City in Nature.



Scan to learn more about sustainability in Rifle Range Nature Park



The installation of solar panels, use of upcycled wood to build boardwalks, and a rain garden that utilises aquatic plants to filter and clean runoff are among efforts in place to drive sustainability in Rifle Range Nature Park.

Jurong Lake Gardens Sets the Standard

As Singapore moves towards becoming a City in Nature, integrating nature into our urban landscape grows increasingly crucial.

The second development phase of Jurong Lake Gardens exemplifies NParks' commitment to sustainable development, earning the prestigious Platinum Super Low Energy Rating under the new Green Mark Standard (2021). The award highlights the project's exceptional energy efficiency, inspiring future developments that also utilise sustainable energy building and management strategies.

With energy-efficient features like High-Volume Low-Speed Fans and solar panels generating 100 MWh/year, along with advanced water cleansing circulation systems, bio-retention basins and rain gardens that treat surface water runoff, the project set a new benchmark for clean energy and water conservation in urban landscapes.

Sealing International Partnerships for Regional Conservation

NParks reaffirmed its commitment to biodiversity conservation through the signing of Memoranda of Understanding (MoU) with international partners. The MoUs with the Department of National Parks, Wildlife and Plant Conservation of Thailand and the Pahang Biodiversity Council bolster the exchange of knowledge and expertise in wildlife health, forensics and the management of botanical gardens and arboreta. These agreements aim to protect native flora and wildlife by sharing best practices, raising public awareness, and organising educational workshops and symposia to promote research initiatives.



Footpaths in the northern section of Jurong Lake Gardens are constructed from carbon dioxide mineralised concrete and act like a carbon sink. During the production of this concrete, industrial waste carbon dioxide is permanently embedded into it.

Sharpening our Green Vision for Biosurveillance

NParks' commitment to ecological resilience and public health extends to innovative approaches leveraging science and technology. This helps address public health challenges arising from climate change and the movement of people, animals and vectors across borders, strengthening biosurveillance efforts and empowering industry stakeholders and the wider community with essential knowledge on zoonoses prevention.

NParks launched a groundbreaking \$15 million Biosurveillance Research programme under the Research, Innovation and Enterprise 2025 plan, to advance the scientific understanding of zoonotic diseases in Singapore, as well as their risk factors, and develop evidence-based mitigation strategies. The programme will leverage advanced technologies and interdisciplinary research to track pathogens and study their behaviour in animal hosts, vectors and the environment. Overall, this programme seeks to build ecological and public health resilience against biosecurity threats, safeguarding animal, human and environmental health.



Ms Kannagi G, Director for Development Management, who has dedicated her life's work to developing parks reflects on how they have evolved over time. Citing her involvement in Thomson Nature Park, she shared why her involvement in developing parks for the community means so much to her.



Improving Forensics to Combat Illegal Wildlife Trade

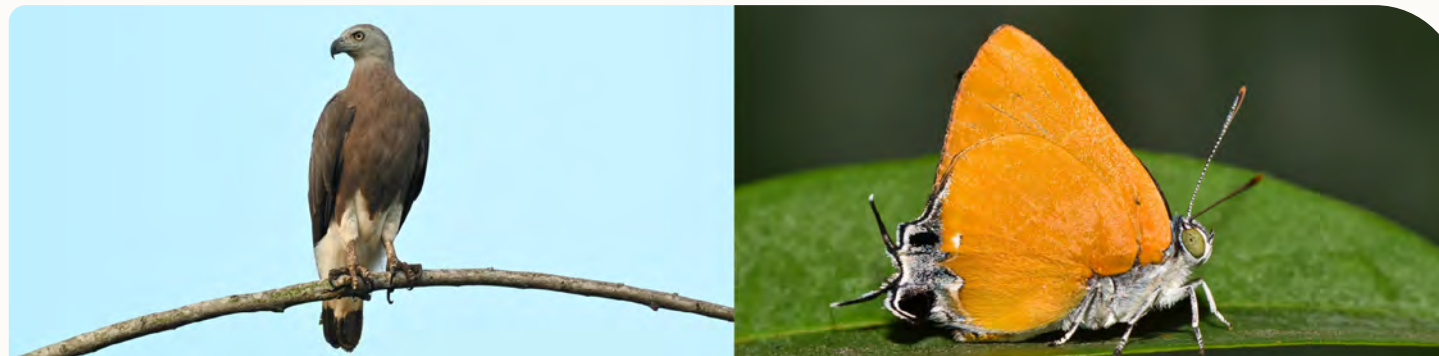
Singapore is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and adopts a zero-tolerance stance on the illegal trade of wildlife species as well as their parts and derivatives. National and international enforcement agencies have cooperated to detect and intercept the trade routes of illegal wildlife products, resulting in the sentencing of one such offender, who attempted to smuggle 34.7 kg of rhinoceros horns, to two years in jail.

Advanced forensic techniques are invaluable tools for combating illegal wildlife trade, enabling the identification of illegally trafficked wildlife with speed and precision. Rapid and scalable methods are essential to quickly genotype a sizeable subset of a consignment, so as to derive necessary data about the illegal wildlife products to share with law enforcement and conservation organisations who help to curb poaching and illegal trade at the source.

To this end, the Centre for Wildlife Forensics (CWF) developed a scalable and cost-effective genotyping method for pangolin scales. This cutting-edge forensic technique allowed CWF to genotype 2,346 pangolin scales — the record number of pangolin scales genotyped to date — and produced insights on the geographical origin of the scales. The study described how the methodology could be applied to genotyping other wildlife seizures, aiding the global fight against illegal wildlife trade.

Since the 19th CITES Conference of Parties in 2022, around 90 per cent of all internationally traded species of sharks and rays can be traded only if their stocks are not endangered as a result. Following this heightened protection of shark and ray species under CITES, CWF also intensified its efforts to enhance regional capacity in combating the illegal trade of shark fins. In October 2023, the Centre conducted a training workshop for law enforcement officers to learn about tools and techniques used to detect illegal shark and ray products, including the use of FinFinder, Asia's first AI-based mobile app for shark and ray fin identification. It was attended by almost 50 participants from the region.

Building on the success of the workshop, in 2024, NParks collaborated with the World Customs Organisation to organise an international training workshop on CITES-listed shark and ray species identification, to share knowledge about wildlife forensic research and species identification.



The Grey-headed Fish Eagle and Golden Royal butterfly are two of over 560 species of fauna and flora whose conservation status has improved, signalling that conservation efforts and habitat enhancements have been and must remain consistent and strong.



The study of pangolin scales revealed data on the origins of the scales and the pangolins, which is key for on-the-ground patrolling in areas historically prone to wildlife poaching.



Scan to see how NParks' K9 unit helps us in the fight against illegal wildlife trade

Youths Leading The Fight against Illegal Wildlife Trade

A group of 25 Youth Stewards for Nature (YSN) organised the third annual World Wildlife Day Regional Youth Symposium, with support from NParks, Mandai Nature and the ASEAN Centre for Biodiversity. The Symposium, which was started by five youths under the YSN programme as a virtual conference in 2022 during the Covid-19 pandemic, has since grown into a regional meeting attracting 300 youths from 15 countries — its largest participation to date. The third run of the Symposium saw attendees learning about regional biodiversity conservation efforts and discussing their roles in contributing towards conservation.

The Symposium also served to garner the support and participation of youths in the new CITES Global Youth Network (CGYN), which would go on to be launched later in 2024. This initiative was first proposed by Singapore at the 77th CITES Standing Committee meeting in Geneva, Switzerland, in

late 2023, where it was supported by the Parties to CITES. Kickstarted by alumni YSNs and supported by NParks, CGYN will provide a platform for knowledge sharing, network formation and the strengthening of international ties and capabilities that go towards understanding the intricacies of sustainable wildlife trade.



Youths came together for a series of talks, workshops and learning journeys that revolved around the theme of *Connecting People and Planet: Exploring Digital Innovation in Wildlife Conservation*.

Sharing Knowledge through Publications

Research informs conservation strategies and promotes long-term sustainability initiatives, aiding NParks in safeguarding our flora and fauna.

In June 2023, the third edition of the Singapore Red List was released, documenting the conservation statuses of over 7,300 algae, fungi, plant, and animal species across mainland Singapore and offshore islands — more than double the 2,900 species assessed in the previous edition.

Since the last edition, the conservation statuses of over 560 species such as the Grey-headed Fish Eagle (*Haliaeetus ichthyaeus*), Sunda Slow Loris (*Nycticebus coucang*) and Golden Royal butterfly (*Pseudotajuria donatana*) have improved. The updated list, a collaborative effort between NParks, the Lee Kong Chian Natural History Museum of the National University of Singapore and the Nature Society Singapore, will guide conservation initiatives such as habitat enhancement and species recovery programmes.

The *Handbook on Habitat Restoration: General Principles and Case Studies in Singapore* seeks to share global perspectives and promote ongoing evaluation for improved conservation outcomes. Launched in November 2023, this comprehensive compilation of project case studies from 24 diverse ecosystem sites across Singapore gives practitioners invaluable insights and practical tips for habitat restoration and enhancement efforts. The case studies also exemplify how NParks is Intensifying Nature in our Gardens and Parks, Restoring Nature into the Urban Landscape and Strengthening Connectivity between our Green Spaces — three key thrusts of how Singapore is transforming into a City in Nature.

Researchers from the Singapore Botanic Gardens also released the 2nd edition of *Native Orchids of Singapore*. The informative guide features case studies on nature conservation and 70 beautifully illustrated profiles of native orchid species, including the endemic *Nervilia singaporensis*, further cementing the Gardens' role in providing expertise on local orchid flora and its conservation.



The first sample of *Bulbophyllum singaporeanum* (left) was collected in 1889 but was later listed as "locally extinct" until the plant was rediscovered in 2009 in Nee Soon Swamp Forest. The 2nd edition of *Native Orchids of Singapore* also highlights the interdependent nature of insects and orchids, exemplified in the *Pinalia bractescens* (right) being pollinated by a Clear-haired Reed Bee (*Braunsapis clarihirta*).



The Singapore Botanic Gardens is a leading botanical institute and plays an important role in the research and conservation of local plant species. **Prof Tan Puay Yok**, Group Director of the Singapore Botanic Gardens speaks about the Gardens' Herbarium, where some of the region's oldest plant specimens are stored and the Seed Bank, a stronghold of seeds native to Southeast Asia.





Message from the Chairman

The support of our generous community and individual partners through the Garden City Fund has enabled us to further our efforts in advancing Singapore’s City in Nature vision and encourage greater ownership of our natural heritage.

Partnerships between stakeholders and NParks effectively harness the strengths and resources of both, as seen in marine conservation efforts. Generous donations from Ocean Network Express (ONE) and Singtel will support conservation, recreation and education at Sisters’ Islands Marine Park. Additionally, Sumitomo Mitsui Banking Corporation and Uniqlo Singapore’s contributions to the Plant-A-Coral, Seed-A-Reef programme have enabled us to scale up coral restoration in Singapore’s waters.

We are also encouraged by like-minded donors such as City Developments Limited, KPMG Singapore and PSA Singapore, who have contributed to the enhancement of our parks and gardens, enabling more visitors to appreciate and enjoy nature.

The Plant-A-Tree programme has progressed steadily, with over 79,000 trees planted with the help of some 134,000 community members since the start of the programme. In addition to raising financial capital, new partners such as the Singapore Indian Chambers of Commerce and Industry, Singapore International Chambers of Commerce, and Orchard Road Business Association have engaged their stakeholders to donate and plant trees, expanding our reach and promoting nature in our urban landscape. This hands-on experience with nature remains a memorable first touch for many when it comes to contributing to nature conservation.

We deeply appreciate that donors share our vision of equipping the next generation to contribute to Singapore’s environment. This includes support from Mr Peter Lim through the NParks-Peter Lim Scholarship Study Awards, which enables youths from underprivileged backgrounds to pursue their interests in the landscape and veterinary industry. They will in turn go on to support Singapore in its next 60 years of greening and beyond.

Alongside corporate donors, individuals have also stepped forward to contribute to our City in Nature. Long-time supporters and friends like Dr Rosslyn Leong and Mrs Tina Ou have contributed to botanical research and species recovery at the Singapore Botanic Gardens. Others who regularly participate in fundraising campaigns through the Giving.sg platform also help us forge ahead in our vision of a City in Nature.

Greening and conservation is a never-ending effort and therefore we remain dedicated to nurturing our City in Nature. We look forward to working with you as we step up marine conservation with the launch of the 100K Corals initiative and the Comprehensive Marine Biodiversity Survey 2. New fundraisers to encourage responsible pet ownership and facilitate the microchipping of cats will promote better coexistence with animals in our urban ecosystem. We will also continue to enhance nature in our parks and gardens with new therapeutic landscapes for nature-based therapy and harness nature-based solutions to mitigate the effects of climate change in our parks and gardens, so as to enhance our long-term climate resilience.

Your partnership is important to us as we take significant strides towards a greener, more sustainable Singapore. Let us work together to conserve our natural heritage and ensure that Singapore continues to thrive as a vibrant City in Nature for generations to come.



Professor Emeritus Leo Tan

About the Garden City Fund

Charity Registration Number/
Unique Entity Number:
T02CC1634C

Charity Registration Date:
19 November 2002

IPC Number:
IPC000104

Auditor:
Foo Kon Tan LLP

The Garden City Fund (GCF) is a registered charity and an Institution of a Public Character (IPC), with its registered address at National Parks Board, Singapore Botanic Gardens, 1 Cluny Road, Singapore 259569.

It seeks to enhance the enjoyment of our City in Nature by working with corporations and individuals to support the development of amenities and special features in Singapore’s green spaces; community activities and programmes that promote and enhance nature and ecology, art and culture, landscape and

horticulture, animal and greenery management, animal health and welfare, and conservation; and citizen involvement to encourage greater ownership of our City in Nature.

The Board of NParks serves as the trustee of the GCF and has appointed the GCF Management Committee to plan, develop, promote and manage the GCF in accordance with its Trust Deed.

The GCF Management Committee comprises mainly non-executive members except for the GCF Secretary. Dr Leong Chee Chiew, who was also NParks’ Executive Director of National Parks, Gardens & Nature Reserves, served as Secretary from November 2012 to June 2024. Dr Yap Him Hoo, who is NParks’ Deputy Chief Executive Officer, Professional Development & Services, was appointed Secretary on 13 June 2024.

Between 1 April 2023 and 31 March 2024, the total amount of cash donations through GCF was about S\$10.6 million.

The 11th GCF Management Committee for the Year in Review

NAME	CURRENT APPOINTMENT	PAST APPOINTMENT	OCCUPATION	ATTENDANCE AT MANAGEMENT COMMITTEE MEETINGS IN FY 2023
Professor Emeritus Leo Tan*	Chairman 1 November 2022	Chairman since 1 November 2006	Retired	4/4
Mr Daren Shiau	Treasurer 1 November 2022	Member since 1 November 2016	Partner, Allen & Gledhill LLP	3/4
Dr Leong Chee Chiew*	Secretary 1 November 2022	Member since 1 November 2004 Secretary since 1 November 2012	Executive Director of National Parks, Gardens & Nature Reserves, NParks	4/4
Mr Gerald Tan	Member 1 November 2022	Member since 1 November 2020	Executive Director of Business Selection, Reputational Risk and Conflicts, UBS Global Banking	3/4
Mr Goh Kong Aik	Member 1 November 2022	Member since 1 November 2014	Retired	4/4
Mr Han Jok Kwang	Member 1 November 2022	Member since 1 November 2020	Business Development Advisor, Schneider Electric	3/4
Mrs Kirtida Mekani*	Member 1 November 2022	Member since 1 May 2005	Director, CISTECH International Pte Ltd	4/4
Mr Guy Harvey-Samuel	Member 1 November 2022	Member since 1 November 2022	Retired	4/4

* These members have continued to serve for more than 10 consecutive years. Their wealth of knowledge, services and expertise have guided the charity to reach out to corporates and individuals for funding support and ensured sound governance of the charity. As professionals in their own right, they have also contributed to a balanced composition in the committee, with a diverse mix of backgrounds and experience to meet the growing needs of the charity. As part of Garden City Fund’s commitment to renewal, succession planning and diversity for the management committee, plans are ongoing to identify suitable members to enable an appropriate balance of skills, expertise, experience and views.

Towards a Greener Singapore

The journey to transform Singapore into a City in Nature has gained remarkable momentum, driven by the unwavering support of both corporate partners and dedicated individuals over the past year. Through collaborative efforts, we have seen steady progress in enhancing our parks and gardens, stepping up conservation and research, and providing educational and recreational programmes for the community.

Bringing Nature Closer to All

The KPMG Wellness Garden, a multi-generational garden located in East Coast Park, was opened in September 2023. Funded by KPMG, the development of the Garden took inclusiveness, accessibility and environmental sustainability into its design consideration. The Garden encompasses various interconnected zones including a biophilic playgarden, therapeutic landscape and tranquil environment for seniors. In line with NParks' efforts to develop parks for mental and physical wellness, the new Garden contributes towards NParks' goal to establish 30 Therapeutic Gardens in Singapore by 2030. KPMG's support extends to the Garden's programming, including five years of horticulture programmes. Ultimately, the Wellness Garden serves as a prime example of urban planning for health and wellness while also promoting intergenerational togetherness and a sense of community.

Contributions from the community played a key part in the expansion and overall enhancement of a new 2.2 km section at Pasir Panjang Park, including a S\$3.5 million and in-kind donations from PSA Singapore, maritime artefacts from the Maritime and Port Authority of Singapore, and archival photos from the community. PSA's upcycled shipping containers and the maritime artefacts within them draw out the maritime theme of the Park, and enable the community to appreciate Singapore's history as a shipping hub. The extension also enhances the recreational connectivity of the area, enabling park-goers to run or cycle between Labrador Nature Park and West Coast Park.

City Developments Limited (CDL) and NParks have extended their decade-long partnership on the CDL Green Gallery for another 10 years. With CDL committing S\$1.5 million for the Gallery's refurbishment, Singapore's first net-zero energy Gallery received a facelift and will continue to host nature- and sustainability-themed exhibitions for the public.



Minister in the Prime Minister's Office, Second Minister for Finance, and Second Minister for National Development Indranee Rajah tries out the balancing stumps in the KPMG Wellness Garden that were made from upcycled wood.



As a nod to Pasir Panjang's significance as one of Singapore's major port terminals and in recognition of the maritime trade's importance to our nation's economy, three 20 ft shipping containers donated in kind by PSA Singapore have been repurposed as shelters, enhancing the park experience for visitors while promoting sustainability.

Greening Singapore

The Plant-A-Tree (PAT) programme continued to make significant strides in the past year, bolstering the OneMillionTrees movement with substantial growth. As of 31 March 2024, more than 79,000 trees have been donated and planted by some 870 corporates and 6,000 individuals since the programme's conceptualisation in 2007. To date, over 134,000 participants have been reached through this programme.

AIA Singapore raised close to S\$200,000 towards its S\$5 million pledge through the AIA Charity Golf 2023; this was further matched by Tote Board's Enhanced Fund-Raising Grant of S\$154,000.

The PAT also saw multiple new supporters, including the Singapore Indian Chambers of Commerce and Industry, which pledged S\$150,000 (500 trees), the Singapore International Chambers of Commerce which donated S\$30,000 (100 trees), and the Lion's Club of Singapore, which contributed S\$60,000 (200 trees). The Orchard Road Business Association also contributed S\$30,000 to plant 100 trees in Orchard Road and other areas, while Takashimaya Singapore commemorated its 30th anniversary by donating S\$30,000 (100 trees). In addition to greening Singapore, these contributions also go towards supporting capacity building efforts and outreach programmes that enable people to connect with nature.

Championing Marine Conservation Together

As part of community efforts to enhance Sisters' Islands Marine Park as a sanctuary for a wide range of coastal and marine habitats, Ocean Network Express (ONE) and Singtel contributed S\$1 million each to support projects which will enrich visitors' experiences and educate them on the importance of conserving coastal and marine biodiversity.

ONE's contribution will enable the creation of the new Ocean Network Express Coastal Forest Trail, which will feature critically endangered coastal species and support species conservation efforts while also providing an immersive and educational experience for visitors of all ages. Singtel's contribution will help transform an existing lagoon into a tidal pool, creating new habitat niches to support marine biodiversity and a unique visitor experience to come up close to marine fauna. These features will be accessible to the public once the enhancement works at the Marine Park are completed in 2024. Contributions from ONE and Singtel will also support outreach and marine education programmes at the new marine classroom, fostering greater awareness and appreciation for marine conservation efforts.

The Plant-A-Coral, Seed-A-Reef programme continues to receive support that boosts NParks' marine conservation efforts. In conjunction with its 60th anniversary, Sumitomo Mitsui Banking Corporation contributed S\$120,000 in support while another S\$50,000 was donated by Uniqlo, as part of its *JOIN: The Power of Clothing* campaign. These generous gifts will go towards a delicate process of transplanting coral nubbins from a coral nursery to degraded or artificial reefs for them to regenerate naturally.



Sisters' Islands Marine Park is Singapore's first marine park dedicated to protecting the country's coral reefs and marine life.



Under the Plant-A-Coral, Seed-A-Reef programme, coral nubbins, such as this small *Acropora* coral nubbin will be transplanted from a coral nursery to degraded or artificial reefs. The programme aims to enhance our marine biodiversity by providing areas for marine organisms to grow and reef fish to seek refuge.

Reaching Out to the Community

Donor support enables large outreach and educational events to reach the masses, as evidenced by the *From Mudflats to Metropolis* public exhibition that showcased Singapore's urban transformation journey into the sustainable, green city it is today. The roving exhibition moved across North, East and Central Singapore and was made possible by partners Frasers Property and Mapletree Investments Pte Ltd at Northpoint City, Our Tampines Hub, Heartbeat@Bedok, and Vivocity.

A wide range of researchers, conservationists and hobbyists, orchid enthusiasts and families also attended the 14th edition of the Asia Pacific Orchid Conference (APOC), collectively organised by NParks and the Orchid Society of South East

Asia, from 16 to 20 August 2023. The event was supported by multiple sponsors: Singapore EXPO, Matrix Star Marketing, Natural GRO, Nikon and Sistic. Product brands such as Himalaya Sports, Himalaya Vajomba, St Dalfour and Ricola also showcased their enthusiasm for the programme.

Our youths continue to be crusaders for many greening efforts. The 3rd World Wildlife Day Regional Youth Symposium, held from 24 to 25 February 2024, was facilitated by 16 youth stewards from NParks' Youth Stewards for Nature Programme. The event gathered some 300 youth participants from 15 countries, including all 10 ASEAN member states. With the S\$150,000 donation from Mandai Nature, a non-profit wildlife conservation organisation, the Symposium provided a meaningful platform for discourse on how young people can actively contribute to nature and biodiversity conservation efforts.

Over 220 youths from local universities, polytechnics, Institutes of Technical Education and Nanyang Academy of Fine Arts (NAFA) have been awarded study grants through the NParks-Peter Lim Scholarship, established with a generous S\$10 million pledge from Mr Peter Lim. This initiative supports young talents pursuing careers in landscape architecture, horticulture, ecology, veterinary sciences and animal sciences — crucial sectors that contribute to Singapore's environmental sustainability as we look forward to the next 60 years of greening.

As a mark of appreciation for supporting the City in Nature vision over the years, Heritage Trees were dedicated to five corporate and individual donors who have donated S\$1 million and above. These include AIA Singapore, Ocean Network Express, Singtel, LU Foundation and Vince and Amanda Steckler.



The NParks-Peter Lim Scholarship aims to empower deserving underprivileged youths to excel in fields that play pivotal roles in enhancing and preserving Singapore's natural environment.

Individual Actions for Progress

Besides corporate partners, GCF also receives robust support from many individuals. Mrs Tina Ou and Dr Rosslyn Leong, regular visitors to Singapore Botanic Gardens, donated S\$50,000 and S\$150,000 respectively, for the enhancement of the Gardens and maintenance of the Jacob Ballas Children's Garden.

Twenty-three individual donors, alongside 10 corporate partners, raised S\$184,000 at the Festive Celebrations at Singapore Botanic Gardens, held from 8 December 2023 to 7 January 2024. Other donors included Equinix and its participating partners: Fortinet Singapore, Hewlett Packard Enterprise, Orange Business and Telstra Singapore, who made a S\$60,000 contribution. The fundraiser aimed to raise greater awareness for three key areas: environmental sustainability in the Gardens, botanical art and its fascinating functions, and digitalisation of the Singapore Herbarium. The event featured four themed lighted displays at the Bandstand, Nassim Visitor Centre, Tyersall Visitor Centre and Botany Centre and brought about festive cheer to the Gardens at the end of the year.



Minister for National Development and Minister-in-charge of Social Services Integration Desmond Lee (in the middle) and NParks CEO Hwang Yu-Ning (extreme right) dedicate Heritage Trees to five donors at the 30th Anniversary Celebration of Sungei Buloh Wetland Reserve.

Moving Forward



Funds raised for the Pet Cat Sterilisation Support, an initiative that is part of the Cat Management Framework, will assist low-income households in the sterilisation and microchipping of their pet cats. The programme will be rolled out on 1 September 2024 by the Animal & Veterinary Service, a cluster of NParks.

In the coming year, GCF will continue to maintain close collaborations with corporate partners and individuals while seeking community support for various projects. Among these will be nature-based projects in the Mandai Mangrove and Mudflat, aimed at reducing the impacts of climate change and enhancing Singapore's long-term resilience to climate challenges, and the second instalment of the Comprehensive Marine Biodiversity Survey (CMBS), which serves to assess Singapore's marine biodiversity through its mudflats, intertidal areas, coral reefs and seabeds. Additionally, GCF will continue to enhance its Plant-A-Coral, Seed-A-Reef programme in the coming year.

Other important initiatives include the development of more Therapeutic Gardens which will provide visitors with access to nature-based therapy for overall well-being, as well as various programmes on responsible pet ownership after the launch of the Cat Management Framework.

Through these efforts, GCF aims to enhance corporate and community engagement with its activities, fostering deeper collaboration between people and nature. Visit www.gardencityfund.gov.sg for more information.

About the Garden City Fund

Conflict of Interest Policy

The GCF Management Committee members are required to comply with the charity's conflict of interest policy. The charity has put in place documented procedures for committee members to declare actual or potential conflicts of interest on a regular and need-to basis. Committee members also abstain from and do not participate in discussions or decision-making on matters where they have a conflict of interest.

Whistleblowing Policy

GCF follows NParks' whistleblowing policy for reporting improper conduct and addressing concerns about possible wrongdoing or improprieties in financial or other matters within the charity.

GARDEN CITY FUND DONOR'S ACKNOWLEDGEMENT FY2023

We acknowledge and thank the following donors who have generously supported our City in Nature efforts, including those who wish to remain anonymous.

\$S\$1 million and above

- AIA Singapore
- Peter Lim

\$S\$100,000 and above

- ExxonMobil Asia Pacific Pte Ltd
- Keppel Care Foundation
- Leong Sou Fong Rosslyn
- LU Foundation
- Ocean Network Express Pte Ltd
- Oversea-Chinese Banking Corporation Limited
- Singapore Telecommunications Limited
- Sumitomo Mitsui Banking Corporation
- The Hongkong and Shanghai Banking Corporation Limited

\$S\$10,000 and above

- Activecool Fashion Pte Ltd
- AIA Investment Management Pte Ltd
- AirTrunk Singapore Pte Ltd
- Allen & Gledhill LLP
- Amlin Asia Pacific Pte Ltd
- ASM Front-end Manufacturing Singapore Pte Ltd
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- Yue Ting Chew
- Zhang Yandong
- Zhang YiJing

Donations listed above are of a minimum amount of \$1,000.
We thank all other individuals and organisations who have given to the charity, including in-kind donations.

SUSTAINABILITY REPORT

Our Sustainability Governance Structure



Our Sustainability Strategies



Sustaining our City in Nature

Creating the best possible living environment through excellence in nature conservation, greenery, and recreation



Embedding sustainability into our core business areas

Leveraging strategies across the planning and development life cycle to pursue sustainability, and harnessing opportunities across NParks' wide-ranging operations to inculcate sustainability



Building a greener future together

Propelling collaboration with partners, industry, and the community to work towards a liveable and sustainable future for Singapore



Fostering a sustainability culture from within

Driving internal efforts to achieve business excellence and cultivate a strong organisational culture in sustainability

Sustaining our City in Nature

Conserving and Extending Our Natural Capital

NParks is responsible for maintaining and enhancing Singapore's greenery for future generations. Our nature reserves safeguard primary and secondary rainforests which are core habitats for our native biodiversity. They are also primary providers of ecosystem services like clean air and water. Forested areas surrounding nature reserves have been converted into nature parks, serving as buffers against the impact of urbanisation and human activities. These buffers also provide complementary habitats for our native flora and fauna to thrive beyond the nature reserves, along with alternative spaces for nature-based recreation.

Strengthening Connectivity Between Our Green Spaces

NParks will continue to expand our island-wide connectivity networks so that Singaporeans will have greater access to green spaces. Today, over 380 km of park connectors have been established — more than seven times the length of Singapore from east to west.

To sustain a healthy ecosystem, we will also continue building our network of ecological corridors, to connect the habitats in our nature reserves and nature parks to those in gardens and parks. For example, corridors along our streetscapes, known as Nature Ways, mimic the multi-tiered structure of a natural forest to facilitate the movement of native animals such as birds and butterflies, while keeping our streets cool and comfortable for pedestrians. To date, NParks has established 210 km of Nature Ways.



Nature Ways are often planted with flowering plants and trees, such as this row of flowering Trumpet Trees (*Tabebuia rosea*) along the Central Expressway that add a pop of colour to our streetscapes.

Enhancing Nature in Our Gardens and Parks

More than 40% of Singapore is covered in greenery, in the form of Nature Reserves, parks, gardens, roadside greenery, skyrise greenery, and vacant state land. NParks is enhancing existing parks to feature more natural landscapes to recreate the look and feel of natural habitats, for Singaporeans to benefit from more immersive experiences with nature.

NParks is also pressing on with efforts to strengthen the conservation of Singapore's native flora and fauna. To date, we have restored and enhanced over 40 ha of forest, coastal, and marine habitats, and aim to bring this figure to 80 ha by 2030.

Ongoing habitat restoration and species recovery efforts have enabled Singaporeans to encounter and enjoy once-rare species of native plants and animals in our green spaces, such as the Singapore Kopsia (*Kopsia singaporensis*) and the Sunda Slow Loris (*Nycticebus coucang*). Today, species recovery plans are being implemented for over 80 plant species and over 40 animal species.

Restoring Nature into the Urban Landscape

NParks is seeking to further restore nature into the built environment, to cool the urban environment and bring the therapeutic effects of greenery directly to homes and workplaces. To do so, we are promoting the implementation of skyrise greenery in Singapore's buildings and infrastructure. For example, vertical green walls, green roofs, and rooftop gardens help cool our buildings and make them more comfortable to live, work, and play in, while further beautifying our city and advancing Singapore's status as a world leader in vertical greening. To date, around 193 ha of skyrise greenery has been implemented across Singapore.

We are also working with various stakeholders to intensify our greening efforts in industrial estates, which are currently among the hotter areas in Singapore. We aim to plant 170,000 more trees in industrial estates, including Jurong Island, from 2020 to 2030 — nearly a threefold increase. In FY2023, NParks planted an additional 20,000 trees in industrial estates, bringing the total number of trees planted in industrial estates since 2020 to over 115,000.

Enhancing Veterinary Care and Animal Management

Another important thread in our City in Nature narrative is the need to safeguard the well-being of our community animals and wildlife while helping Singaporeans understand what it means to live alongside nature. To this end, NParks takes a science- and community-based approach to community animals and wildlife management.

To raise the standards of the veterinary and pet sector in Singapore, NParks is working with industry stakeholders to establish new guidelines and regulations, in areas such as veterinary telehealth, novel therapeutics, animal shelters, ornamental bird trade, dog breeding, and dog training. We are also developing the legislative and operational framework for the Veterinary Council.

On the wildlife management front, to achieve a balanced ecosystem and safeguard public health and safety, we adopt a multi-pronged strategy of studying the population ecology of target species to understand factors affecting population growth and persistence, managing their populations through a combination of measures, and conducting public education and outreach to foster community stewardship.

Embedding Sustainability into Our Core Business Areas

Planning Stage

Catering for Nature Areas, Green Spaces, and Green Corridors Upstream in the Land-use Planning Process

In a land-scarce city-state like Singapore, careful planning is needed to optimise land use and balance nature conservation with urban development for Singapore's long-term liveability. Upstream at the strategic and master planning level, NParks seeks to ensure that nature areas and green spaces are catered for upfront in Singapore's land use planning, so that we can not only conserve our natural heritage but also reap the benefits of nature on our health and well-being. NParks has set park provision targets to cater 0.8 ha of green space per 1,000 population, and to have all households within a 10-minute walk to a park by 2030. To this end, we are safeguarding existing green spaces and creating parks and park connectors in areas with accessibility gaps, to increase Singaporeans' access to greenery and recreational opportunities.



The Cat Management Framework which was rolled out on 1 September 2024 strives for the welfare and management of pet and community cats.

NParks is also working with other developing agencies — Housing and Development Board (HDB), Land Transport Authority (LTA), and JTC Corporation (JTC) — to identify areas of ecological significance where conservation efforts should be prioritised, and developments done sensitively to safeguard ecological connectivity. The findings of NParks' Ecological Profiling Exercise (EPE), which mapped the ecological profile of green and blue spaces across Singapore, have directly guided Singapore's master planning considerations through the Long-Term Plan Review. For instance, through the EPE, Clementi and Khatib Nature Corridors were identified for establishment, to serve as important ecological connections between areas rich in biodiversity.

Ensuring Sufficient Greenery Provision in Developments

At the development planning stage, NParks also ensures that greenery is sufficiently provided for through working closely with other agencies to incorporate greenery into various development projects across Singapore. Some examples include the North-South Corridor and new housing estates such as Bidadari and Tampines North.

Understanding and Mitigating the Potential Environmental Impact of New Developments

NParks also plays a critical role in evaluating and mitigating the potential impact of new developments on the environment. For Nature Park development projects, NParks undertakes Environmental Impact Assessment (EIA), which comprises an environmental baseline survey, assessment of potential environmental impact, and formulation of mitigation measures under the

Environmental Management and Monitoring Plan. This rigorous process ensures that development works take place sensitively with minimal impact to surrounding habitats and biodiversity.

NParks is the Technical Agency for biodiversity conservation within Singapore's EIA Framework, which requires proposed development projects near sensitive nature areas to conduct more in-depth consultations and studies before they are permitted to proceed. Together with other Technical Agencies, NParks assesses the potential impact of such development projects, and recommends and approves mitigation measures to minimise impact on biodiversity.

In addition, the management of EIA consultancy services has been centralised under NParks, with this approach being piloted for new HDB and JTC development projects requiring EIAs starting from 2023. This seeks to further strengthen the EIA framework by enhancing industry standards and consolidating information on Singapore's



Energy harvested from the photovoltaic solar panels installed around Rifle Range Nature Park exceeds the expected annual operational energy consumption of the site, making it a net positive energy Nature Park.

biodiversity. In FY2023, NParks also undertook a review of the Biodiversity Impact Assessment guidelines with domain experts and the nature community, to continue building up technical capabilities within the industry and allow developers to have a better understanding of the biodiversity impact of their projects.

The Sembcorp Cool House in the National Orchid Garden has been specially designed to minimise its ecological footprint. Despite being four times larger than the original Cool House it replaced, the energy consumption of this 1,100 m² facility is estimated to be 30% lower than that of its predecessor, made possible through the following design features:

High-Efficiency Cooling System

Cooling requirements are minimised through focusing on cooling only the occupancy zone (i.e. the lower third of the Cool House) and leveraging passive energy systems. Chilled water pipes within the concrete flooring cool the ground level, while chillers supply cool air at the lowest levels through vents hidden in the rock walls, creating a convective air current. When hot air rises and accumulates at the top such that the temperature exceeds the ambient temperatures outside, louvres automatically open to release the hot air.

Use of Specially Selected Materials to Minimise Heat Gain

The Cool House is fitted with spectrally selective glass that maximises light penetration to promote plant growth while reflecting most of the infrared radiation to minimise solar heat gain.



The spectrally selective glass in the Sembcorp Cool House maximises light penetration to promote plant growth.

Retention of Existing Structures

Existing steel frames from the original Cool House structure were retained, retrofitted, and integrated into the new Cool House, preventing waste.

Harvesting of Solar Energy

Photovoltaic cells deployed on the Cool House's vestibule roofing and back-of-house facilities generate nearly 90,000 kWh per year, helping to offset around 15% of the Cool House's energy requirements.

Design Stage

In designing our green spaces and infrastructure, our strategies are underpinned by multi-faceted considerations centred around sustainability.

Design Strategies for Achieving Energy Efficiency and Decarbonisation

To minimise energy and resource consumption while enhancing visitor experience, the design of our buildings and park amenity nodes are optimised to maximise natural ventilation and lighting. For instance, site elements are intentionally oriented to increase wind flow, ceilings are raised to allow more sunlight and air in, and skylights and solar tubes are introduced into toilets and offices.

NParks is also increasingly harnessing renewable energy to offset electricity use and reduce reliance on fossil fuels. Solar panels are installed on the roofs of many of our buildings, and the structures in our Nature Parks are often designed to be net zero or even net positive. For example, the Visitor Pavilion and Community Nursery in Rifle Range Nature Park are equipped with photovoltaic cells on the roofs to harvest solar energy to power the lights and fans in the Nature Park, contributing to Rifle Range Nature Park's status as Singapore's first net-positive Nature Park. On Pulau Ubin, NParks has an ongoing partnership with Energy Market Authority to enhance the island's existing micro-grid, through the installation of a solar green roof connected to an advanced energy storage system.

NParks is also tapping on off-grid solar power, especially in more remote areas with high biodiversity such as the Rail Corridor. Off-grid solar not only minimises habitat loss arising from machinery access for service installation, but also promotes energy independence, builds resilience against power disruptions, and generates cost savings. NParks is additionally trialling hydro panels — an infrastructure-free off-grid technology that harnesses solar power to convert water vapour into high-quality potable water — at Jurong Lake Gardens, to test their functionality within green spaces.

Design Strategies for Building Climate Resilience

As we grapple with the impact of climate change, it is crucial that we build climate resilience into our green and blue spaces through careful and creative design strategies.

To adapt to rising sea levels and more intense rainfalls, NParks aims to design and develop all upcoming and redeveloped coastal and riverine

parks to enhance flood resilience, through leveraging nature-based solutions. For instance, we are restoring mangroves in parks along Singapore's coasts, such as Kranji Coastal Nature Park, and have embarked on a mangrove restoration project at Sungei Durian on Pulau Ubin, where we aim to naturally restore around 8,000 mangrove plants over time. These mangroves will work in tandem with engineering solutions to mitigate the effects of erosion brought about by storm surges and rising sea levels.

In our parks and gardens, we are adopting Water Sensitive Urban Design where possible — an approach that seeks to integrate water cycle management with the built environment through planning and design principles, to mitigate the effects of urbanisation on the natural functioning of the water cycle. For example, at Jurong Lake Gardens, to overcome the site's high water table and resultant waterlogging issues, the existing 300 m concrete canal was transformed into a series of naturalised, vegetated streams which reduce the velocity of surface runoff and cleanse the stormwater before being discharged into Jurong Lake, one of Singapore's 17 reservoirs.

Greenery continues to be our key strategy in mitigating the urban heat island effect, through lowering ambient temperatures and improving thermal comfort. We actively incorporate vegetation into heat-absorbing urban structures, such as by installing green roofs on shelters and bus stops, and integrating vertical greenery into buildings and MRT stations.

Landscaping also plays an important role in climate adaptation. NParks curates our planting palettes to reduce maintenance requirements while strengthening ecological resilience. Strategies include planting more native species adapted to our local climate, as well as species suited to the habitat type and site conditions they are planted in.

Design Strategies for Enhancing Habitats and Promoting Biophilia

NParks also intentionally seizes opportunities to create, restore, enhance, and connect habitats as part of our development projects. We have formulated a framework — the Naturalising our Parks Framework — to enhance the naturalisation of our parks and gardens, and are actively applying it to guide our development projects through the planning, implementation, and programmatic phases to realise the projects' restoration goals. Each project's restoration goal is first identified based on the landscape type — natural (largely intact), novel (largely degraded), or hybrid (largely degraded but with the potential to partially restore

ecological processes). Strategies to restore and/or create the habitats and restore ecological processes are subsequently determined, such as modifying the hydrology, topography, and soil composition of the area, planting suitable native species, as well as conducting species recovery programmes for key floral and faunal species. Design considerations to incorporate biophilic elements are then layered on, to create immersive experiences that would enhance visitors' sense of connection to nature.

For example, as Rifle Range Nature Park serves as an important buffer to the Bukit Timah Nature Reserve, the protection and enhancement of ecological habitats within were a priority. Native trees were planted using a combination of forest restoration techniques to assist the natural regeneration of the forest, and a freshwater habitat for marsh birds and aquatic animals was created out of the former backfilled quarry.

NParks also creates artificial habitats that mimic natural environments where needed. For instance, during the development of Changi Bay Park Connector, marine tiles were installed on coastal protection structures to encourage the proliferation of marine life. These tiles come in different shapes and forms and are designed to trap water when hit by waves, providing habitat niches for marine biodiversity including crustaceans, bivalves, and gastropods, during high tide and low tide.

Construction Stage

At the construction stage, we consciously seek to reduce carbon emissions and waste generation, minimise impact on the environment, and promote durability, while reaping productivity and cost savings. Carrying out construction in our nature areas

and green spaces poses a unique set of challenges — construction must be carried out in a sensitive manner to avoid adverse impact to biodiversity, site access and machinery use can be challenging due to existing trees and difficult terrain, and wear and tear can quickly result from the constant exposure to the forces of nature in an outdoor environment. Yet, these challenges also present us with opportunities to experiment with materials that would not only lead to better sustainability and maintainability outcomes, but which would also benefit biodiversity and enhance the visitor experience.

Opting for Construction Materials that Promote Sustainability and Maintainability

NParks intentionally opts for materials with lower carbon footprint and that can withstand outdoor elements. We frequently source for sustainable wood sources and wood alternatives for use in our park development projects. The use of Mass Engineered Timber (MET) in the construction of structures in Jurong Lake Gardens proved to reduce overall carbon footprint as well as construction time, as all building components were prefabricated off site and assembled on site. In the construction of boardwalks, we are shifting to more sustainable materials such as reconstituted timber and CELLwood, which have advantages over regular timber.

In the making of trails and footpaths requiring a natural finish, binded gravel and polymer-binded soil are used in place of loose gravel or soil, reducing the need for constant topping up of natural materials while improving trail stability. CarbonCure concrete has also been adopted in footpath construction, such as at Jurong Lake

In 2023, NParks collaborated with the National Environment Agency (NEA) to use geobags filled with NEWSand™, a by-product from slagging gasification of municipal solid waste from the Nanyang Technological University's Waste-to-Energy Research Facility, to protect a segment of the East Coast Park coastline from erosion. Geobags containing a collective 67 tonnes of NEWSand™ were placed along a 14 m coastal stretch — the first time NEWSand™ has been used to replace conventional sand in geobags. Close monitoring over six months revealed that the NEWSand™ geobags retained their structural soundness and had no negative impact on water quality or surrounding flora and fauna. This successful trial represents a step forward in our bid to develop proactive and innovative approaches to sustainable coastal and marine management.



Completed NEWSand geobags installation along a segment of the coastline at East Coast Park.

Gardens. This innovative technology permanently stores carbon dioxide in the concrete during the curing process and lowers the required cement content, reducing carbon footprint without compromising the concrete's strength or durability.

We also actively make use of recycled materials where possible. For example, recycled construction debris is used to form the hard core for new footpaths and shelters, and decommissioned firehoses donated by the Singapore Civil Defence Force (SCDF) went into the construction of a fence at Coney Island Park.

Adopting Construction Methods that Minimise Environmental Impact and Promote Resource Efficiency

NParks ensures that the construction methods and processes utilised have minimal impact on surrounding habitats and biodiversity, particularly for development works within or in close proximity to sensitive nature areas. General principles include keeping vegetation clearance and pollution to surrounding habitats, and impact to fauna on a minimum. Environmental

Mitigation and Monitoring Plans are put in place for all development projects within our Nature Reserves and Nature Parks to proactively manage construction impact and ensure that stipulated Environmental Quality Objectives for the project are not breached.

NParks also adopts lean construction techniques and productive construction technologies to promote resource optimisation. For example, the use of just-in-time construction methods to align construction schedules with material transportation schedules leads to streamlined processes, reduction in abortive work and construction waste, and cost savings, while the use of CCTVs with AI capabilities for remote monitoring of construction works enhances project efficiency and promotes worksite safety. NParks is also using Building Information Modelling (BIM) for infrastructure-intensive development projects, for better interdisciplinary design and construction coordination. BIM promotes the development of energy-efficient designs, supports lifecycle management, enhances collaboration and harmonisation of work processes, and facilitates environmental impact assessment, ultimately enabling improved building performance.



Trichoderma-treated Chinese Endives (left) show better growth and health compared to non-treated ones (right).

NParks' Plant Science and Health branch is developing solutions to promote soil health and sustainable pest and disease management, several of which are featured below:

Trichoderma Project

Trichoderma is a naturally occurring fungi that can act as a biological control agent to enhance plant vitality and combat plant disease. This project trialled the efficacy of local Trichoderma strains, with the aim of equipping community gardeners with solutions that are effective in fostering long-term garden health and yet be gentle on the environment.

Lab-synthesised Glucosinolates Project

Glucosinolates are natural compounds existing in many pungent plants such as mustard and horseradish. They can be broken down into

isothiocyanates, a class of active compounds that help control fungal diseases, by the enzyme myrosinase which naturally occurs in the same plants. This collaboration between NParks and multiple Institutes of Higher Learning seeks to produce and formulate glucosinolates for more sustainable control of fungal pathogens in the field.

The Soil Regeneration Project

A collaboration between NParks and Living Soil from Foodscape Collective, this project aims to develop a community-focused initiative to bolster soil regeneration within urban environments to encourage the cultivation of edibles while promoting community resilience and well-being. Efforts include educating residents and community gardeners on practices that enhance soil aggregation.

Operations Stage

Our commitment to sustainability follows through to the operations stage, where we consciously seek to incorporate sustainability into processes and practices spanning park and greenery management, infrastructure and facilities management, and events management.

Green Landscape Management Practices

With NParks managing over 400 parks and around six million trees across Singapore, examining and enhancing our landscape management practices through the lens of sustainability enables us to do our part to reduce energy and material consumption, lower carbon emissions and pollution, and minimise waste.

i. Water conservation strategies

To reduce the use of potable water, we are increasingly tapping on non-potable water for irrigation. In the Singapore Botanic Gardens, the system has been progressively enhanced to switch the irrigation source for many landscape areas to lake water, cutting potable water usage. Rifle Range Nature Park's community nursery is also equipped with a swale and rainwater harvesting tank to store and filter rainwater for watering the nursery's plants. NParks dovetails the planting of tree saplings with the monsoon season where possible to leverage natural rainfall for irrigation, reducing the need for manual irrigation while increasing survival rates.

ii. Emissions reduction strategies

Our park and greenery maintenance operations entail the frequent use of machinery and vehicles, most of which are traditionally diesel-powered. In seeking to lower carbon emissions as well as environmental and noise pollution, NParks is gradually transitioning to battery-operated equipment and buggies where feasible. This also eliminates the risk of fuel spillage and exposure of park users and residents from nearby estates to exhaust fumes. Since April 2023, all NParks landscape contractors have been required to replace fuel-powered leaf blowers with electric leaf blowers.

We are making deliberate efforts to streamline and optimise our operations to reduce their cumulative carbon footprint. For instance, material transportation is properly planned to maximise load and minimise number of trips, and arboriculture operations such as pruning and epiphyte removal are streamlined for more works to be conducted within the same locality at one time. Certain operations such as jet-washing and roof cleansing are also only carried out when required.



Upcycled wood and logs were incorporated into the play and wellness element of the KPMG Wellness Garden at East Coast Park.

iii. Chemical reduction strategies

NParks champions the sustainable use of synthetic chemicals and prioritises the use of cultural treatments as the primary means of pest and disease management. These strategies minimise negative impact on soil health, water quality, and non-target organisms, while preventing the build-up of pesticide resistance in pest populations. For example, HortPark adopts sustainable pest management practices, including employing pheromone traps and opting for organic solutions such as white summer oil and neem oil. The Singapore Botanic Gardens focuses on applying leaf litter, organic fertilisers, and biological control measures to promote plant health, without using herbicides.

iv. Waste reduction strategies

To promote resource circularity, NParks actively recycles and upcycles horticultural debris, repurposing it into useful materials that contribute to enhancing the physical environment and ecology of our green spaces. Debris from tree pruning and removal operations is converted into mulch or compost to enrich the soil and enhance plant growth. In HortPark alone, 2,000 litres of compost are produced every three months from the horticultural debris collected from the park's routine maintenance, and are fed back into the park's landscapes to form a closed loop system. In the Singapore Botanic Gardens, leaf litter is collected from across the Gardens and applied to landscape areas as mulch. Felled wood is also creatively upcycled to form a diversity of park furniture, from benches and wood cookies for footpath maintenance, to play equipment in Nature Playgardens. At the Wood Sculpture Symposium 2023, logs provided by NParks were carved by the Sculpture Society (Singapore) and displayed in Pasir Ris Park.

We also make use of other types of recycled materials where possible in our operations. For example, bamboo removed as part of the Singapore Botanic Gardens’ routine horticultural maintenance is reused as cladding material for the multipurpose shelter at the Jacob Ballas Children’s Garden, and unwanted jute bags from cafes used to store coffee beans are reused at the Bukit Timah Nature Reserve to dispose of unwanted plant material during Invasive Species Management sessions.

Another noteworthy measure is the deployment of fewer rubbish bins in our parks and gardens, strategically positioned where they are most needed. In the Singapore Botanic Gardens alone, the reduction in bin numbers from over 200 to under 50, coupled with the introduction of smart bins which are plastic liner-free, has led to a 90% reduction in plastic liner use and a halving of dumper trips for trash removal.

Green Infrastructure and Facilities Management Practices

NParks adopts a range of energy- and water-saving infrastructure and practices across our managed premises, in new park developments as well as through cyclical upgrading of existing facilities. We have also installed private meters for our offices situated within parkland to segregate office consumption from other uses, allowing close monitoring of our electricity and water consumption and swift implementation of rectification measures where needed. In addition, sustainability messages are put up in public-facing locations within our parks

Table 1: Examples of green events management practices adopted by NParks

GUIDING PRINCIPLES	EXAMPLES OF MEASURES TAKEN
Reduce waste	<ul style="list-style-type: none">• Encourage participants to bring their own cutlery, to minimise consumption of single-use plastics• Provide water dispensers in place of plastic water bottles and encourage participants to bring their own bottles; if bottles must be provided, those with sustainable packaging (e.g. plant-based cartons) are procured• Prioritise digital collaterals and minimise printed materials, such as by adopting electronic tickets, registration, brochures, programme booklets, and educational resources; if printing must be done, materials from sustainable sources (e.g. FSC-certified paper) are used• Encourage participants to bring their own gloves for tree planting events
Reuse and recycle	<ul style="list-style-type: none">• Identify event materials (e.g. structures, signage, décor items, landscaping plants) across the design to implementation stages to be stored after the event, and reuse or repurpose them for future events• Source for sustainable alternatives to conventional event materials (e.g. recyclable carpets)
Minimise carbon footprint	<ul style="list-style-type: none">• Encourage participants to take public transport or carpool• Select external event venues with Green Mark Platinum rating or equivalent

and gardens, such as at visitor centres and toilets, to encourage the public to adopt eco-friendly practices during their visit as well as raise awareness of NParks’ ongoing sustainability measures.

i. Energy conservation measures

In the area of cooling, we are upgrading our Air-Conditioning and Mechanical Ventilation (ACMV) and chillers to higher-efficiency systems, as well as reducing operational hours where possible and presetting temperatures. For instance, some offices

also practise hybrid cooling, using wall fans to reduce the amount of energy needed to power the air-conditioning to cool the entire office.

In terms of lighting, energy-efficient LED lights are implemented as the norm. For example, during the re-lamping exercise at East Coast Park, incandescent bulbs were replaced with LED bulbs. Other measures include the use of motion-activated lights in toilets and corridors, installation of photocell sensors to automatically adjust lighting based on ambient light levels, and limiting the use of artificial lighting during the daytime in offices designed to let natural light in.

ii. Water conservation measures

Our water conservation measures include utilising water fittings with three-tick Water Efficiency Labelling Scheme ratings, such as low-flow toilets, and installing rainwater harvesting systems in our buildings to collect water for storage and irrigation. Minimal water wastage is also ensured by our rigorous inspection and maintenance regime, where preventive checks on all toilets are conducted at least once a month on top of routine toilet inspections, and utility bills are reviewed monthly.

iii. Waste management measures

On the waste management front, on top of ongoing digitisation measures to go paperless, recycling bins are deployed in several offices, such as at the Animal and Plant Health Centre where there are separate recycling bins for paper, plastic, metal, and e-waste disposal. Some offices have also cut the number of bins from one per cubicle to one central bin, to reduce bin liner use.

Green Events Management Practices

With many of our events underpinned by conservation and environmental stewardship narratives, NParks places strong emphasis on organising events with sustainability in mind. The range of green events management practices adopted by NParks is summarised in Table 1.

Going Digital to Improve Work Processes and Reduce Resource Consumption

NParks is increasingly transitioning to digital collaterals, platforms, and systems, to not only reduce paper use and transport-associated carbon emissions arising from manual inspections, but also enable greater productivity and improved outcomes for both staff and stakeholders.

One key area of our digitalisation efforts is in licensing and inspection, which has traditionally been time- and resource-intensive. For example, NParks uses GovTech’s OpenAttestation digital tool to automatically generate animal quarantine and vaccination certificates, which are sent to customers upon quarantine completion — a marked improvement from the time-consuming process of manually signing and issuing hardcopy certificates. Similarly, for phytosanitary certificate applications, inspections are now conducted virtually rather than in person for low-risk and highly processed plant products, leading to savings in cost, manhours, and fuel use.

Many administrative processes have also been digitised, including HR processes such as softcopy interview transcripts and online resignation submission and certification of service, and finance and procurement processes such as e-invoicing and e-payment. NParks has also onboarded the eGuarantee@Gov initiative, where security deposit in the form of guarantees is provided by contractors in digital copy instead of hardcopy.

Building a Greener Future Together

Partnering the Community to Achieve Our City in Nature Vision

The support and involvement of the community is key to the success of our City in Nature vision. NParks builds understanding of, and appreciation for, our natural heritage through conducting numerous outreach and educational programmes targeted at various stakeholders. The annually held Festival of Biodiversity, for instance, caters to people



Holttum Hall was built in 1921 and we are working to turn it into net-zero energy heritage building.

need for a major overhaul to the existing electrical infrastructure or regulatory submissions to authorities, installation and commission were possible within two weeks of material delivery. This innovative system has successfully slashed energy consumption of the Nassim office by 38%, spelling potential for the technology to be rolled out to other NParks offices.

The Singapore Botanic Gardens has cut energy consumption per ha by 10% from 2019 to 2023. This has been achieved through various changes to the facilities, such as turning off floodlights which are highly energy-intensive, converting 90% of lights across the Gardens to LED lighting, and most notably, upgrading the Air-Conditioning and Mechanical Ventilation (ACMV) systems — the largest contributor to energy consumption. For example, the upgraded ACMV system at Holttum Hall has reduced energy by 50%, and the Gardens is working with a partner to turn Holttum Hall into a net-zero energy heritage building through the installation of solar panels and a hydrogen fuel cell-based battery system.

Recently, the Gardens has also implemented a newly developed hybrid ACMV system powered by a combination of solar and grid energy. It has a built-in inverter that allows for the integration of solar power with grid supply in its condensing units, bypassing the typical requirement of installing intermediary systems to perform the integration. By eliminating the

of all ages through interactive booths and activities, reaching out to thousands at every edition to raise awareness about our native biodiversity.

We also actively involve the community in our greening and nature conservation efforts, such as through our citizen science initiatives which enlist the help of the community in collecting valuable data on animal populations and ecosystems in Singapore, and in turn allow them to learn more about our biodiversity.

Indeed, NParks is seeking to go beyond encouraging passive participation to nurturing active stewardship, by equipping and empowering the community to increasingly take on the mantle of building our City in Nature. In May 2023, NParks launched the Nature Kakis Network to further drive such a model of citizen engagement.

Amplifying Impact Through Partnerships with the Public, Private, and People Sectors

NParks collaborates with other organisations and institutions to widen our City in Nature outreach, deepen and expand our expertise, explore synergies, and develop novel solutions to further our sustainability agenda.

i. Partnerships with agencies, institutions, and committees

Cognisant of the interconnections between climate change, animal health, and human health, NParks has been collaborating with One Health agencies (Ministry of Health, Singapore Food Agency, NEA and PUB) on biosurveillance efforts, to proactively monitor and manage upstream climate-sensitive

biorisks in the natural and urban environments. To further these efforts, NParks launched the S\$15 million Biosurveillance Research Programme in March 2024 to advance our understanding of zoonotic disease prevention and develop effective mitigation strategies.

To strengthen our fight against illegal wildlife trade, we leverage partnerships with local and international agencies to support law enforcement and prosecution, as well as research collaborations with local and overseas institutions to build up our capabilities in wildlife forensics. One such research collaboration is the study published in *Conservation Biology* in August 2023 on the enabling of provenance tracing by extensive nanopore genotyping of seized pangolin scales.¹

We also work closely with many committees and working groups to realise our City in Nature vision. For example, the Advisory Panel for NParks' Ecological Profiling Exercise (EPE) and Straw-headed Bulbul Working Group both bring together academics, subject matter experts, and NParks staff to safeguard our natural heritage.

ii. Partnerships with industry partners and corporate organisations

Under the Social Enterprise Community Urban Farm (SECUF) initiative, NParks provides social enterprises with grants to support them in bringing edible gardening and other City in Nature programmes to seniors, low-income families, people with special needs, and other disadvantaged communities. As of March 2024, six social enterprises are supported under the SECUF programming grant, reaching out to nearly 500 participants. We are also working closely with City Sprouts to establish the first SECUF site at

West Coast Park as a community hub, by bringing together active grassroots in the region and Nature Kakis chapters.

To enhance industry capabilities in skyrise greenery, NParks has a Skyrise Greenery Incentive Scheme which provides funding support for new rooftop greenery and vertical greenery installations in developments. NParks also publishes the *Skyrise Greenery* e-bulletin, which showcases innovative skyrise greenery projects across different building types and highlights unique design considerations that enhance their maintainability and sustainability. Now in its fourth edition, the e-bulletin has featured 54 projects to date.

Within NParks' premises, NParks encourages tenants to incorporate environmentally sustainable practices through the tender/contract specifications, such as adopting environmentally sustainable methods and materials when renovating or fitting out their premises, as well as encouraging practices such as sustainable food sourcing, minimising use of plastics in handling and packaging, and opting for reusable packaging solutions wherever possible.

NParks also works with sponsors in supporting environmental sustainability in our work, through programmes such as the Garden City Fund's Plant-A-Tree Programme and Plant-A-Coral, Seed-A-Reef Programme. NParks also works with corporate partners on various collaborations, including volunteering for invasive management and nursery work.

Sowing the Seeds of Stewardship in the Next Generation

Cultivating awareness of and interest in the City in Nature vision in our next generation is an important part of our work in advancing the sustainability agenda.

i. Seeding messages through school curriculum and programmes

NParks is working with the Ministry of Education to incorporate City in Nature messages into every student's formal education through the syllabus and educational materials incorporating Singapore's sustainability and conservation efforts. In addition, NParks also engages students through school plays, talks, learning journeys on these messages, as well as other programmes such as Community in Nature school programmes, Greening Schools for Biodiversity, and Biodiversity Week for Schools.



Students get to learn more about conservation efforts and how they can play a part in our City in Nature.

ii. Empowering and enabling youths to step up as stewards

We have been involving youths in biodiversity conservation efforts through avenues such as the Youth@SGNature initiative, which includes the Youth Stewards for Nature programme, where youths are given the opportunity to lead and implement real-world projects in several fields including greenery management and biodiversity conservation.

Advancing Singapore's Biodiversity Expertise and Interests on the International Stage

NParks represents Singapore at various global and regional forums and biodiversity-related conventions. As a small, highly-urbanised island city-state, Singapore's interests lie in the field of urban biodiversity conservation and greening, and we often adopt best practices concerning urban biodiversity and greenery and nature-based solutions for climate change. NParks is committed to staying connected with international negotiations and initiatives to address these environmental concerns.

i. Promoting urban biodiversity and greenery in the global and regional agenda

As a city-state, Singapore works with relevant partners such as the Global Partnership on Local and Subnational Action for Biodiversity to promote the interests of cities as a state Party to the Convention on Biological Diversity (CBD), particularly in the development and implementation of the CBD's Plan of Action on Subnational Governments, Cities and Other Local Authorities for Biodiversity. The Plan of Action recognises the Singapore Index on Cities' Biodiversity as a useful monitoring tool for cities to evaluate their biodiversity conservation efforts, and invites its use by cities. The development of the Singapore Index was led by Singapore in collaboration with the CBD Secretariat and the Global Partnership on Local and Subnational Action for Biodiversity.



Highlights of the Kayak in Nature session organised by Taman Jurong Nature Kakis included witnessing a White-bellied Sea Eagle (*Haliaeetus leucogaster*) soaring across the sky and learning about the prop roots of trees growing by the edge of the water.

¹ <https://doi.org/10.1111/cobi.14162>

At the regional level, Singapore (NParks) is the leading country in urban biodiversity and greenery under the ASEAN Working Group on Nature Conservation and Biodiversity within the ASEAN Cooperation on Environment. NParks is working with the ASEAN Centre for Biodiversity, the ASEAN Secretariat, ASEAN member states, ASEAN dialogue partners, and other relevant partners to develop and implement activities in various areas including: (i) Local Biodiversity Strategy and Action Plan, (ii) Nature-based Solutions, and (iii) Monitoring, Evaluation and Reporting. Other initiatives and projects that NParks has initiated or led in include the establishment of the ASEAN Flyway Network, the ASEAN Urban Wetlands Network, and ASEAN Workshops on Therapeutic Horticulture.

ii. Supporting whole-of-government interests in climate change

As a Party to the United Nations Framework Convention on Climate Change (UNFCCC), Singapore is committed to addressing climate change and contributing towards international efforts to mitigate its impacts. NParks contributes to the technical discussions related to forests and land use at the meetings of the Conference of the Parties and subsidiary bodies to the UNFCCC. NParks also provides greenhouse gas emissions and removals estimates for the Land Use, Land-Use Change and Forestry sector to Singapore's reporting obligations under this convention.

Fostering a Sustainability Culture from Within

Recognising that effective pursuit of sustainability requires shifts in mindsets and values to embrace sustainability, NParks endeavours to bring all staff on board our sustainability journey and create a conducive environment for sustainability considerations to permeate all domains of our work.

Raising Staff Sustainability Awareness and Capability

NParks has identified Sustainability and Circularity as a strategic growth area to strengthen organisational capabilities in. Officers are scheduled to attend relevant external courses, including Sustainability for the Built Environment 201 conducted by the National University of Singapore and the Green Mark Accredited Professional administered by the Singapore Green Building Council. NParks' Centre for Urban Greenery and Ecology (CUGE) also runs sustainability-related training courses and

programmes that staff can sign up for, such as the Skyrise Greenery Speaker Series and the annual Green Thumbs conference.

Knowledge exchange is further facilitated through talks and workshops organised by various NParks divisions, where staff and external speakers are invited to share their expertise on a wide range of subjects relevant to NParks' operational and research work, including sustainability-related topics. The Science & Technology Research Colloquium, Hort Colloquium and Hort Champs are platforms in NParks for staff to learn about sustainability-related topics such as innovative technology projects to enhance sustainability and landscaping strategies for sustainable maintenance.

NParks also contributes to her parent Ministry, Ministry of National Development (MND)'s Family Green Group's efforts in organising sustainability initiatives for the MND Family, such as repurposing food waste into compost, holding food donation drives, and conducting learning journeys for staff to gain insights into the sustainability solutions implemented by different organisations.

Building a Strong Culture in Research and Innovation

NParks' focus on research and innovation has enabled the organisation to harness Science and Technology to advance our understanding of sustainability challenges and formulate science-based approaches to address them. For example, NParks' Marine Climate Change Science programme aims to develop solutions to help tackle the challenges faced by our coastal and marine environment arising from climate change, such as sustainable engineering measures to protect our coasts against sea level rise and extreme storm events, and nature-based solutions to enhance our marine environment and create new habitats.

We also conduct research to guide the planning, design, development, and management of sustainable landscapes in Singapore. A recently completed study showed that the co-location of solar photovoltaic cells with green roofs can increase solar energy generation, improve survivability and growth of shade-tolerant plant species, and lower the outdoor roof surface and indoor ceiling surface temperature of buildings.

To address the urban heat island effect, NParks collaborated with the Singapore University of Technology and Design on a study to identify strategies and interventions for improving thermal comfort in Singapore's green spaces. We have also embarked on a new project from July 2023 to deploy microclimatic sensors in the Jurong region to collect data on the cooling potential of greenery

across various land use contexts. Additionally, we have an upcoming study planned to develop microclimate models and establish best practices on greenery modelling for microclimate simulation.



Studies have shown that green roofs, such as those found at select bus stops in Singapore, can reduce ambient temperatures.

NParks is also proactively trialling and developing ops tech to optimise operational efficiency and thereby enhance resource utilisation. The Jurong Lake Gardens, NParks' designated living lab for sustainability and technology, is a prime example of this. Its Integrated Garden Management System, for instance, integrates environmental monitoring and facilities management sensors into a central monitoring system for smarter operations management and enhanced visitor experience. The Gardens also conducts testbeds on ops robots and deploys them if proven successful, such as autonomous lawn mowers and road sweepers as well as surveillance and concierge robots equipped with video analytics capabilities. The digital transformation of NParks' urban greenery management has also been made possible by the development of novel ops-tech tools, such as the Remote Tree Management System which leverages LiDAR technology coupled with AI and machine learning to enable virtual tree inspection, raising the efficiency of landscape operations.



Jurong Lake Gardens aspires to be a showcase of sustainability and acts as a testbed for green innovation that seeks to reduce environmental impact.

To further encourage ground-up innovation to enhance work processes and outcomes, NParks has also implemented the Grow Every New Idea (GENI) initiative — a platform for officers to pitch their work innovation ideas for seed funding support. Through GENI, a centralised energy usage tracking platform was developed to facilitate the consolidation and analysis of NParks' energy consumption data through robotic process automation (RPA), eliminating the need for manual scanning of utility bills and data entry. This innovation has translated into over 90% time savings, on top of allowing for improved oversight and evaluation of our energy consumption patterns.

Upholding Organisational Excellence

i. Incorporating sustainability into procurement practices

NParks has established a green procurement guide to urge users to incorporate specifications into their tender requirement specifications where applicable, such as for the provision of ICT equipment, electrical appliances, water equipment, and building products. Divisions are also encouraged to accord evaluation points when tenderers include environmentally-friendly materials or practices in their tender proposals.

ii. Upholding integrity and accountability

As part of NParks' efforts to foster strong corporate governance and instil public and stakeholder trust, NParks has an internal Code of Conduct addressing the prevention of corruption and fraud. This is communicated to all employees through induction programmes for new hires and HR employee engagement sessions.

NParks also provides whistleblowing channels for staff to report improper behaviour or misconduct, which are managed independently and followed up upon accordingly.

Figure 1.



iii. Ensuring robust risk management

NParks' Enterprise Risk Management (ERM) Framework lays out a systematic approach to identifying and managing risks and opportunities across the organisation, facilitating decision-making and the achievement of NParks' strategic objectives.

The framework is built around four core components: (a) ERM objectives and strategy; (b) ERM governance; (c) Risk Assessment; and (d) Risk Monitoring and Reporting (see Figure 1).

iv. Promoting workplace safety and health

Dedicated to prioritising the safety of our employees and contractors, NParks strives for the highest standards of Workplace Safety and Health (WSH) that are consistent with industry best practices. NParks' WSH Committee works with divisions and contractors to create and maintain a safe work environment for employees and workers.

Standard Operating Procedures for high-risk work processes are documented by the respective process owners within NParks and communicated to staff.

To ensure compliance with NParks' WSH measures and regulations, monthly inspections are conducted on contractors. In the event of

a safety infringement or incident occurrence, demerit points and/or administrative charges will be imposed on the contractor. Contractors will be penalised under the safety evaluation criteria for future tenders for NParks contracts, should they accrue a certain number of demerit points.

Creating a Great Workplace

i. Supporting staff development

NParks officers are encouraged to grow their professionalism, build capabilities, and provide service excellence. NParks develops employees through a competency development framework focusing on business, operational, and people excellence. Operational staff undergo in-depth training by CUGE and professional certification bodies, with tailored roadmaps formulated to grow their professional competencies in arboriculture and other specialist fields. Corporate staff can get certified by industry-recognised agencies such as the Institute of Singapore Chartered Accountants and Institute for Human Resource (HR) Professionals. In late 2023, NParks updated its Competency Framework, which identifies suitable development opportunities for upskilling and reskilling, to include strategic growth areas such as Sustainability and Circularity.

To deepen officers' professional expertise in NParks' core work areas and enhance deployability of staff, officers who possess certifications recognised under NParks' Vocational and Skills Allowance Framework are eligible for a monthly allowance. 45.5% of NParks officers have obtained at least one professional certification, and officers are encouraged to continually upskill by picking up additional competencies relevant to NParks' work.

Number of Staff with Professional Operational Certifications²

138	Certified Practicing Horticulturists
269	ISA Certified Arborists
78	Certified Playground Inspectors
17	Project Management Professionals
26	Certificate in Animal Health
34	Certificate in Animal Welfare and Behaviour

We will continue to professionalise the role of an NParks officer and improve the attractiveness of a career in NParks. Officers' skills and competencies will be recognised by appropriate progression opportunities and commensurate remuneration. We will also continue to support and encourage continuous movement of officers — horizontal as well as vertical — throughout their career. To further strengthen staff development, HR has upcoming initiatives planned for FY2024, including increasing the training budget allocation across NParks as well as establishing a Capacity Building and Innovation Fund to advance staff knowledge and skillsets through overseas trips, scholarships, sponsorships, and learning opportunities.

ii. Prioritising staff well-being

NParks has put in place several good practices and initiatives to support staff well-being, and these are regularly communicated to supervisors and staff. Examples include active hour every Friday afternoon for staff to engage in healthy lifestyle activities (protected time that starts two hours before the end of the work day), guidelines for meetings to be scheduled before 3pm every Friday, and for staff to minimise sending out emails on weekends.

The Staff Well-Being Committee (SWC) works with NParks HR and Staff Union to launch and implement initiatives to promote staff well-being and make NParks a great workplace. It is supported by three sub-committees:

- **Healthy Lifestyle:** To promote physical and mental health and self-care through active lifestyles and healthy habits;
- **Kindness Movement:** To promote and nurture a culture of kindness, compassion, and volunteerism among staff for the less privileged in our society; and
- **Social and Recreation:** To provide opportunities for staff to connect, interact, and build relationships through common interests.

The SWC organises events to bring the organisation together and foster a greater sense of belonging and bonding among staff, such as the Year-End Get-Together and activities by the various sports interest groups. It has also organised several sustainability-related activities, including annual food donation drives with Food Bank Singapore, and collection of toiletries and household appliances for donation to migrant workers at ItsRainingRaincoats.

iii. Recognising staff achievements and contributions

Each year, deserving staff are recognised for their exemplary service and work via the Excellent Service Award and Divisional Star Award presented at the annual Y.E.O.P! Service Excellence Forum organised by the Y.E.O.P! Committee, a cross-divisional team that engages our officers to contribute to NParks' service vision. In 2023, 40 staff were commended for providing excellent service to internal and external customers.

This year, 226 staff received their Long Service Award for their contributions towards building and caring for our City in Nature.

Please refer to page 65 for more information on these awards.

² The list of qualifying certifications is not exhaustive. There are other certifications such as Field Epidemiology (Veterinary and Animal Health) and Advanced Animal Welfare and Behaviour (Cat and Dog).

Our Sustainability Targets and Performance

NParks has set sustainability targets aligned with the whole-of-government targets set out under the GreenGov.SG initiative, and is committed to stepping up existing efforts and exploring new measures to achieve these targets. The reporting boundary for the data presented here is aligned with the GreenGov.SG scope.

Greenhouse gas emissions

Target: Peak emissions around 2025 and achieve net zero emissions around 2045

Performance

	FY2021	FY2022	FY2023
Fuel consumption from corporate vehicle usage (L)	NA ³		Diesel: 23,423 Petrol: 11,633
Direct Scope 1 emissions (t CO ₂ e) <i>[calculated from fuel consumption from corporate vehicle usage]</i>			91.17
Indirect Scope 2 emissions (t CO ₂ e) <i>[calculated from NParks' electricity consumption]</i>	10,807	11,111	11,756
Total emissions intensity from Scope 2 emissions (t CO ₂ e/sqm)	0.08	0.09	0.08

Electricity consumption

Target: 10% reduction in Energy Utilisation Index (EUI) by 2030, compared to average of 2018–2020 levels

Performance

	2030 TARGET	BASELINE (AVERAGE OF 2018 TO 2020)	FY2021	FY2022	FY2023
EUI (kWh/sqm) ⁴	134.09	148.99	149.57	148.58	135.86
Total electricity consumption (kWh)	NA	23,642,552	26,486,899	27,231,838	28,813,474
Total building electricity consumption (kWh) ⁵		18,425,989	19,085,650	18,791,814	17,056,051

NParks’ total energy consumption and hence Scope 2 emissions have been on the rise in recent years, as a direct result of larger operational spaces and more comprehensive service offerings as we continue to develop new parks and infrastructure. Over the same period, however, our total building electricity consumption and EUI have fallen steadily since FY21, indicating that our efforts in lowering the carbon footprint of our facilities and operations are bearing fruit. Going forward, we are committed to increasing our investment in energy-efficient systems and renewable energy sources to pursue decarbonisation such as the deployment of solar photovoltaics for our buildings, and in research and innovation to develop new and enhanced sustainability solutions.

3 Data not available for FY2021 and FY2022, as NParks only began tracking fuel consumption from corporate vehicle usage in FY2023

4 EUI is calculated for NParks’ standard infrastructure with meaningful gross floor area (GFA), which includes offices and facilities but excludes open public spaces such as parks

5 Total building electricity consumption is similarly calculated for NParks’ standard infrastructure with meaningful GFA

Water consumption

Target: 10% reduction in Water Efficiency Index (WEI) by 2030, compared to average of 2018–2020 levels

Performance

	2030 TARGET	BASELINE (AVERAGE OF 2018 TO 2020)	FY2021	FY2022	FY2023
WEI (L/person/day) ⁶	116.27	129.19	133.38	124.93	150.36
Total water consumption (L)	NA	787,026	911,053	1,014,198	1,008,194
Total building water consumption (L) ⁷		300,766	290,041	292,324	318,807

NParks’ water consumption is mainly from our operational activities, including the maintenance of our greenery and premises as well as public consumption within NParks’ facilities. The rise in visitorship to our parks and gardens over the past few years, coupled with the development of new green spaces and infrastructure, has led to an increase in NParks’ total water consumption. Our total building water consumption has also shown an upward trend from FY2021 to FY2023, attributable to the return of more employees to the workplace post Covid-19. Consequently, our WEI has increased, due to the increase in the number of staff and visitors to our premises. As we continue to expand and enhance our green spaces, we endeavour to better steward our water resources by rolling out more water conservation measures, including equipping newly developed infrastructure with rainwater harvesting systems and exploring the use of smart water monitoring systems.

Waste generation

Target: 30% reduction in Waste Disposal Index (WDI) by 2030, compared to 2022 levels

Performance

	2030 TARGET	BASELINE (2022)	FY2023
WDI (kg/person/day)	0.256	0.365	0.399
Total waste (kg) ⁸	NA	847,197	850,740

NParks’ total waste has increased slightly from FY2022 to FY2023, due to the increased number of staff and visitors to our premises. To reduce our waste generation, we will continue to focus on optimising our operations, digitising paper-based processes, and recycling horticultural and other types of waste.

6 WEI is calculated by dividing water consumption per day by the total number of staff and visitors to the premises. Similar to EUI, WEI is calculated for NParks’ standard infrastructure with meaningful GFA (i.e. our offices, laboratories and centres) and excludes green spaces

7 Total building water consumption is similarly calculated for NParks’ standard infrastructure with meaningful GFA

8 NParks’ total waste and WDI are calculated based on only the amount of waste generated by NParks’ non-parkland offices and facilities, as NParks does not have data on the amount of waste generated within parkland, for which disposal is carried out by NEA’s Division of Public Cleanliness (DPC) instead of NParks

FACTS & FIGURES

FY2023

National Day Awards

Note: Staff appointments indicated on this page are accurate as of when the Awards were announced.

Public Administration Medal (Gold)

Mr Er Boon Hwee Kenneth
DEPUTY SECRETARY / PLANNING
(ON SECONDMENT TO MND)
Ministry of National Development

Public Administration Medal (Silver) (Bar)

Mr Tang Tuck Weng
ASSISTANT CHIEF
EXECUTIVE OFFICER
Park Management and Lifestyle Cluster

Public Administration Medal (Silver)

Ms Chua Yen Ling
GROUP DIRECTOR / CORPORATE
STRATEGY AND PLANNING &
PARKS WEST
Corporate Strategy and Planning &
Parks West

Mr Lim Liang Jim
GROUP DIRECTOR / CONSERVATION &
SENIOR DIRECTOR / INTERNATIONAL
BIODIVERSITY CONSERVATION
Conservation & International
Biodiversity Conservation

Public Administration Medal (Bronze)

Dr Wong May Shih Anna
GROUP DIRECTOR / COMMUNITY
ANIMAL MANAGEMENT & SENIOR
DIRECTOR / WILDLIFE TRADE
Community Animal Management &
Wildlife Trade

Ms Ng Sok Hong
DEPUTY DIRECTOR / CUGE
(GREENERY AND PEOPLE)
Industry & CUGE

Ms Ng Hui Bing
DIRECTOR / SERVICE QUALITY
AND ENGAGEMENT
Communications and
Community Engagement

Ms Ng Hui Min Stephanie
DIRECTOR / PARK PLANNING
CENTRAL
Policy and Planning

Commendation Medal

Mr Voon Tin Keat
DEPUTY DIRECTOR /
ENVIRONMENTAL GRAPHIC DESIGN
Parks Development and Design

Mr Lin Rui Long
DEPUTY DIRECTOR / COMMUNITY
ANIMAL MANAGEMENT OPERATIONS
Community Animal Management

Dr Wong Shih Peng
DEPUTY DIRECTOR / JURONG LAKE
GARDENS OPERATIONS & CURATOR
(HORTICULTURE AND COMMUNITY
& JURONG LAKE GARDENS
HORTICULTURE PROGRAMMING &
OUTREACH)
Jurong Lake Gardens

Ms Koh Ee Yong
DEPUTY DIRECTOR / SERVICE QUALITY
Communications and
Community Engagement

Mr Muhamad Shahrizal bin Sihak
DEPUTY DIRECTOR / STREETSCAPE
(NORTH WEST)
Streetscape

Mr Low Bing Wen
SENIOR MANAGER / BIODIVERSITY
(TERRESTRIAL)
National Biodiversity Centre

Ms Tan Huimin Pauline
SENIOR MANAGER / PARKS
(CENTRAL WEST)
Parks Central

Mr Chew Dewei Jerome
DEPUTY DIRECTOR / DEVELOPMENT
MANAGEMENT (NATIONAL PARKS,
GARDENS AND NATURE RESERVES)
Fort Canning Park and Istana

Efficiency Medal

Mr Muhammad Khairi bin Doroham
MANAGER /
BUKIT TIMAH NATURE RESERVE
Conservation

Mr Mohamad Riduan Ghazali
SENIOR MANAGER / JURONG LAKE
GARDENS OPERATIONS
Jurong Lake Gardens

Ms Chan Yin Peng
SENIOR EXECUTIVE / INVESTIGATION
Enforcement and Investigation

Mr Huang Yihe
SENIOR EXECUTIVE /
COMMUNICATIONS
Communications and
Community Engagement

Long Service Medal

Ms Ang Wei Ping
GROUP DIRECTOR /
POLICY AND PLANNING
Policy and Planning

Ms Ang Chiean Hong
COORDINATING DIRECTOR /
PARKS DEVELOPMENT
Parks Development and Design

Mr Boyd Leon Luis
SENIOR TECHNICAL OFFICER /
PLANT SCIENCE AND HEALTH
Horticulture and Community

Ms Chan Hwee Chuang
ASSISTANT /
OFFICE ADMINISTRATION
Corporate Services

Ms Chew Wei Yen Stephanie
SENIOR MANAGER / EMERGENCY
PLANNING AND RISK MANAGEMENT
Corporate Strategy and Planning

Dr Charlene Judith Fernandez
GROUP DIRECTOR / PROFESSIONAL
AND SCIENTIFIC SERVICES &
DIRECTOR / CENTRE FOR ANIMAL
AND VETERINARY SCIENCES
Professional and
Scientific Services Division

Mr Gwee Aik Teck
SENIOR OFFICER / PLANT RECORDS
Singapore Botanic Gardens

Mr Joshua Teoh Ken Ne
DIRECTOR / ENFORCEMENT
AND INVESTIGATION
Enforcement and Investigation

Mr Raja Muhammad Khalid bin Raja Adnan
SENIOR RANGER / TACTICAL
Enforcement and Investigation

Ms Seri Hayuni binte Hadi
SENIOR EXECUTIVE / EDUCATION
Singapore Botanic Gardens

Ms Sheralee binte Mohamed Saniff
MANAGER / GREENERY AND
DEVELOPMENT PLANNING
Policy and Planning Division

Ms Tan Beng Yen
MANAGER / PARKS (SOUTH EAST)
Parks East

Mr Chia Kim Huat Paul
DIRECTOR / PROSECUTION
Professional Development and Services

Awards and Accolades

Excellent Service Award

Attractions
6 STAR, 9 GOLD AND 6 SILVER

IT Awards

ESRI Special Achievement in GIS (SAG)
Awarded in recognition for the development of its Tree Management System for the management of urban trees in public housing estates

May Day Awards 2024

Model Worker
Mr Peter Tan Poh Tai
EXECUTIVE /
SECURITY MANAGEMENT
Singapore Botanic Gardens

MND Minister's Award 2023

Completion of Central Nature Park Network with the opening of Rifle Range Nature Park

Interagency Efforts to Enhance Singapore's Biosecurity Framework and Combat Illegal Wildlife and Animal Trade

Municipal Services Awards 2023

Love Our 'Hood Category
CREATING A SAFER, CLEANER AND
CONNECTED KAMPONG GELAM
TEAM TRAP-NEUTER-RELEASE-MANAGE

Community Category
OTTER-PROOFING TOWARDS
COEXISTENCE IN SELETAR HILLS
ESTATE

Team Category
3P PARTNERSHIP OPENS UP NEW
3-GENERATION RECREATIONAL AREA
FOR JOO CHIAT RESIDENTS
PAINTING OF D-MARKINGS AND
ENFORCEMENT TO TACKLE RECKLESS
CYCLING ALONG PAYA LEBAR ROAD

PST Awards 2023

Exemplary SkillsFuture @ Public Service Award

Mr Daniel Teo
SENIOR MANAGER / PARKS
(SOUTH WEST)
Parks West

Others

Community Chest Bronze Award 2023

MINDEF NS Mark (Gold) 2023

FACTS & FIGURES FY2023

CUGE Training Programmes

The Centre for Urban Greenery and Ecology (CUGE) was established by NParks as a regional centre of excellence to advance an urban and green living environment, as well as a one-stop training and knowledge hub in urban greenery and ecology.

Workforce Skills Qualification (WSQ) Courses

WSQ Courses for Landscape Workers (Level 1)

- Plant Health Management and Disease Control
- Plant Identification
- Plant Pruning

WSQ Courses for Landscape Technicians (Level 2)

- Chainsaw Operation and Maintenance
- Hazards and Risk Control, and Policy Management*
- Horticultural Chemical Usage*
- Plant Health Management and Disease Control*
- Plant Propagation and Production
- Plant Pruning*
- Soil and Media Assessment and Remediation
- Tree Health Management
- Tree Pruning
- Tree Climbing and Aerial Rescues
- Turf Maintenance*

WSQ Courses for Landscape Supervisors (Level 3)

- Hazards and Risk Control, and Policy Management
- Plant Health Management and Disease Control
- Plant Identification
- Soil and Media Assessment and Remediation

WSQ Courses for Landscape Managers (Level 4)

- Budgeting
- Environmental Management in Landscape Operations
- Hazards and Risk Control, and Policy Management
- Horticultural Chemical Usage
- Horticultural Maintenance Programme
- Plant Health Management and Disease Control
- Project Management

* Programmes with Assessment-Only Pathway (AOP)

Workshops

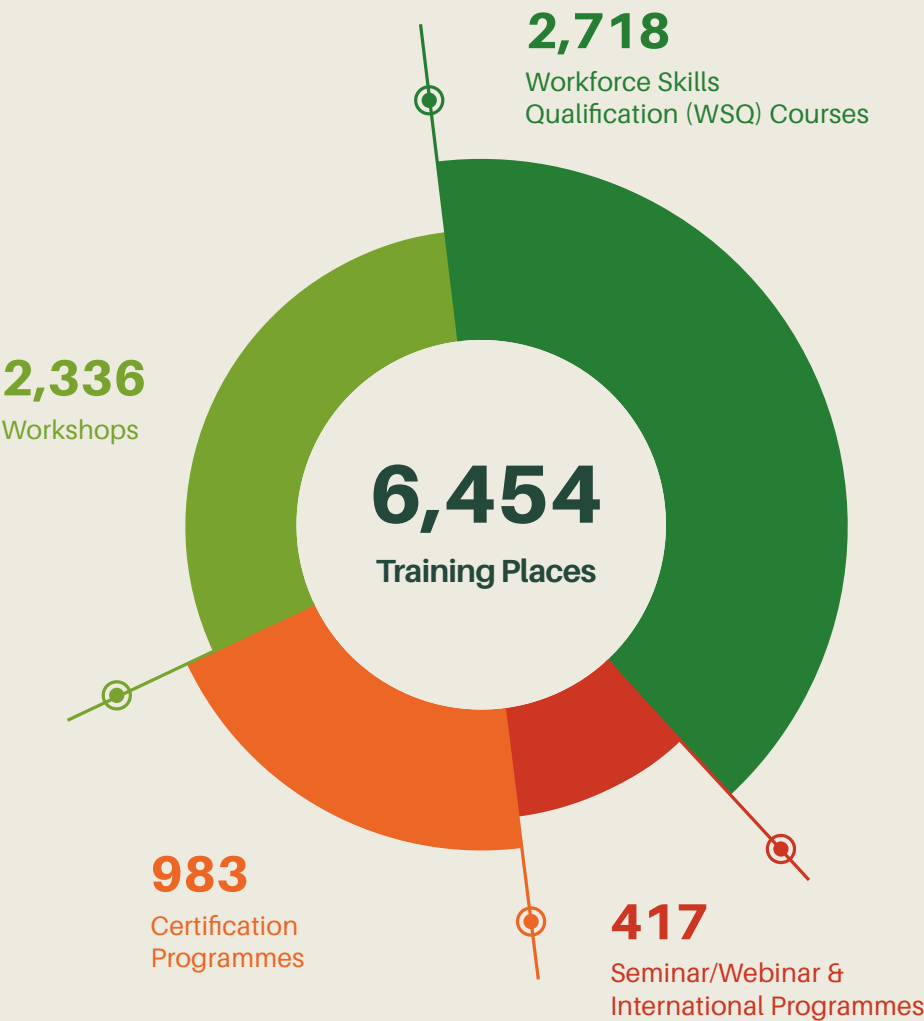
- Animal Movement Analyses
- Applied Hierarchical Modelling of Species Distribution and Abundance
- Designing Therapeutic Horticulture Programmes for Children with Special Needs
- Formative Pruning for Young Trees
- From Theory to Practice with the Contemplative Landscape Model
- Fundamental Tree Management Programme
- Landscape Safety Orientation Programme (Bengali)
- Landscape Safety Orientation Programme (English)
- Landscape Safety Orientation Programme (Tamil)
- Mountain Bike Trail Workshop
- Playground Safety Management Workshop
- Pneumatic Blowpipe and Dart Gun New Operator Course
- Resistance Drilling Equipment
- Therapeutic Garden Design
- Tree Failure Profiling for Common Urban Trees of Singapore
- Tree Felling
- Tree Inspection — Advanced
- Tree Inspection — The Basics
- Tree Inspection Using Resistograph and PiCUS Sonic Tomography
- Trees & Construction — Understanding the Arboriculture Impact
- Unmanned Aircraft Practical Handling

Certification Programmes

- Animal Health Professional Certification Programme (Refresher)
- Animal Management Certification Programme Basic (Refresher)
- Animal Management PCP Intermediate Elective Community Animals — Cat
- Animal Management PCP Intermediate Elective Community Animals — Dog
- Animal Management PCP Intermediate Elective — Mammals
- Animal Management PCP Intermediate Elective — Reptiles
- Animal Welfare and Behaviour
- Certificate in Basic Plant Recognition Programme (Module 1 to 10)
- Certified Playground Safety Inspector Course and Examination
- Certified Practising Horticulturist Assessment-Only Pathway*
- Certified Practising Horticulturist Programme
- ISA Certified Arborist Exam
- ISA Certified Arborist Preparatory Programme
- ISA Certified Tree Worker Climber Specialist Preparatory Programme
- ISA Tree Risk Assessment Qualification Programme
- ISA Tree Risk Assessment Qualification (TRAQ) Renewal
- Refresher for ISA Arborist
- Skyrise Greenery Certification

Seminar/Webinar & International Programmes

- Animal Management PCP Intermediate Elective — Wildlife Management in Development
- Study Visit on Singapore's Greenery and Nature Conservation Effort for Chinese University of Hong Kong EMBA
- Therapeutic Power of the Urban Green Spaces: Design and Assessment with Contemplative Landscape Model
- Tree Decay — The Fundamentals
- Tree Inspection — Failure Documentation & Analysis
- Tropical Tree Identification, Biology & Physiology
- Technical Deep Dive on Urban Heat



FACTS & FIGURES FY2023

(AS OF 31 MARCH 2024)

Regional Parks and Greenery Maintained by NParks

NUMBER OF REGIONAL PARKS	
88	
NUMBER OF NEIGHBOURHOOD PARKS	
317	

TOTAL AREA MAINTAINED	AREA (HA)
Parks, playgrounds, open spaces, fitness corners and park connectors*	3,326.02
Nature Reserves (Gazetted)	3,347
Istana and Parliament House Grounds	42
Roadside Greenery	5,161.78
State Land Greenery as of Mar 2024**	4,381.89

TOTAL MILEAGE OF PARK CONNECTORS MAINTAINED, INCLUDING SPACE BETWEEN: 387 KM

Plant Health

IMPORT, PERMITS AND INSPECTIONS	
Import permits issued	52,150
Post-entry inspections conducted	496

Animal Health & Welfare

LICENCES, PERMITS, AND HEALTH CERTIFICATES ISSUED FOR ANIMAL IMPORTS	
Animals (excluding livestock)	4,921
Biologics	203
Birds	137
Eggs for research	0
Products (blood, sera, urine, clinical specimens)	1,791
Ornamental fish (export health certificates)	3,384
Ornamental fish (import permits)	5,599
TOTAL	16,035

LICENSING VETERINARIANS AND VETERINARY CENTRES	
Number of veterinarians	579
Number of veterinary centres	113

DOG LICENSING AND ENFORCEMENT	
Dog licences issued	~90,000
New licences	~15,000
Renewed licences (includes multi-year licences)	~75,000

TYPES OF ANIMAL DISEASE SURVEYED IN LOCAL FAMRS	
Captive bird farms surveyed <ul style="list-style-type: none">• Avian influenza• Newcastle disease	3
Ornamental fish farms surveyed <ul style="list-style-type: none">• <i>Aeromonas salmonicida</i>• Chytrid fungus• Epizootic haematopoietic necrosis virus• Infectious haematopoietic necrosis virus• Infectious spleen and kidney necrosis virus• Koi herpes virus• Megalocytivirus• Spring viraemia carp virus• Viral haemorrhagic septicaemia• White spot disease	48

NPARKS' ANIMAL BIOSURVEILLANCE PROGRAMMES	
<ul style="list-style-type: none">• <i>Aeromonas salmonicida</i>• African swine fever• Anaplasmosis• Antimicrobial resistance• Avian influenza• Babesiosis• Bluetongue• Bovine tuberculosis• Brucellosis• Campylobacteriosis• Canine distemper• Chytridiomycosis• Classical swine fever• Contagious bovine pleuropneumonia• Coronaviruses• Cryptococcosis• Cryptosporidiosis• <i>Escherichia coli</i> O157:H7• Ehrlichiosis• Epizootic ulcerative syndrome• Foot-and-mouth disease• Heartworm• Koi herpes virus• Leishmaniosis• Leptospirosis• Lyme disease• Newcastle disease• Nipah virus disease• Parvovirus• <i>Plasmodium knowlesi</i>• Psittacosis• Rabies• Rickettsial disease• Spring viraemia of carp virus• Swine influenza• Toxoplasmosis• White spot disease	

* Excludes Bukit Timah Nature Reserve, Central Catchment Nature Reserve, Sungei Buloh Wetland Reserve and Labrador Nature Reserve which have been computed under "Nature Reserves".

** Greenery on vacant land taken over from agencies

CORPORATE GOVERNANCE FY2023

Board Members

NParks is overseen by a Board comprising 11 members. All Board members are non-executive members, except the Chief Executive Officer. The Board derives its strength from the extensive and complementary backgrounds, qualifications and experience of its members.

The Board provides strategic direction and guidance on policies and strategies relating to NParks' vision, mission, objectives, and performance of its functions. In addition, it oversees NParks' operating and financial performance, taking into account NParks' budget, expenses, assets, transactions and projects.

In discharging its duties, the Board is supported by the following committees:

Audit Committee

The Audit Committee comprises four non-executive Board members. It plays a key role in ensuring a high standard of corporate governance through independent reviews of internal controls, financial reporting processes and financial risks. In addition, the Audit Committee reviews the audited financial statements, as well as the audit plans and observations of external and internal auditors, and reviews the effectiveness of internal audit.

Operations Risk Committee

The Operations Risk Committee comprises three non-executive Board members, including the Chairman of the Board. Its role is to provide strategic oversight of NParks' operations risk management framework and conduct reviews of NParks' operations risks. The Operations Risk Committee also oversees the implementation of risk mitigation plans, policies and practices.

Human Resource and Compensation Committee

The Human Resource and Compensation Committee comprises three non-executive Board members. Its role is to review key human resource policies and provide strategic oversight of related risks.

Chairman
Ms Shantini Ramachandra

Members
Mr Musa Fazal
Mr Gerald Tan
Ms Eu Chin Fen

Chairman
Mr Benny Lim
(Until 30 September 2023)
Mr Loh Khum Yean
(From 1 October 2023)

Members
Ms Tham Loke Kheng
Mr Lee Chee Koon

Chairman
Mr Cheng Hsing Yao

Members
Prof David Chan
Ms Nur Hidayah Abu Bakar

Garden City Fund Management Committee

The Garden City Fund Management Committee manages and administers the Garden City Fund, a registered charity and an Institution of a Public Character, to plan, develop, promote and manage the Garden City Fund in accordance with its Trust Deed.

Please refer to page 40 for the work of the Garden City Fund in the year in review.

Board's Conduct of Its Affairs

The Board meets four times a year and as and when necessary to address any significant matters that may arise. To enable the Board to fulfil its responsibilities, the Management Team provides the Board members adequate information during Board meetings and on an ongoing basis. The Board also has direct and independent access to the Management Team if further information and explanation are required.

Code of Conduct

Members of the Board are guided by a set of key principles and guidelines to ensure fairness and impartiality when they carry out their responsibilities, as well as to uphold the integrity and reputation of the Public Service, including adhering to the Public Sector (Governance) Act 2018.

Accountability and Audit

The Board's accounts are audited by the Auditor-General or such other auditor who may be appointed annually by the Minister in consultation with the Auditor-General. The auditor engaged for the financial year which ended on 31 March 2023 was Foo Kon Tan LLP. The audited financial statements and the auditor's report were submitted to the Board and the Ministry of National Development, and also presented to Parliament.



Garden stream in the Istana

Internal Control Framework

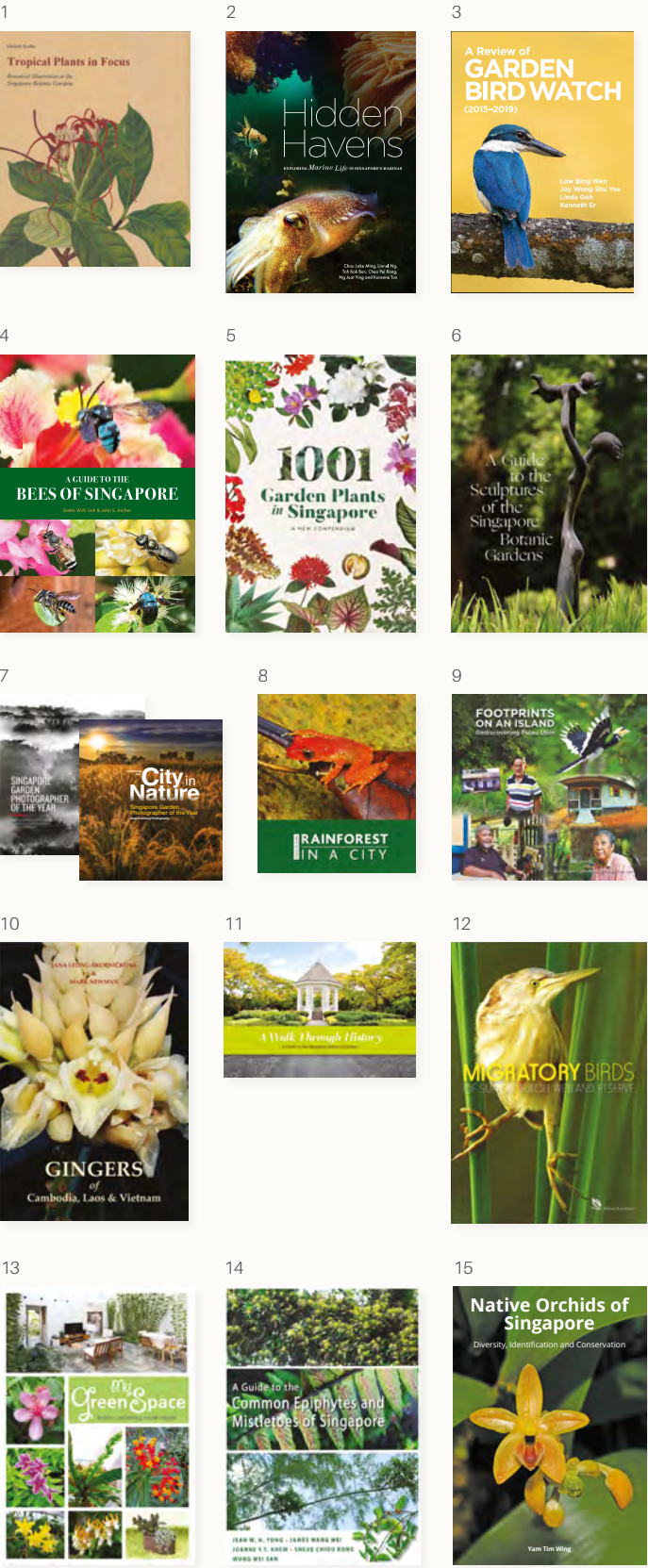
NParks' internal control system ensures that assets are safeguarded, proper accounting records are maintained, and financial information is reliable. The overall control framework includes:

- An organisation structure with clearly defined authority and delegation limits and reporting mechanisms to higher levels of management and to the Board;
- An annual budgeting and quarterly financial reporting system for all operating units that enables progress against annual plans and objectives to be monitored;
- Compliance with the provisions of the National Parks Board Act 1996, Statutory Board Financial Reporting Standards, Government Instruction Manuals, Finance and PSD Circulars and Minutes for policies and procedures related to operations, human resource management and financial controls and regulations; and
- A risk management framework which ensures close monitoring with proper mitigating measures for all identified high-risk areas.

PUBLICATIONS

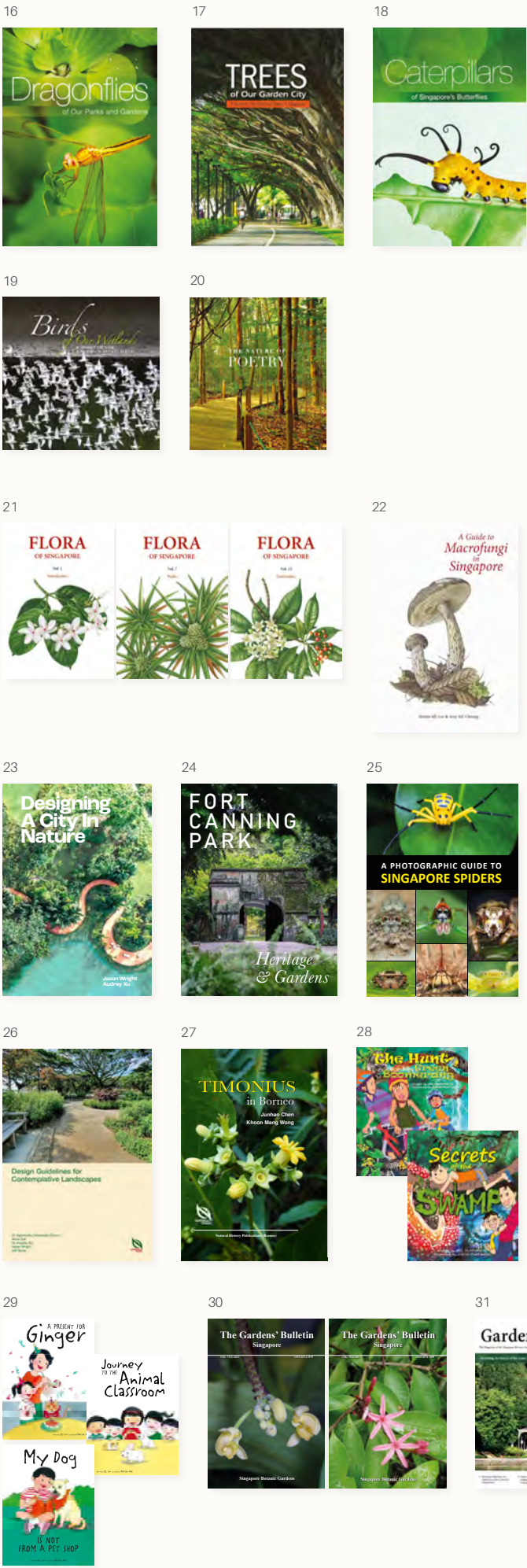


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Books

- Tropical Plants in Focus: Botanical Illustration at the Singapore Botanic Gardens**
By Michele Rodda
- Hidden Havens: Exploring Marine Life in Singapore's Marinas**
By Chou Loke Ming, Lionel Ng, Toh Kok Ben, Cheo Pei Rong, Ng Juat Ying and Karenne Tun
Published in collaboration with NUS.
- A Review of Garden Bird Watch (2015–2019)**
By Low Bing Wen, Joy Wong Shu Yee, Linda Goh and Kenneth Er
- A Guide to the Bees of Singapore**
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- 1001 Garden Plants in Singapore: A New Compendium**
By Soh Weijing, Tamako Kobayashi, Dr Jennie Tang, Jessica Teo, Pauline Tay and Low Wei Teng
- A Guide to the Sculptures of the Singapore Botanic Gardens**
By Grace Lee, Ada Davis, Tan Miao Yuan and Tan Wan Xin
- Singapore Garden Photographer of the Year & Celebrating Our City in Nature: Singapore Garden Photographer of the Year**
Edited by Wong Tuan Wah, Linda Goh, Ada Davis and Victoria Cheong
Singapore Garden Photographer of the Year won the Grand Award in the 2016 APEX Awards for Publication Excellence under the category of One-of-a-Kind Publication (Green).
- Rainforest in a City**
By Chua Ee Kiam
Won the Bronze medal in the 2015 Independent Publisher Book Awards under the category of Environment/Ecology/Nature, and the Silver award in the 2015 Nautilus Book Awards under the category of Ecology Environment.
- Footprints on an Island: Rediscovering Pulau Ubin**
By Chua Ee Kiam, Choo Mui Eng and Wong Tuan Wah
Won the Nautilus 2016 Silver Award in the Multicultural & Indigenous category, and was recognised in the One-of-a-Kind Publication (Green) category at the 30th Annual APEX Awards for Publication Excellence competition.
- Gingers of Cambodia, Laos & Vietnam**
By Jana Leong-Skornicková and Mark Newman
- A Walk Through History: A Guide to the Singapore Botanic Gardens**
By Nigel Taylor and Ada Davis
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By James Gan, Mendis Tan and David Li
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By Serena M.L. Lee and Amy M.F. Choong
- Designing a City in Nature**
By Jason Wright and Audrey Xu
- Fort Canning Park: Heritage and Gardens**
By Chng Mun Wye and Sara-Ann Ang
- A Photographic Guide to Singapore Spiders**
By Joseph K.H. Koh, David J. Court, Chris S.P. Ang and Paul Y.C. Ng
- Design Guidelines for Contemplative Landscapes**
By Agnieszka Olszewska-Guizzo, Alicia Soh, Dr Angella Sia, Jason Wright and Jeff Seow
- Timonius in Borneo**
By Junhao Chen and Khoon Meng Wong
- The Hunt for the Green Boomerang, Secrets of the Swamp**
By Neil Humphreys and illustrated by Cheng Puay Koon
Secrets of the Swamp won the Best Book award for 6-8 year olds in the 2014 Harper's Bazaar Junior Toy Awards.
- A Present for Ginger, My Dog is Not from a Pet Shop, Journey to the Animal Classroom**
By Jill Lim and illustrated by Patrick Yee

Journals

- The Gardens' Bulletin, Jun 2023 & Nov 2023**

Periodicals

- Gardenwise, Sep 2023 & Feb 2024**
- CITYGREEN, Issue 21**
The CUGE publication *CITYGREEN* won APEX Awards for Publication Excellence for 11 consecutive years (2012–2022).

STAFF PUBLICATIONS

Books

Antonelli, A. et al. (180 authors including **Hu, A.Q.**). (2023). *State of the World's Plants and Fungi*. Royal Botanic Gardens, Kew.

Chan, L., Ng, D. & Lim, L.J. (2023). *Handbook on Habitat Restoration: General Principles and Case Studies in Singapore*. National Parks Board, Singapore.

Neo, L. (2023). *The Endemic Plant Genera of Borneo*. Natural History Publications (Borneo) in association with National Parks Board Singapore.

Book Chapters

Leong-Škorníčková, J. & Saensouk, S. (2023). Curcuma. In: Newman, M. & Sangvirodtjanapath, S. *Flora of Thailand*, 16, 2 (pp. 415–476, plates LII–LVI). Forest Herbarium, Royal Forest Department.

Plowright, R. & **Lim, K.** (2024). How the Past Informs the Future: Opportunities in Southeast Asia to Prevent and Respond to Zoonotic Spillover. In: *Guidelines for Countering Zoonotic Spillover of High Consequence Pathogens (HCPs) in the Southeast Asia Region*. International Network for Governmental Science Advice (INGSA) Asia.

Journal Articles

Ali Ibrahim, Chong, R., Soh, S.Y., Muhammad Khairuldin Aziz, Tan, P.Y.L., Tan, J.S.Y. & Chong, K.Y. (2023). Biodiversity Record: *Rediscovery of Engelhardia serrata* in Singapore. *Nature in Singapore*, 16: e2023047.

Ang, S. B., Lam, W. N., Png, G. K., Tan, S. K., **Lee, B. P. H., Khoo, M.**, Luskin, M.S., Wardle, D.A. & Slade, E.M. (2023). Isopod mouthpart traits respond to a tropical forest recovery gradient. *Oecologia*, 1–13. <https://doi.org/10.1007/s00442-023-05494-8>

Ardi, W.H. & **Thomas, D.C.** (2023). Three new species of Begonia from the outer islands of Southeast Sulawesi. *Edinburgh Journal of Botany*, 80: Article 1980, 1–17.

Bai, L., Xia, N.H. & **Leong-Škorníčková, J.** (2024). Typification of names relevant to a revision of *Zingiber* (Zingiberaceae) in China. *Taxon*, 72(2): 586–614. <https://doi.org/10.1002/tax.13115>

Basumatary, S., **Rodda, M.** & Baruah, S. (2023). Morphological variation of *Heterostemma alatum* (Apocynaceae, Asclepiadoideae). *Journal of Japanese Botany*, 98(6): 319–323.

Chan, A.H.J., Gardner, M.G. & Linacre, A. (2023). Visualisation and detection of latent DNA deposited by dried pangolin scales. *Forensic Science International: Genetics*. <https://doi.org/10.2139/ssrn.4455560>

Chan, P.J., Athen, P., Ng, X.Y. & Chong, K.Y. (2023). Biodiversity Record: Litsea ferruginea in the Central Catchment Nature Reserve. *Nature in Singapore*, 16: e2023049.

Chan, M.E., Tan, J.Y., Lee, Y.Y., **Lee, D.**, Fong, Y.K., Mutwil, M. & Hong, Y. (2023). Locally Isolated *Trichoderma harzianum* Species Have Broad Spectrum Biocontrol Activities Against the Wood Rot Fungal Species through Both Volatile Inhibition and Mycoparasitism. *Journal of Fungi*, 9(6), 675. <https://doi.org/10.3390/jof9060675>

Chen, A., Boulay, M., Chong, S., Ho, K., Chan, A., Ong, J., **Fernandez, C.J., Chang, S.F. & Yap, H.H.** (2023). Suspected clinical toxoplasmosis in a 12-week-old puppy in Singapore. *BMC Veterinary Research*, 19(1): 110. <https://doi.org/10.1186/s12917-023-03674-5>

Chen, J., Hoo, P.K. & **Wong, K.M.** (2023). *Chewlunia* (Guettardeae: Rubiaceae), a new genus from Borneo and the Philippines. *Sandakania*, 24: 31–38.

Chen, P.Z., Goh, M.R.X., Ong, E.S.N. & Chen, A.G.Y. (2023). Piloting a criterion-based and in-cage behavioural monitoring approach in assessing the sociality of shelter cats towards humans. *Applied Animal Behaviour Science*, 265: 105967. <https://doi.org/10.1016/j.applanim.2023.105967>

Chisholm, R.A., Kristensen, N.P., Rheindt, F.E., **Chong, K.Y.**, Ascher, J.S., Lim, K.K.P., Ng, P.K.L., Yeo, D.C.J., Meier, R., Tan, H.H., Giam, X., **Yeoh, Y.S., Seah, W.W.**, Berman, L.M., Tan, H.Z., Sadanandan, K.R., Theng, M., Jusoh, W.F.A., Jain, A., Huertas, B., Tan, D.J.X., Ng, A.C.R., Teo, A., Zeng, Y., Cho, T. & Sin, K.Y.C. (2023). Two centuries of biodiversity discovery and loss in Singapore. *Proceedings of the National Academy of Sciences, USA*, 120: Article e2309034120.

Chong, S.Q., Yeo, D., Aidil, N.I., Ong, J.L., Chan, A.H., Fernandez, C.J., Lim, B.T., Khoo, M.D., Wong, A.M., Chang, S.F. & Yap, H.H. (2023). Detection of a novel Babesia sp. in *Amblyomma javanense*, an ectoparasite of Sunda pangolins. *Parasites & Vectors* Nov 22, 16(1): Article 432.

Dai, Q., Lee, Y.H., Sun, H.H., Ow, G., **Yusof, M.L.M.** & Yucel, A.C. (2023). 3DInvNet: A Deep Learning-Based 3D Ground-Penetrating Radar Data Inversion. *IEEE Transactions Geoscience and Remote Sensing*, 61: 1–16, Article. 5105016. <https://doi.org/10.1109/TGRS.2023.3275306>

Er, K.B.H., Chong, K.Y., Choo, T.Y.S., Middleton, D.J. & Tan, P.Y. (2023). Establishing a network of long-term forest monitoring plots in Singapore. *Gardens' Bulletin Singapore*, 75(1): 1–20.

Gardner, E.M., Bruun-Lund, S., **Niissalo, M.A.**, Chantarasuwanc, B., Clement, W.L., Geri, C., Harrison, R.D., Hipp, A.L., Holvoet, M., **Khew, G.S.**, Kjellberg, F., Liao, S., Pederneiras, L.C., Peng, Y.Q., Pereira, J.T., Philipps, Q., Puad, A.S.A., Rasplus, J.Y., Sang, J., Schou, S.J., **Velautham, E.**, Weiblen, G.D., Zerega, N.J.C., Zhang, Q., Zhang, Z., Baraloto, C. & Rønsted, N. (2023). Echoes of ancient introgression punctuate stable genomic lineages in the evolution of figs. *Proceedings of the National Academy of Sciences (PNAS)*, 120(28): Article e02222035120.

Hazell, E.C., Baines, R., Nguyen, V.D. & **Middleton, D.J.** (2023). *Wrightia vietnamensis* (Apocynaceae), a new species from Vietnam. *Kew Bulletin*, 78: 619–623. <https://doi.org/10.1007/s12225-023-10133-9>

He, J., Ng, K., Qin, L., Shen, Y., Rahardjo, H., Wang, C.L., Kew, H.L., Chua, Y.C., **Poh, C.H. & Ghosh, S.** (2024). Photosynthetic Gas Exchange, Plant Water Relations and Osmotic Adjustment of Three Tropical Perennials During Drought Stress and Re-watering. *PLOS ONE*, 19(2): Article e0298908. <https://doi.org/10.1371/journal.pone.0298908>

Ho, B.C. & Ong, M.W.S. (2023). *Desmodium tortuosum* (Fabaceae), a non-indigenous legume species new to Singapore. *Nature in Singapore*, 16: e2023075.

Ho, C., Dehaudt, **B., Lee, B.P.**, Tan, H.Y.R. & Luskin, M.S. (2023). Recolonizing native wildlife facilitates exotic plant invasion into Singapore's rain forests. *Biotropica*, 55(5), 1033–1044. <https://doi.org/10.1111/btp.13251>

Hong, Y., Tan, J.Y., Xue, H., Chow, M.L., Mohamed Ali, Ng, A., Leong, A., **Yeo, J.**, Koh, S.M., Tang, M.S.Y., Lee, Y.Y., Choong, A.M.F., Lee, S.M.L., Ponti, R.D., Chan, P.M., **Lee, D.**, Wong, J.Y., Marek Mutwil & Fong, Y.K. (2023). A Metagenomic Survey of Wood Decay Fungi in the Urban Trees of Singapore. *Journal of Fungi*, 9, 4: Article 460.

Hoo, P.K., Sugumaran, M. & **Wong, K.M.** (2023). Two new species of Timonius (Rubiaceae: Guettardeae) from the Malay Peninsula. *Phytotaxa*, 599(3) 171–182.

Hua, F., Wang, W., Nakagawa, S., Liu, S., Miao, X., Yu, L., Du, Z., Abrahamczyk, S., Arias-Sosa, L.A., Buda, K., Budka, M., Carrière, S.M., Chandler, R.B., Chiatante, G., Chiawo, D. O., Cresswell, W., Echeverri, A., Goodale, E., Huang, G., Hulme, M.F., Hutto, R.L., Imboma, T.S., Jarrett, C., Jiang, Z., Kati, V.I., King, D.I., Kmecl, P., Li, N., Lövei, G.L., Macchi, L., MacGregor-Fors, I., Martin, E.A., Mira, A., Morelli, F., Ortega-Alvarez, R., Quan R.-C., Salgueiro, P.A., Santos, S.M., Shahabuddin, G., Socolar, J.B., **Soh, M.C.K.**, Sreeker, R. Srinivasan, U., Wilcove, D.S., Yamaura, Y., Zhou, L. & Elsen, P.R. (2024). Ecological filtering shapes the impacts of agricultural deforestation on biodiversity. *Nature Ecology & Evolution*, 8, 251–266. <https://doi.org/10.1038/s41559-023-02280-w>

Ip, Y.C.A., Tan, A., Ong, J., Fernandez, C.J., Lau, C., Wong, W. K., Chang, S.F., Yap, H.H. & Er, B.H. K. (2023). Anthropogenic transmission of SARS-CoV-2 from Humans to Lions in Singapore, 2021. *Emerging Infectious Diseases*, 29(12): 2550–2553. <https://doi.org/10.3201/eid2912.221916>

Koh, E.Y., Ong, J., Wang, Y., Toh, X., Fernandez, C.J., Huangfu, T., Hall, R.N., Toh, S., Lim, K., Sng, W., Lim, H.P., Ho, K., Chang, S.F. & Yap, H.H. (2023). Rabbit Haemorrhagic Disease Virus 2 (RHDV) from Singapore, 2020 Outbreak Revealed an Australian Recombinant Variant. *Virus Evolution*, 9(1): vead029. <https://doi.org/10.1093/ve/vead029>

Koh, E.Y., Tan, K.S.A., Yeo, D., Lau, C., Tan, L.Y., Ng, O.W., Ong, J., Chong, S., Toh, S., Chen, J., Wong, W.K., Tan, Z.Y.B., Lee, C., Heng, Z.P., Liang, I., Fernandez, C.J., Chang, S.F. & Er, B.H.K. (2023). Detection of African Swine Fever Virus from Wild Boar, Singapore, 2023. *Emerging Infectious Diseases*, 29(12): 2580-2583. <https://doi.org/10.3201/eid2912.230966>

Kuang, Y.F., Jia, R., **Rodda, M.**, Zhang, J., Xia, M., Wu, C. & Liao, J. (2024). Morphological diversity and evolutionary changes of pollinaria in Hoya (Marsdenieae: Apocynaceae). *Botanical Journal of the Linnean Society*. <https://doi.org/10.1093/botlinnean/boae011>

Kurzweil, H., Ormerod, P. & C. Sathish Kumar. The genus *Habenaria* (Orchidaceae) in Myanmar. *Thai Forest Bulletin*, 51(2): 98–156.

Lai, S., Teo, T.Z.Z., Rullyanto, A., **Low, J., Tun, K.**, Todd, P.A. & Yaakub, S.M. (2024). *Ecological Modelling*, 487: 110528.

Lee, J.X.Q., **Soh, Z.W.W.**, Chui, S.X., Leong, A.Q., Ong, C.N. & Ascher, J.S. (2023). Hornets (Vespidae: Vespinae) of Singapore: ecology, identification, and national conservation assessment. *Raffles Bulletin of Zoology*, 71: 457–477. <https://doi.org/10.26107/RBZ-2023-0034>

Lee, S.M.L., Helfer, S. & Watling, R. (2023). Defining Xerocomus s.str. (Boletaceae) in Malaysia. *Journal of Tropical Biology and Conservation*, 20: 27–43. <https://doi.org/10.51200/jtbc.v20i.4639>

Leong-Škorníčková, J., Nguyen, Q.B., Tran, H.D., Zaveska, E., Bui, H.Q., Tran, D.B., Ye, X.E., Khang, S.N., Kuznetsov, A.N., Kuznetsova, S. & Nuraliev, M. (2023). A key to *Meistera* (Zingiberaceae: Alpinioideae) in Cambodia, Laos and Vietnam, with description of a new species, *M. muriformis*. *Phytotaxa*, 618 (2): 149–160.

Leong-Škorníčková, J., Soonthornkalump, S., Lindstrom, A., Niwesrat, S., Lim, S.Q. & Suksathan, P. (2023). *Curcuma maxwellii* and *C. rubroaurantiaca* (Zingiberaceae: Zingiberoideae), two new species from Thailand. *Phytokeys*, 235: 237–248. <https://doi.org/10.3897/phytokeys.235.111400>

Li, Y.-L., Nie, L.-Y., Deng, S.-W., Duan, L., Wang, Z.-F., Charboneau, J.L.M., **Ho, B.-C.** & Chen, H.-F. (2024). Characterization of *Firmiana danxiaensis* plastomes and comparative analysis of *Firmiana*: insight into its phylogeny and evolution. *BMC Genomics*, 25: Article 203. <https://doi.org/10.1186/s12864-024-10046-2>

Lim, K.N., Soh, M.C.K., Leong, D., Loo, A.H.B., Lee, B.P.Y. H. & Er, K.B.H. (2023). Proximity to antropogenic food sources determine roosting and nesting prevalence of feral pigeons (Columbia livia) in a tropical city. *Ecological Solutions and Evidence*, Article e12234.

Low, Y.W., Wanma, J.F., **Bazilah Ibrahim**, Heatubun, C.D. & Albert, V.A. (2023). Taxonomic appraisal of *Fagraea ceilanica* (Gentianaceae), and description of a new tree species from the Bird's Head Peninsula, western New Guinea. *Candollea*, 78(2): 167–175. <https://doi.org/10.15553/c2023v782a8>

Loy, R.H.Y., Cheo, P.R., **Lai, S.**, Leong, B., & **Tun, K.** (2024). Citizen science monitoring uncovers resilience of intertidal assemblages in a tropical urban environment. *Bulletin of Marine Science* (In Press). doi: h10.5343/bms.2023.0104

Luo, W., Lee, Y.H., Ow, L.F., **Yusof, M.L.M.** & Yucel, A.C. (2023). Slice-Relation-Clustering Framework via Horizontal Angle Information for 3-D Tree Roots Reconstruction. *IEEE Transactions on Geoscience and Remote Sensing*, vol61: 1–10, Article 4502110. <https://doi.org/10.1109/TGRS.2023.3272743>

Luo, W., Lee, Y.H., **Yusof, M.L.M.** & Yucel, A.C. (2023). A Depth-Adaptive Filtering Method for Effective GPR Tree Roots Detection in Tropical Area. *IEEE Transactions On Instrumentation and Measurement*, 72: 1–10, Article Sequence Number: 8003810. <https://dx.doi.org/10.1109/TIM.2023.3282654>

Lupascu, M., Taillardat, P., Sasmito, S.D., Agus, F., Mudiayoso, D., **Ramchunder, S.J.**, Tata, H.L. & Taylor, D. (2023). Climate smart peatland management and the potential for synergies between food security and climate change objectives in Indonesia. *Global Environmental Change*, 82, 1027–1031.

Middleton, D.J. (2023). Flora of Singapore precursors 39: Notes on Podocarpaceae in Singapore. *Gardens' Bulletin Singapore*, 75(1): 69–71.

Middleton, D.J. (2023). Flora of Singapore precursors 40: Notes on Ericaceae in Singapore. *Gardens Bulletin Singapore*, 75: 177–181.

Middleton, D.J. (2023). Four New species of Gesneriaceae from Vietnam. *Gardens' Bulletin Singapore*, 75: 297–307.

Middleton, D.J. (2023). A new species of *Kopsia* (Apocynaceae) of unknown provenance. *Gardens' Bulletin Singapore*, 75: 315–317.

Middleton, D.J. (2023). A new species of *Paraboea* (Gesneriaceae: Didymocarpoideae) from Myanmar. *Gardens' Bulletin Singapore*, 75: 309–314.

Middleton, D.J. (2023). A new species of *Spelaeanthus* (Gesneriaceae: Didymocarpoideae) from Vietnam. *Edinburgh Journal of Botany*. 80-1993: 1–5. <https://doi.org/10.24823/EJB.2023.1993>

Middleton, D.J. (2023). A revision of *Codonoboea* (Gesneriaceae: Didymocarpoideae) in Thailand. *Gardens' Bulletin Singapore*, 75: 263–296.

Middleton, D.J., Tetsana, N., Suddee, S. & Puglisi, C. (2023). Eight new species of *Microchirita* (Gesneriaceae: Didymocarpoideae) from Thailand. *Thai Forest Bulletin* (Botany). 51(2): 54–70. <https://doi.org/10.20531/tfb.2023.51.2.08>

Mustaqim, W.A., Randi, A., Wijedasa, L.S., Widodo, P., Rivers, M., Lucas, E. & **Low, Y.W.** (2023). *Syzygium setosum* (Myrtaceae), a rare and endangered peat swamp tree in Southeast Asia: Lectotypification, conservation status and a new record in Sumatra. *Candollea*, 78(2): 153–159. <https://doi.org/10.15553/c2023v782a6>

Neo, L. (2023). Lectotypifications of names pertaining to Malesian *Dillenia* and *Tetracera* (Dilleniaceae). *Phytotaxa*, 613 (3): 292–296.

Ng, D.J.J., Li, T., Alisha, D.B.M., Ong, B., Cai, Y. & Er, K.B.H. (2023). Ex-situ conservation of the critically endangered swamp forest crab *Parathelphusa reticulata* Ng, 1990 (Decapoda: Brachyura: Gecarcinucidae): observations on its reproduction and biology in captivity. *Raffles Bulletin of Zoology*, 71: 366–376.

Nguyen, V.C., Truong, B.V., Bohmova, A., Dang, V.S., Nguyen, Q.B., Pham, T.Q., Nguyen, V.K. & **Leong-Škorníčková, J.** (2023). *Chellocostus phuongii* (Costaceae), and unusual new terminally flowering species from central Vietnam. *Kew Bulletin*, Doi 10.1007/s12225-023-10104-0

Niissalo, M.A., Leong, P.K.F., Tay, F.E.L., Choo, L.M., Kurzweil, H. & Khew, G.S. (2023). A new species of *Claderia* (Orchidaceae). *Gardens' Bulletin Singapore*, 75(1): 21–41.

Olszewska-Guizzo, A., **Sia, A.** & Escoffier, N. (2023). Revised Contemplative Landscape Model (CLM): A Reliable and Valid Evaluation Tool for Mental Health-Promoting Urban Green Spaces. *Urban Forestry & Urban Greening*, 86, Article 128016. <https://doi.org/10.1016/j.ufug.2023.128016>

Oscar A. Perez-Escobar et al. (40 authors including **Hu, A.Q.**). (2024) The origin and speciation of orchids. *New Phytologist*, 242(2): 700–716. <https://doi.org/10.1111/nph.19580>

Ow, S.S.Y., Kong, E.Y.L. & Han, H.Z. (2024). Biodiversity Record: A king bird-of-paradise at Windor Nature Park. *Nature in Singapore*, 17: e2024004. doi: 10.26107/NIS-2024-0004

STAFF PUBLICATIONS

Park, D.S., Feng, X., Akiyama, S., Ardiyani, M., Avendaño, N., Barina, Z., Bartschi, B., **Lee, S.M.L.**, ... & Davis, C.C. (2023). The colonial legacy of herbaria. *Nature Human Behaviour*, 1–10.

Phang, A., Pezzini, F.F., Burslem, D.F.R.P., **Khew, G.S., Middleton, D.J.**, Ruhsam, M. & Wilkie, P. (2023). Target capture sequencing for phylogenomic and population studies in the Southeast Asian genus Palaquium (Sapotaceae). *Botanical Journal of the Linnean Society*, 203(2): 134–147. <https://doi.org/10.1093/botlinnean/boad022>

Qi, J., Lin, E.S., **Tan, P.Y.**, Zhang, X., Ho, R., Sia, A., Olszewska-Guizzo, A. & Waykool, R. (2023). Representing the landscape visual quality of residential green spaces in Singapore with 3D spatial metrics. *Urban Forestry & Urban Greening*, 90, Article 128132. <https://doi.org/10.1016/j.ufug.2023.128132>

Qi, J., Lin, E.S., Tan, P.Y., Zhang, X., Ho, R., **Sia, A.**, Olszewska-Guizzo, A. & Waykool, R. (2024). Applying 3D spatial metrics for landscape planning: Creating and measuring landscape scenarios by a point cloud-based approach. *Ecological Informatics*, 79, Article 102436. <https://doi.org/10.1016/j.ecoinf.2023.102436>

Rodda, M., Armstrong, K. & Klackenberg, J. (2024). Apocynaceae of Continental Southeast Asia: new species, new records and new combinations. *Thai Forest Bulletin*, 52(1): 5–20.

Saleh, M.F.R.M., Bandjolu, K.P., Ardi, W.H. & **Thomas, D.C.** (2023). Begonia ranoposensis (Begoniaceae), a new species from Sulawesi, Indonesia. *Taiwania*, 68(2): 180–184

Saul, F., Scharmann, M., Wakatake, T., Rajaraman, S., Marques, A., Freund, M., Bringmann, G., Channon, L., Becker, D., Carroll, E., **Low, Y.W.**, Lindqvist, C., Gilbert, K.J., Renner, T., Masuda, S., Richter, M., Vogg, G., Shirasu, K., Michael, T.P., Hedrich, R., Albert, V.A. & Fukushima, K. (2023). Subgenome dominance shapes novel gene evolution in the decaploid pitcher plant *Nepenthes gracilis*. *Nature Plants*, 9: 2000–2015. <https://doi.org/10.1038/s41477-023-01562-2>

Seah, W.W. (2023). A name change in *Gynochthodes* (Rubiaceae). *Gardens' Bulletin Singapore*, 75(2): 319–320.

Sia, A., Tan, P. Y. & Er, K.B.H. (2023). The Contributions of Urban Horticulture to Cities' Liveability and Resilience: Insights from Singapore. *Plants, People, Planet*, 5(6): 828–841. <https://doi.org/10.1002/ppp3.10377>

Simmelink, B.; Coolen, J.P.M.; Vogels, W.; Deijs, M.; van der Last-Kempkes, J.L.M.; Ng, K.S.; **Chang, S.F.**; Gevers, K.; Harkema, L.; van der Hoek, L.; et al. Discovery, Pathogenesis, and Complete Genome Characterization of Lates calcarifer Herpesvirus. *Genes* 2024, 15, 264. Discovery, Pathogenesis, and Complete Genome Characterization of Lates calcarifer Herpesvirus

Skopalíková, J., **Leong-Škorníčková, J.**, Sída, O., Newman, M. Chumová, Z., Zeisek, V., Jarolimova, V., Poulsen, A., Dantas-Queiroz, M. Fér, T., & Závěská, E. (2023). Ancient hybridization in Curcuma (Zingiberaceae) – Accelerator or brake in lineage diversifications? *The Plant Journal*, 116(3): 773–785. <https://doi.org/10.1111/tpj.16408>

Soh Z.W.W., Soh K.Y., Lim Y.J., & Ascher J.S. (2023). Biodiversity Record: The rare solitary bee, *Lipotriches goniognatha*, and its host plants at Kranji. *Nature in Singapore*, 16: e2023069. doi: 10.26107/ NIS-2023- 0069

St-Hilaire, S.N.; Bastos Gomes, G.; Marques, A.R.P.; **Chang, S.F.**; Brun, E., 9781800621640.0008, CABI, doi:10.1079/9781800621640.0008, (315–350), CABI, Sporadic Emerging Infectious and Non-Infectious Diseases and Disorders, (2023)

Tan, A., Rao, S., & Salman, M. (2024). Human Dimensions in an Animal Disease Reporting System: A Scoping Review Protocol and Pilot Mapping to Behavioral Frameworks. *Agriculture*, 14(2), 248. <https://doi.org/10.3390/agriculture14020248>

Tan, J.Y., Zhang, Z., Izzah, H.J., Fong, Y.K., **Lee, D.**, Mutwil, M. & Hong, Y. (2023). Volatile-Based Diagnosis for Pathogenic Wood-Rot Fungus *Fulvifomes siamensis* by Electronic Nose (E-Nose) and Solid-Phase Microextraction/Gas Chromatography/Mass Spectrometry. *Sensors*, 23(9), 4538. <https://doi.org/10.3390/s23094538>

Taram, M., Borah, D., Tag, H. & **Middleton, D.J.** (2023). A clarification of the status of *Rhynchoglossum lazulinum* (Gesneriaceae: Didymocarpoideae). *Edinburgh Journal of Botany*, 80, Article 1976: 1–5.

Thomas, D.C., Ardi, W.H., Santana, F., Pinto, P., Loke, F.W., Martins, N. & Conaboy, N. (2023). A new species of *Begonia* from Indonesia and Timor-Leste. *Edinburgh Journal of Botany*, 80, Article 1973, 1–8.

Tiong, R.H.Y., Dacanay, J., Uchida, A., Desai, A.S., Kalsi, N., **Tong, C.** & Kim, H.L. (2023). *Population genomic analysis reveals high inbreeding in a Hawksbill turtle population nesting in Singapore*. bioRxiv doi: <https://doi.org/10.1101/2023.12.28.573525>

Trethowan, L.A., ...**Utteridge, T.M.A.** et al. [47 authors]. (2024). From earthquakes to island area: multi-scale effects upon local diversity. *Ecography*, Article e07038. <https://doi.org/10.1111/ecog.07038>

Turner, I.M. (2023). Drift in the tropics: Phylogenetics and biogeographical patterns in Combretaceae. *Global Ecology & Biogeography*, 32(10): 1790–1802. <https://doi.org/10.1111/geb.13737>

Turner, I.M. (2023). Flora of Singapore precursors, 36: Notes on Pentaphragmataceae in Singapore. *Gardens' Bulletin Singapore*, 75(1): 49–53.

Turner, I.M. (2023). Flora of Singapore precursors, 37: Notes on Goodeniaceae in Singapore. *Gardens' Bulletin Singapore*, 75(1): 55–59.

Turner, I.M. (2023). A new combination in *Dysolobium* (Leguminosae–Papilionoideae). *Thai Forest Bulletin* (Botany), 51(2): 71–72.

Turner, I.M. (2023). Proposal to conserve the name *Rubus repens* (L.) Kuntze against *R. repens* Weston (Rosaceae). *Taxon*, 74(2): 942.

Turner, I.M. (2023). Reflections on the name of the looking-glass tree, *Heritiera macrophylla* (Malvaceae, Sterculioideae). *Annales Botanici Fennici*, 60:219–220.

Turner, I.M. (2023). Restraining some coral beads – nomenclatural notes on Nertera (Rubiaceae). *Kew Bulletin*, 78: 689–693.

Turner, I.M. (2023). Revision of *Tinospora* (Menispermaceae - Chasmantheroideae - Burasaieae) in Singapore. *European Journal of Taxonomy*, 900: 180–193.

Turner, I.M. & Ho, B.C. (2023). Proposal to conserve the name *Millettia thyrsiflora* (*Aganope thyrsiflora*) against *Dalbergia alata* (Leguminosae-Papilionoideae). *Taxon*, 72(5): 1126.

Turner, I.M. & Wong, K.M. (2023). (2997) Proposal to conserve *Arundo multiplex* (*Bambusa multiplex*) (Gramineae: Bambusoideae) with a conserved type. *Taxon*, 72(6): 1368. <https://doi.org/10.1002/tax.13090>

Utteridge, T.M.A. (2024). Editorial. *Kew Bulletin*, 79: 1–2. <https://doi.org/10.1007/s12225-024-10174-8>

Utteridge, T.M.A., Trethowan, L.A., Brown, M.J.M., Ratcliffe, S., Plummer, J., Brambach, F., & Rustiami, H. (2024). A new species of *Lasjia* (Proteaceae) from Sulawesi: *Lasjia griseifolia* Utteridge & Brambach. *Kew Bulletin*. <https://doi.org/10.1007/s12225-024-10162-y>

Warrit N., Ascher J.S., Basu P., Belavadi, V., Brockmann, A., Buchori, D., ... **Soh, Z.W.W.**, ... & Orr, M. (2023). Opportunities and challenges in Asian bee research and conservation. *Biological Conservation*, 285, Article 110173. <https://doi.org/10.1016/j.biocon.2023.110173>

Wei, S., Yin, T., Yuan, B., **Ow, L.F., Yusof, M.L.M.**, Gastellu-Etcheberry, J-P. & Whittle, A.J. (2024). Estimation of Chlorophyll Content for Urban Trees from UAV Hyperspectral Images. *International Journal of Applied Earth Observation and Geoinformation*, 126, Article 103617. <https://doi.org/10.1016/j.jag.2023.103617>

Yap, A., Lee, C., Seah, M. & **Ng, D.** (2023). Biodiversity Record: Glossiphonid leech on lowland freshwater crab. *Nature in Singapore*, 16: e2023068. doi: 10.26107/ NIS-2023-006

Yeo, D., Chan, A.H.J., Hiong, K.C., Ong, J., Ng J.Y., Lim, J.M., Zhang, W., Lim, S. R., Fernandez, C.J., Wong, A.M-S., Lee, B.P.Y-H., Khoo, M., Cheng, T.X.W., Lim, B.T-M., Yeo, H.H.T., Tan, M.M. Q., Sng, W.B.G., Adam, S.S., Ang, W.F., How, C.B., Xie, R., Wasser, S.K., Finch, K.N., Loo, A., Yap, H.H., Leong, C.C. & Er, K.B.H. (2023). Uncovering the magnitude of African pangolin poaching with extensive nanopore DNA genotyping of seized scales. *Conservation Biology*, Article e14162. doi: 10.1111/cobi.14162

Závěská, E., Sída, O., **Leong-Škorníčková J.**, Chumová, Z., Travnicek, P., Newman, M., Poulsen, A., Bohmova, A., Chudackova, H. & Fer, T. (2023). Testing the large genome constraint hypothesis in tropical rhizomatous herbs: life strategies, plant traits and habitat preferences in gingers. *The Plant Journal*. <https://doi.org/10.1111/tpj.16559>

Zhang, X., Lin, E.S., **Tan, P.Y.**, Qi, J., Ho, R., **Sia, A.**, Waykool, R., Song, X.P., Olszewska-Guizzo, A., Meng, L. & Cao, Y. (2024). Beyond just green: Explaining and Predicting Restorative Potential of Urban Landscapes Using Panorama-based Metrics. *Landscape and Urban Planning*, 247, Article 105044. <https://doi.org/10.1016/j.landurbplan.2024.105044>

Magazine Articles

Chia, E. (2023). Revisiting the history of the iconic Swan Lake Gazebo. *Gardenwise*, 61: 2–5.

Choo, M., Whang, L.K., Chua, Z.H., Pang, Y.Y. & Khew, G. (2024). The 14th Asia Pacific Orchid Conference, Singapore. *Gardenwise*, 62: 2–6.

Choo, T. (2024). A homecoming for the Burkills. *Gardenwise* 62: 40.

Gardner, E., **Ganesan, S.K. & Ng, L.** (2024). Ethnobotany and Diversity of Figs: An Exhibition at the Centre for Ethnobotany. *Gardenwise*, 62: 12–17.

Lee, S. (2024). Fungi-Animal Interactions. *Gardenwise*, 62: 34–37.

Lee, S. & Leong-Škorníčková, J. (2024). Remembering Davi – “Amma” of the Herbarium (7 Apr 1958–22 Oct 2023). *Gardenwise*, 62: 26–27.

Lim, J. & Zaki Jamil (2023). Around the Gardens: HPL Canopy Link officially opens in the Tyersall-Gallop Core. *Gardenwise*, 61: 34–38.

Low, Y.W. (2023). Book Reviews: A Guide to Macrofungi in Singapore. *Gardenwise*, 61: 29.

Lu, Y.X. & Ooi, Z.Y. (2024). The Singapore Botanic Gardens Seed Bank: Building Conservation Capacity. *Gardenwise*, 62: 7–11.

Muhammad Khairuldin bin Aziz, Chong, R., Soh, S.Y. & Chong, K.Y. (2023). Forest research by the Singapore Botanic Gardens, from past to present. *Gardenwise*, 61: 20–25.

Neo, L. & Ganesan, S.K. (2023). Rainforest Remedies: An Exhibition at the Centre for Ethnobotany. *Gardenwise*, 61: 8–13.

Nura, A.K. (2023). The 8th Southeast Asia Botanic Gardens Network Conference & Meeting. *Gardenwise*, 61: 32–33.

Nura, A.K. (2023). Around the Gardens: The Global Tree Assessment Workshop 2023. *Gardenwise*, 61: 39.

Nura, A.K. (2023). What’s Blooming: A Floral Explosion – Needles on Show! *Gardenwise*, 61: 30–31.

Nura, A.K. (2024). Durian flowers galore at the Bandstand! *Gardenwise*, 62: 38–39.

Rodda, M. (2024). Beccari’s travel diary to Borneo. *Gardenwise*, 62: Back cover.

Rodda, M. & Yeo, M. (2024). Capturing Nature: An Exhibition at the Botanical Art Gallery. *Gardenwise*, 62: 18–21.

Tan, J. (2024). The 8th Global Botanic Gardens Congress: Botanic Gardens – People and Plants for a Sustainable Future. *Gardenwise*, 62: 22–23.

Utteridge, T.M.A. (2024). The Trees of New Guinea. *Gardenwise*, 62: 24–25.

Whang, L.K. & Tan, R. (2023). Forging New Ties and Strengthening Old Ones: Singapore Botanic Gardens signs an MOU with Japan’s Awaji Greenhouse. *Gardenwise* 61: 6–7.

Wong, W. (2024). Growing your own edible flowers in the Tropics (Part 1). *Gardenwise* 62: 30–33.

Yee, Y.L. & **Lee, S.M.L.** (2023). From the Earth: Out of Sight, Out of Mind – The Marasmiaceae mushrooms in Singapore. *Gardenwise*, 61: 26–28.

Yeo, M. & Rodda, M. (2023). From the Archives: Impressions from Northwestern India: Nature Printed Fodder Grasses. *Gardenwise*, 61: Back cover.

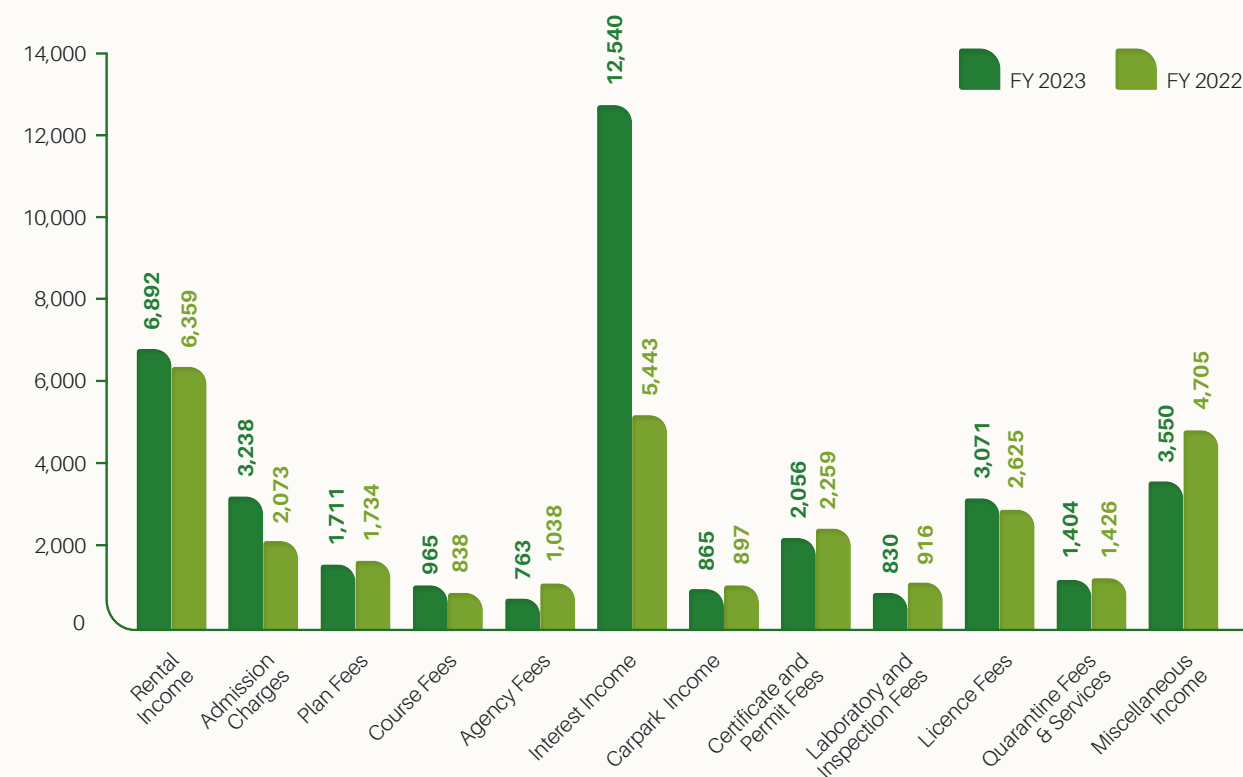
Yeo, M. & Rodda, M. (2023). A walk through the changing tropical forest sceneries of Singapore & beyond. *Gardenwise*, 61: 14–19.

FINANCIAL REVIEW

Income

The Group's income comprised mainly interest income, rental income from souvenir kiosks and F&B outlets in Singapore Botanic Gardens and Fort Canning Park, admission charges and licence fees. The income for the year was \$37.9 million. The increase from last year's income was mainly due to an increase in interest income.

Operating Income for FY 2023 & FY 2022 (\$'000)

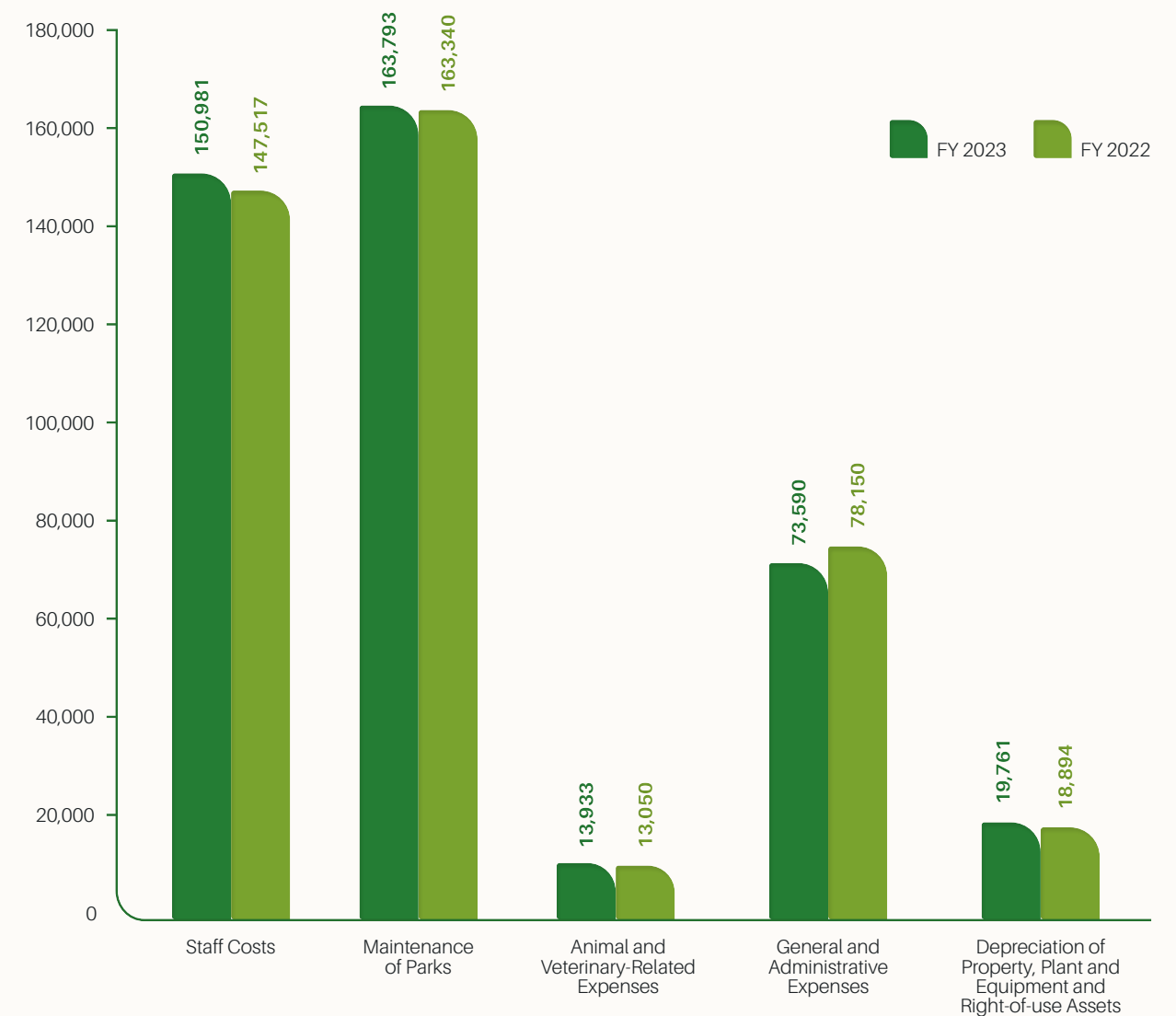


INCOME	FY 2023 \$ '000	FY 2022 \$ '000	INCREASE / (DECREASE) \$ '000	% CHANGE
Rental Income	6,892	6,359	533	8
Admission Charges	3,238	2,073	1,165	56
Plan Fees	1,711	1,734	(23)	(1)
Course Fees	965	838	127	15
Agency Fees	763	1,038	(275)	(26)
Interest Income	12,540	5,443	7,097	> 100
Carpark Income	865	897	(32)	(4)
Certificate and Permit Fees	2,056	2,259	(203)	(9)
Laboratory and Inspection Fees	830	916	(86)	(9)
Licence Fees	3,071	2,625	446	17
Quarantine Fees and Services	1,404	1,426	(22)	(2)
Miscellaneous Income	3,550	4,705	(1,155)	(25)
	37,885	30,313	7,572	25

Operating Expenditure

The Group's operating expenditure for the year was \$422.06 million, which is <1% higher compared to last year's operating expenditure of \$420.95 million. The slight increase was due to an increase in staff cost, maintenance of parks, animal and veterinary-related expenses and depreciation costs, offset by a decrease in general and administrative expenses.

Operating Expenditure for FY 2023 & FY 2022

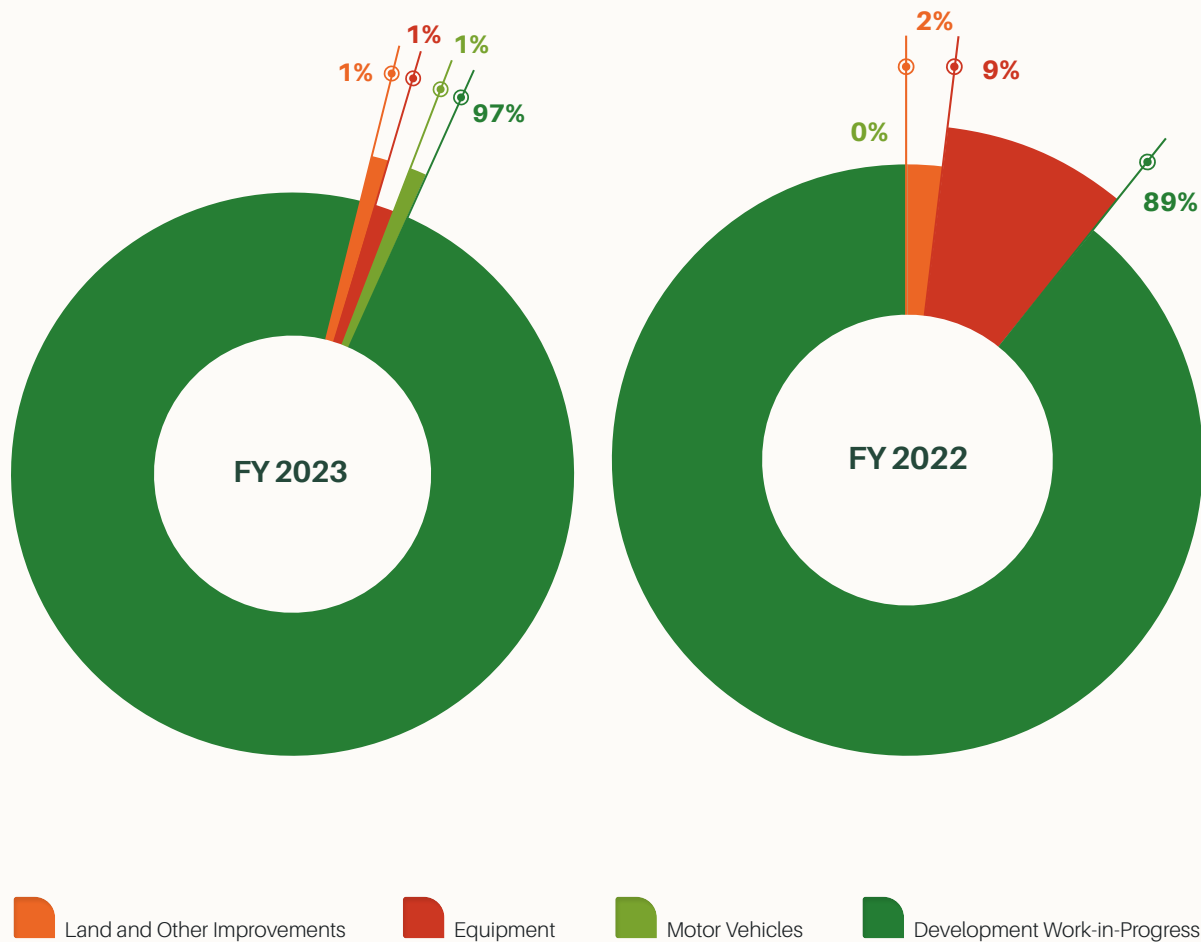


OPERATING EXPENDITURE	FY 2023 \$ '000	FY 2022 \$ '000	INCREASE / (DECREASE) \$ '000	% CHANGE
Staff Costs	150,981	147,517	3,464	2
Maintenance of Parks	163,793	163,340	453	< 1
Animal and Veterinary-Related Expenses	13,933	13,050	883	7
General and Administrative Expenses	73,590	78,150	(4,560)	(6)
Depreciation of Property, Plant and Equipment and Right-of-use Assets	19,761	18,894	867	5
	422,058	420,951	1,106	< 1

Capital Expenditure

The Group's capital expenditure for the year was \$11.8 million. The decrease in capital expenditure was mainly due to higher purchases of equipment and development work-in-progress in FY2022.

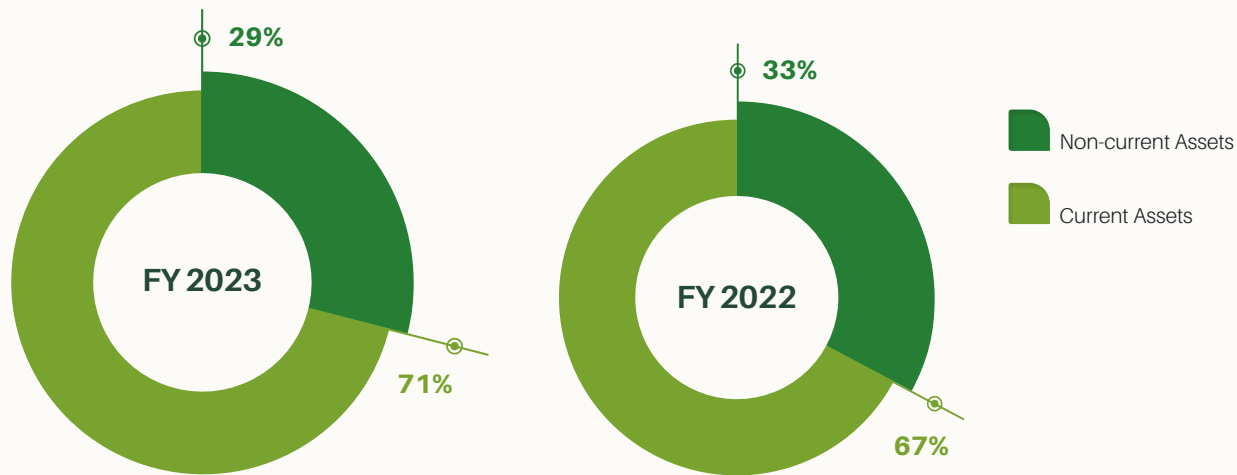
Capital Expenditure for FY 2023 & FY 2022



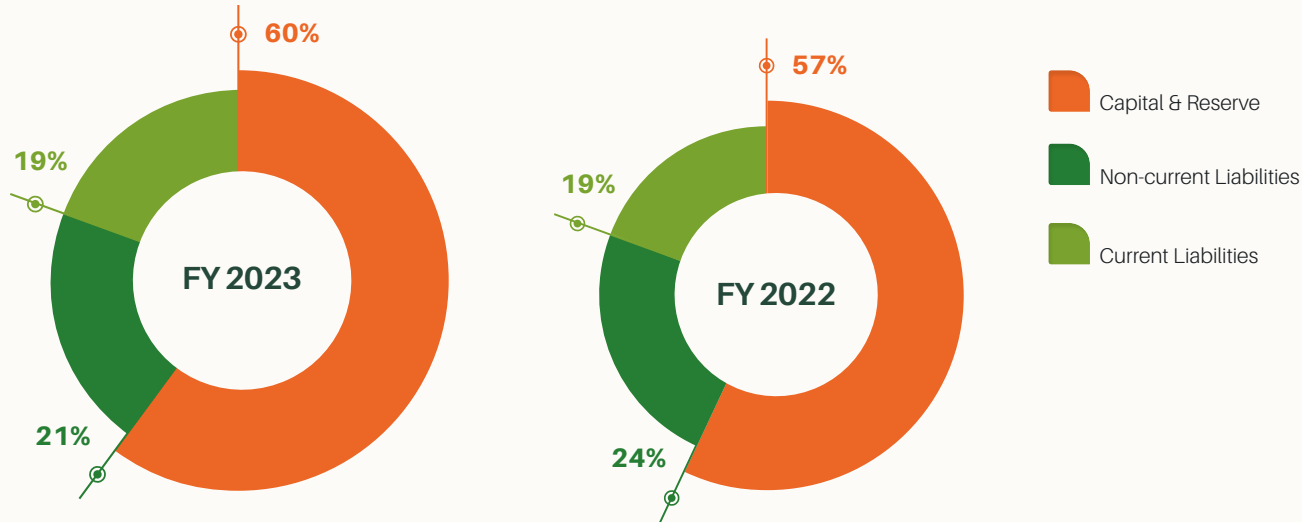
Financial Position

As at 31 March 2024, the Group's total assets stood at \$669.52 million, an increase of 7% from last year. Non-current assets and current assets represent 29% and 71% of total assets respectively. Non-current assets consisted mainly of leasehold land and buildings and structures at Singapore Botanic Gardens and Fort Canning Park, as well as the structures at the Animal & Plant Health Centre, Animal Quarantine Centre and Animal Management Centre. Capital and reserve stood at \$398.95 million, while non-current liabilities and current liabilities stood at \$141.05 million and \$129.52 million respectively.

Total Assets



Total Equity & Liabilities



FINANCIAL STATEMENTS

National Parks and its subsidiary

(ESTABLISHED IN SINGAPORE. UNIQUE ENTITY NUMBER: T08GB0038E)

FOR THE YEAR ENDED 31 MARCH 2024

Board Information

Unique Entity number (UEN)	T08GB0038E
Registered office	Singapore Botanic Gardens 1 Cluny Road Singapore 259569
Board members	Loh Khum Yean (Chairman) Hwang Yu-Ning (Chief Executive Officer) Lee Chee Koon (Member) Eu Chin Fen (Member) Cheng Hsing Yao (Member) Shantini Ramachandra (Member) Musa Fazal (Member) Professor David Chan (Member) Tham Loke Kheng (Member) Gerald Tan Kwong Ming (Member) Nur Hidayah Abu Bakar (Member)
Bankers	DBS Bank Limited
Independent auditor	Foo Kon Tan LLP Public Accountants and Chartered Accountants 1 Raffles Place #04-61/62 One Raffles Place Tower 2 Singapore 048616

FINANCIAL STATEMENTS

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97	Notes to the Financial Statements

Statement by the National Parks Board

(FOR THE FINANCIAL YEAR ENDED 31 MARCH 2024)

In our opinion,

- (a) the accompanying financial statements of National Parks Board (“NParks”) and its subsidiary (the “Group”), are properly drawn up in accordance with the provisions of the National Parks Board Act, 1996 (the “Act”), the Public Sector (Governance) Act 2018 and Statutory Board Financial Reporting Standards (“SB-FRS”) so as to present fairly, in all material respects, the financial position of the Group and NParks as at 31 March 2024, and the financial performance, changes in equity of the Group and NParks and cash flows of the Group for the financial year ended on that date;
- (b) the receipt, expenditure, investments of moneys and the acquisition and disposal of assets by NParks during the year have been, in all material respects, in accordance with the provisions of the Act, the Public Sector (Governance) Act and the requirements of any other written law applicable to money of or managed by NParks; and
- (c) proper accounting and other records have been kept, including records of all assets of NParks whether purchased, donated or otherwise.

The Board has, on the date of this statement, authorised these financial statements for issue.

On behalf of the Board



Mr Loh Khum Yean
CHAIRMAN



Hwang Yu-Ning
CHIEF EXECUTIVE OFFICER

31 July 2024

Independent auditor’s report to the members of National Parks Board

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of National Parks Board (“NParks”) and its subsidiary (collectively, the “Group”), which comprise the statements of financial position of the Group and NParks as at 31 March 2024, the statements of comprehensive income, statements of changes in equity of the Group and NParks and the consolidated cash flow statement of the Group for the year then ended, and notes to the financial statements, including material accounting policy information.

In our opinion, the accompanying consolidated financial statements of the Group, and the statement of financial position, statement of comprehensive income and statement of changes in equity of NParks are properly drawn up in accordance with the provisions of the National Parks Board Act, 1996 (the “Act”), the Public Sector (Governance) Act 2018, Act 5 of 2018 (the “Public Sector (Governance) Act”) and Statutory Board Financial Reporting Standards (“SB-FRS”), so as to present fairly, in all material respects, the state of affairs of the Group and NParks as at 31 March 2024 and the results and changes in equity of the Group and NParks and cash flows of the Group for the year ended on that date.

Basis for Opinion

We conducted our audit in accordance with Singapore Standards on Auditing (“SSAs”). Our responsibilities under those standards are further described in the *Auditor’s responsibilities for the audit of the financial statements* section of our report. We are independent of the Group in accordance with the Accounting and Corporate Regulatory Authority (“ACRA”) *Code of Professional Conduct and Ethics for Public Accountants and Accounting Entities* (“ACRA Code”) together with the ethical requirements that are relevant to our audit of the financial statements in Singapore, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the ACRA Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other Information

Management is responsible for the other information. The other information comprises the Statement by National Parks Board, but does not include the financial statements and our auditor’s report thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with the provisions of the Act, the Public Sector (Governance) Act and SB-FRS, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

A statutory board is constituted based on its constitutional Act and its dissolution requires Parliament’s approval. In preparing the financial statements, management is responsible for assessing the Group’s ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless there is intention to wind up the Group or for the Group to cease operations.

Those charged with governance are responsible for overseeing the Group’s financial reporting process.

Auditor’s Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor’s report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with SSAs, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group’s internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

Independent auditor’s report to the members of National Parks Board (Cont'd)

Auditor’s Responsibilities for the Audit of the Financial Statements (Cont'd)

- Conclude on the appropriateness of management’s use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the management regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Report on Other Legal and Regulatory Requirements

Opinion

In our opinion:

- the receipts, expenditure, investments of moneys and the acquisition and disposal of assets by NParks during the year are, in all material respects, in accordance with the provisions of the Act, the Public Sector (Governance) Act and the requirements of any other written law applicable to moneys of or managed by NParks; and
- proper accounting and other records have been kept, including records of all assets of NParks whether purchased, donated or otherwise.

Basis for Opinion

We concluded our audit in accordance with SSAs. Our responsibilities under those standards are further described in the Auditors’ Responsibilities for the Compliance Audit section of our report. We are independent of the Group in accordance with the ACRA Code together with the ethical requirements that are relevant to our audit of the financial statements in Singapore, and we have fulfilled our ethical responsibilities in accordance with these requirements and the ACRA Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on management’s compliance.

Responsibilities of Management for Compliance with Legal and Regulatory Requirements

Management is responsible for ensuring that the receipts, expenditure, investments of moneys and the acquisition and disposal of assets, are in accordance with the provisions of the Act, the Public Sector (Governance) Act and the requirements of any other written law applicable to moneys of or managed by NParks. This responsibility includes monitoring related compliance requirements relevant to NParks, and implementing internal controls as management determines are necessary to enable compliance with the requirements.

Auditor’s Responsibilities for Compliance Audit

Our responsibility is to express an opinion on management’s compliance based on our audit of the financial statements. We planned and performed the compliance audit to obtain reasonable assurance about whether the receipts, expenditure, investments of moneys and the acquisition and disposal of assets, are in accordance with the provisions of the Act, the Public Sector (Governance) Act and the requirements of any other written law applicable to moneys of or managed by NParks.

Our compliance audit includes obtaining an understanding of the internal control relevant to the receipts, expenditure, investments of moneys and the acquisition and disposal of assets; and assessing the risks of material misstatement of the financial statements from non-compliance, if any, but not for the purpose of expressing an opinion on the effectiveness of NParks’ internal control. Because of the inherent limitations in any internal control system, non-compliances may nevertheless occur and not be detected.

Foo Kon Tan LLP
PUBLIC ACCOUNTANTS AND
CHARTERED ACCOUNTANTS

Singapore,
31 July 2024

Statements of financial position

(AS AT 31 MARCH 2024)

		GROUP			NPARKS		
NOTE		31 MARCH 2024	31 MARCH 2023	1 APRIL 2022	31 MARCH 2024	31 MARCH 2023	1 APRIL 2022
		\$	\$ (RESTATED)	\$ (RESTATED)	\$	\$ (RESTATED)	\$ (RESTATED)
ASSETS							
Non-current assets							
Property, plant and equipment	3	187,669,722	193,839,990	195,784,403	187,669,722	193,839,990	195,784,403
Investment in a subsidiary	4	—	—	—	2	2	2
Right-of-use assets	5(a)	4,543,096	6,961,036	9,952,191	4,543,096	6,961,036	9,952,191
Lease receivables	5(b)	4,309,077	6,057,916	6,127,745	4,309,077	6,057,916	6,127,745
		196,521,895	206,858,942	211,864,339	196,521,897	206,858,944	211,864,341
Current Assets							
Lease receivables	5(b)	2,428,298	2,141,889	1,550,298	2,428,298	2,141,889	1,550,298
Trade receivables	6	8,794,552	4,113,254	3,181,460	8,755,552	4,113,254	3,181,460
Other receivables	7	10,924,621	16,111,701	9,557,822	10,942,874	16,111,203	9,566,709
Prepayments		2,974,007	2,994,453	2,718,889	2,974,007	2,992,878	2,717,539
Cash and cash equivalents	8	447,874,785	394,811,854	368,237,278	447,487,118	394,417,291	367,882,350
		472,996,263	420,173,151	385,245,747	472,587,849	419,776,515	384,898,356
Total assets		669,518,158	627,032,093	597,110,086	669,109,746	626,635,459	596,762,697
EQUITY AND LIABILITIES							
Capital and other funds							
Share capital	9	37,151,352	37,092,611	34,912,734	37,151,352	37,092,611	34,912,734
Capital account	10	4,528,275	4,528,275	4,528,275	4,528,275	4,528,275	4,528,275
Other reserve	11	17,993,051	18,024,180	18,039,559	17,993,051	18,024,180	18,039,559
Accumulated surplus		339,281,571	300,749,124	264,558,664	338,879,020	300,358,273	264,219,761
		398,954,249	360,394,190	322,039,232	398,551,698	360,003,339	321,700,329
Non-Current Liabilities							
Lease liabilities	5(c)	6,444,443	8,718,212	12,535,744	6,444,443	8,718,212	12,535,744
Deferred capital grants	12	132,357,166	137,701,653	141,997,121	132,357,166	137,701,653	141,997,121
Deferred revenue	13	1,022,130	1,139,644	1,157,261	1,022,130	1,139,644	1,157,261
Provision for pension costs	14	1,221,311	1,455,317	1,663,290	1,221,311	1,455,317	1,663,290
		141,045,050	149,014,826	157,353,416	141,045,050	149,014,826	157,353,416

		GROUP			NPARKS		
NOTE		31 MARCH 2024	31 MARCH 2023	1 APRIL 2022	31 MARCH 2024	31 MARCH 2023	1 APRIL 2022
		\$	\$ (RESTATED)	\$ (RESTATED)	\$	\$ (RESTATED)	\$ (RESTATED)
Current Liabilities							
Lease liabilities	5(c)	2,573,254	4,104,960	3,878,900	2,573,254	4,104,960	3,878,900
Deferred revenue	13	2,486,181	2,580,309	2,784,558	2,486,181	2,580,309	2,784,558
Provision for pension costs	14	120,000	120,000	120,000	120,000	120,000	120,000
Trade and other payables	15	88,407,717	84,831,783	77,170,802	88,401,856	84,826,000	77,162,316
Government grants received in advance	16	27,891,306	18,376,697	33,469,961	27,891,306	18,376,697	33,469,961
Contribution to consolidated fund		8,040,401	7,609,328	293,217	8,040,401	7,609,328	293,217
		129,518,859	117,623,077	117,717,438	129,512,998	117,617,294	117,708,952
Total liabilities		270,563,909	266,637,903	275,070,854	270,558,048	266,632,120	275,062,368
Total equity and liabilities		669,518,158	627,032,093	597,110,086	669,109,746	626,635,459	596,762,697
Net assets of the Garden City Fund							
	17	25,435,807	22,537,607	19,032,192	25,435,807	22,537,607	19,032,192
Net assets of National Productivity Fund							
	18	—	217,187	4,007	—	217,187	4,007

The annexed notes form an integral part of and should be read in conjunction with these financial statements.

Statement of comprehensive income

(FOR THE FINANCIAL YEAR ENDED 31 MARCH 2024)

	NOTE	GROUP		NPARKS	
		2023/2024	2022/2023	2023/2024	2022/2023
		\$	\$	\$	\$
INCOME OR EXPENDITURE					
Operating income					
Rental income		6,892,004	6,358,587	6,892,004	6,358,587
Admission charges		3,238,406	2,073,529	3,238,406	2,073,529
Plan fees		1,710,701	1,733,918	1,710,701	1,733,918
Course fees		965,370	837,681	965,370	837,681
Agency fees		762,680	1,037,589	762,680	1,037,589
Interest income		12,540,696	5,443,451	12,532,945	5,439,785
Carpark income		864,596	897,332	864,596	897,332
Certificates and permit fees		2,056,006	2,258,835	2,056,006	2,258,835
Laboratory and inspection fees		830,022	915,843	830,022	915,843
Licence fees		3,070,528	2,624,980	3,070,528	2,624,980
Quarantine fees and services		1,404,379	1,426,038	1,404,379	1,426,038
Miscellaneous income		3,549,982	4,705,157	3,522,649	4,609,672
Total income	19	37,885,370	30,312,940	37,850,286	30,213,789
Operating Expenditure					
Staff costs	20	(150,981,418)	(147,516,611)	(150,981,418)	(147,516,611)
Maintenance of parks		(163,792,972)	(163,340,320)	(163,792,972)	(163,340,320)
Animal and veterinary-related expenses		(13,932,585)	(13,050,047)	(13,932,585)	(13,050,047)
General and administrative expenses		(73,590,425)	(78,149,561)	(73,567,041)	(78,102,358)
Depreciation of property, plant and equipment and right-of-use assets	3, 5(a)	(19,761,127)	(18,894,522)	(19,761,127)	(18,894,522)
		(422,058,527)	(420,951,061)	(422,035,143)	(420,903,858)
Deficit from operations	21	(384,173,157)	(390,638,121)	(384,184,857)	(390,690,069)
Government operating grants	16	416,958,131	419,786,106	416,958,131	419,786,106
Other government grants	16	1,504,070	3,199,489	1,504,070	3,199,489
Deferred capital grants amortised	12	13,019,132	12,465,227	13,019,132	12,465,227
		431,481,333	435,450,822	431,481,333	435,450,822
Surplus before contribution to consolidated fund		47,308,176	44,812,701	47,296,476	44,760,753
Contribution to consolidated fund		(8,040,401)	(7,609,328)	(8,040,401)	(7,609,328)
Surplus for the year, representing total comprehensive income for the year		39,267,775	37,203,373	39,256,075	37,151,425

Statements of changes in equity

(FOR THE FINANCIAL YEAR ENDED 31 MARCH 2024)

	SHARE CAPITAL	CAPITAL ACCOUNT	OTHER RESERVE	ACCUMULATED SURPLUS ⁽¹⁾	TOTAL EQUITY
	\$	\$	\$	\$	\$
THE GROUP					
At 1 April 2022, as reported	34,912,734	4,528,275	18,039,559	266,238,664	323,719,232
Prior year adjustment (Note 28)	—	—	—	(1,680,000)	(1,680,000)
At 1 April 2022, as restated	34,912,734	4,528,275	18,039,559	264,558,664	322,039,232
Surplus for the year, representing total comprehensive income for the year	—	—	—	37,203,373	37,203,373
Transactions with owners, recognised directly in equity					
Equity injection (Note 9)	2,179,877	—	—	—	2,179,877
Transfer from other reserve (Note 11)	—	—	(15,379)	15,379	—
Funding for government projects (Note 22)	—	—	—	(1,028,292)	(1,028,292)
	2,179,877	—	(15,379)	(1,012,913)	1,151,585
At 31 March 2023, as restated	37,092,611	4,528,275	18,024,180	300,749,124	360,394,190
Surplus for the year, representing total comprehensive income for the year	—	—	—	39,267,775	39,267,775
Transactions with owners, recognised directly in equity					
Equity injection (Note 9)	58,741	—	—	—	58,741
Transfer from other reserve (Note 11)	—	—	(31,129)	31,129	—
Funding for government projects (Note 22)	—	—	—	(766,457)	(766,457)
	58,741	—	(31,129)	(735,328)	(707,716)
At 31 March 2024	37,151,352	4,528,275	17,993,051	339,281,571	398,954,249

(1) Included in accumulated surplus as at 31 March 2024 is an amount of \$78,310,159 (2023 - \$72,915,867) which has been earmarked by the Group to fund future replacement and capital improvement of property, plant and equipment.

Statements of changes in equity (Cont'd)

(FOR THE FINANCIAL YEAR ENDED 31 MARCH 2024)

	SHARE CAPITAL \$	CAPITAL ACCOUNT \$	OTHER RESERVE \$	ACCUMULATED SURPLUS ⁽¹⁾ \$	TOTAL EQUITY \$
NPARKS					
At 1 April 2022, as reported	34,912,734	4,528,275	18,039,559	265,899,761	323,380,329
Prior year adjustment (Note 28)	—	—	—	(1,680,000)	(1,680,000)
At 1 April 2022, as restated	34,912,734	4,528,275	18,039,559	264,219,761	321,700,329
Surplus for the year, representing total comprehensive income for the year	—	—	—	37,151,425	37,151,425
Transactions with owners, recognised directly in equity					
Equity injection (Note 9)	2,179,877	—	—	—	2,179,877
Transfer from other reserve (Note 11)	—	—	(15,379)	15,379	-
Funding for government projects (Note 22)	—	—	—	(1,028,292)	(1,028,292)
	2,179,877	—	(15,379)	(1,012,913)	1,151,585
At 31 March 2023, as restated	37,092,611	4,528,275	18,024,180	300,358,273	360,003,339
Surplus for the year, representing total comprehensive income for the year	—	—	—	39,256,075	39,256,075
Transactions with owners, recognised directly in equity					
Equity injection (Note 9)	58,741	—	—	—	58,741
Transfer from other reserve (Note 11)	—	—	(31,129)	31,129	—
Funding for government projects (Note 22)	—	—	—	(766,457)	(766,457)
	58,741	—	(31,129)	(735,328)	(707,716)
At 31 March 2024	37,151,352	4,528,275	17,993,051	338,879,020	398,551,698

(1) Included in accumulated surplus 31 March 2024 is an amount of \$78,310,159 (2023 - \$72,915,867) which has been earmarked by NParks to fund future replacement and capital improvement of property, plant and equipment.

Consolidated statement of cash flows

(FOR THE FINANCIAL YEAR ENDED 31 MARCH 2024)

	NOTE	2023/2024 \$	2022/2023 \$
CASH FLOWS FROM OPERATING ACTIVITIES			
Deficit from operations		(384,173,157)	(390,638,121)
Adjustments for:			
Depreciation of property, plant and equipment and right-of-use assets	3, 5(a)	19,761,127	18,894,522
Loss on disposal of property, plant and equipment	21	154,646	16,334
Gain on derecognition of right-of-use assets arising from the head lease arrangement and recognition of a net investment in a sub-lease classified as finance lease	5(b)	(804,077)	(1,577,809)
Provision for pension costs reversed	14	(114,006)	(87,973)
Amortisation of lease premium received in advance		(83,333)	(83,333)
Impairment loss (reversed)/recognised on trade receivables	6	(599,424)	114,035
Interest expense	5(d)	363,129	444,260
Interest income	19	(12,540,696)	(5,443,451)
Operating deficit before working capital changes		(378,035,791)	(378,361,536)
Changes in trade and other receivables		(3,534,592)	(577,573)
Changes in trade and other payables		3,841,927	8,105,084
Changes in prepayments		20,446	(275,564)
Changes in deferred revenue		(128,309)	(138,533)
Changes in payment for pension costs	14	(120,000)	(120,000)
Changes in amounts due from Ministry of National Development ("MND")		8,091,378	(5,131,925)
Changes in amounts due from Garden City Fund		(1,143,203)	2,432,864
Cash flows used in operations		(371,008,144)	(374,067,183)
Contribution to Consolidated Fund paid		(7,609,328)	(293,217)
Net cash used in operating activities		(378,617,472)	(374,360,400)
Cash Flows from Financing Activities			
Proceeds from disposal of property, plant and equipment		717,404	26,135
Proceeds from lease receivables		2,598,908	1,742,290
Purchase of property, plant and equipment	3	(11,795,914)	(14,285,616)
Interest received		10,586,820	1,715,625
Net cash generated from/(used in) investing activities		2,107,218	(10,801,566)
Cash Flows from Investing Activities			
Grants received (less payment on behalf)	16	435,641,325	424,767,944
Unutilised grants returned	16	(876,590)	(9,745,205)
Principal payments of lease liabilities	5(e)	(4,120,705)	(3,993,522)
Interest paid on lease liabilities	5(e)	(363,129)	(444,260)
Equity injection	9	58,741	2,179,877
Funding for government projects	22	(766,457)	(1,028,292)
Net cash generated from/(used in) investing activities		429,573,185	411,736,542
Net increase in cash and cash equivalents		53,062,931	26,574,576
Cash and cash equivalents at the beginning of year		394,811,854	368,237,278
Cash and cash equivalents at the end of year	8	447,874,785	394,811,854

Refer to the respective notes for the reconciliation of liabilities arising from financing activities, excluding equity items.

The annexed notes form an integral part of and should be read in conjunction with these financial statements.

Notes to the financial statements

(FOR THE FINANCIAL YEAR ENDED 31 MARCH 2024)

1 General information

National Parks Board ("NParks") is a statutory board under the Ministry of National Development ("MND") established under the National Parks Board Act 1996.

The Board has its registered office at Singapore Botanic Gardens, 1 Cluny Road, Singapore 259569.

The primary activities of NParks are to develop, manage and promote the National Parks and Nature Reserves as valuable reserves for recreation, conservation, research and education and to develop, upgrade, manage and maintain the public parks, open spaces on behalf of the Government. With the transfer of the non-food functions from AVA, NParks activities also include working with the community, such as pet owners and businesses, animal welfare groups and the general public, to protect and promote the welfare of animals through regulation and education, such as encouraging responsible pet ownership.

The principal activities of the subsidiary are described in Note 4 to the financial statements.

The financial statements of the Group and of NParks for the year ended 31 March 2024 were authorised for the issue in accordance with a resolution of the Board on the date of the Statement by Board.

2(a) Basis of preparation

The financial statements have been prepared in accordance with the historical cost basis, except as disclosed in the accounting policies below, and are drawn up in accordance with the provisions of the Act, the Public Sector (Governance) Act and SB-FRS, including Interpretation of SB-FRS ("INT SB-FRS") and SB-FRS Guidance Notes.

The financial statements are presented in Singapore Dollar (SGD or \$), which is the Group's functional currency, and rounded to the nearest dollar. All financial information is presented in Singapore dollars, unless otherwise stated.

The preparation of the financial statements in conformity with SB-FRS requires the use of judgements, estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the financial year. Although these estimates are based on management's best knowledge of current events and actions, actual results may differ from those estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised and in any future periods affected. Management is of the opinion that there are no key sources of estimation uncertainty at the end of the reporting period.

Critical accounting judgements and key sources of estimation uncertainty

In the process of applying the Group's accounting policies, management has made the following judgements, apart from those involving estimations, which has the most significant effect on the amounts recognised in the consolidated financial statements:

(a) Significant judgement made in applying accounting policies

Impairment loss on the receivables due from a corporate customer (Note 6)

NParks signed an agreement to lease one of its properties to a corporate customer for 30 years from FY 2022 to FY 2032. The corporate customer had financial difficulties and was unable to make rental payments to NParks in accordance with the payment schedule as stipulated in the tenancy agreement. In FY 2021, NParks agreed to revise the repayment schedule for the customer to repay the outstanding amount of \$4,472,000, as at 1 November 2020 over a 10 years period from 1 November 2023. In addition, NParks has also agreed to defer the rental payment for FY 2021 amounting to \$2,880,000 which was also restructured and repayable over the same 10-year period. In total, annual repayment of \$735,200 is expected to be received from the corporate customer from 1 November 2023. As at 31 March 2024, the full impairment loss of \$6,616,800 (2023 - \$7,352,000) has been recognised on the rental arrears due from a corporate customer to be recovered over 9 (2023 - 10) annual instalments, as disclosed in Note 6 to the financial statements.

As at the balance sheet date, management performed an assessment on the recoverability of the trade receivables which have been fully impaired and concluded that despite the payment of the first instalment of \$735,200 in November 2023, it is premature to reverse the allowance made and there is a possibility that the corporate customer may default on the repayment and as such, there is a need to retain the provision on impairment loss as at 31 March 2024. Management will continue to recognise the reversal of the impairment loss on the amount previously recognised based on the receipt or the repayments from the corporate customer in each of the financial year.

2(b) Adoption of new and amended standards and interpretations

The accounting policies adopted are consistent with those of the previous financial year except that in the current financial year, the Group has adopted all the new and revised SB-FRSs, INT SB-FRS and SB-FRS Guidance Notes that are relevant to its operations and are effective for annual financial periods beginning on or after 1 April 2023.

The adoption of these standards did not have any material effect on the financial performance or position of the Group and NParks.

2(c) Standards issued but not yet effective

At the date of authorisation of these financial statements, the Group has not adopted the new and revised SB-FRS, INT SB-FRS and amendments to SB-FRS that have been issued but are not yet effective to them. Management anticipates that the adoption of these new and revised SB-FRS pronouncements in future periods will not have a material impact on the Group's financial statements in the period of their initial application, as discussed below.

2(d) Material accounting policy information

Basis of consolidation

The consolidated financial statements incorporate the financial statements of NParks and entities (including special purpose entities) controlled by NParks. Control is achieved when NParks:

- Has power over the investee;
- Is exposed, or has rights, to variable returns from its involvement with the investee; and
- Has the ability to use its power to affect its returns.

In NParks’s separate financial statements, investment in subsidiary is carried at cost less any impairment in net recoverable value that has been recognised in the statement of comprehensive income.

NParks reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control listed above.

Consolidation of a subsidiary begins when NParks obtains control over the subsidiary and ceases when NParks loses control of the subsidiary. Specifically, income and expense of a subsidiary acquired or disposed of during the year are included in the consolidated statement of comprehensive income from the date NParks gains control until the date when NParks ceases to control the subsidiary.

Where necessary, adjustments are made to the financial statements of the subsidiary to bring its accounting policies into line with the Group’s accounting policies. The financial statements of the subsidiary used in the preparation of the consolidated financial statements are prepared for the same reporting date as NParks.

All intra-group balances, income and expenses resulting from intra-group transactions and dividends are eliminated in full.

Financial instruments

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

(a) Financial assets

Initial recognition and measurement

Financial assets are recognised when, and only when the entity becomes party to the contractual provisions of the instruments.

At initial recognition, the Group measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at fair value through profit or loss are expensed in the statement of comprehensive income.

Trade receivables are measured at the amount of consideration to which the Group expects to be entitled in exchange for transferring promised goods or services to a customer, excluding amounts collected on behalf of third party, if the trade receivables do not contain a significant financing component at initial recognition.

Subsequent measurement

Financial assets that are held for the collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortised cost. Financial assets are measured at amortised cost using the effective interest method, less impairment. Gains and losses are recognised in the statement of comprehensive income when the assets are de-recognised or impaired, and through amortisation process.

De-recognition

A financial asset is de-recognised where the contractual right to receive cash flows from the asset has expired. On derecognition of a financial asset in its entirety, the difference between the carrying amount and the sum of the consideration received and any cumulative gain or loss that had been recognised in other comprehensive income for debt instruments is recognised in the statement of comprehensive income.

(b) Financial liabilities

Initial recognition and measurement

Financial liabilities are recognised when, and only when, the Group becomes a party to the contractual provisions of the financial instrument. The Group determines the classification of its financial liabilities at initial recognition.

All financial liabilities are recognised initially at fair value plus in the case of financial liabilities not at fair value through profit or loss, directly attributable transaction costs.

Subsequent measurement

After initial recognition, financial liabilities that are not carried at fair value through profit or loss are subsequently measured at amortised cost using the effective interest method. Gains and losses are recognised in the statement of comprehensive income when the liabilities are de-recognised, and through the amortisation process.

De-recognition

A financial liability is de-recognised when the obligation under the liability is discharged or cancelled or expires. On de-recognition, the difference between the carrying amounts and the consideration paid is recognised in the statement of comprehensive income.

Impairment of financial assets

The Group recognises an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognised in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is recognised for credit losses expected over the remaining life of the exposure, irrespective of timing of the default (a lifetime ECL).

For trade receivables, the Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime ECLs at each reporting date. The Group has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

The Group considers a financial asset in default when contractual payments are 90 days past due. However, in certain cases, the Group may also consider a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group. A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

Leases

The Group assesses at contract inception whether a contract is, or contains, a lease. That is, if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration.

As lessee

The Group applies a single recognition and measurement approach for all leases, except for short-term leases and leases of low-value assets. The Group recognises lease liabilities representing the obligations to make lease payments and right-of-use assets representing the right to use the underlying leased assets.

(a) Right-of-use assets

The Group recognises right-of-use assets at the commencement date of the lease (i.e. the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognised, initial direct costs incurred, and lease payments made at or before the commencement date less any lease incentives received. Right-of-use assets are depreciated on a straight-line basis over the shorter of the lease term and the estimated useful lives of the assets. The right-of-use assets are also subject to impairment.

(b) Lease liabilities

At the commencement date of the lease, the Group recognises lease liabilities measured at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in-substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include payments of penalties for terminating the lease, if the lease term reflects the Group exercising the option to terminate.

Variable lease payments that do not depend on an index or a rate are recognised as expense in the period in which the event or condition that triggers the payment occurs.

In calculating the present value of lease payments, the Group uses its incremental borrowing rate at the lease commencement date because the interest rate implicit in the lease is not readily determinable.

After the commencement date, the amount of lease liabilities is increased to reflect the accretion of interest and reduced for the lease payments made. In addition, the carrying amount of lease liabilities is remeasured if there is a modification, a change in the lease term, a change in the lease payments (e.g. changes to future payments resulting from a change in an index or rate used to determine such lease payments) or a change in the assessment of an option to purchase the underlying asset.

(c) Short-term leases and leases of low-value assets

The Group applies the short-term lease recognition exemption to its short-term leases (i.e. those leases that have a lease term of 12 months or less from the commencement date and do not contain a purchase option). It also applies the lease of low-value assets recognition exemption to leases of office equipment that are considered to be low value. Lease payments on short-term leases and leases of low value assets are recognised as expense on a straight-line basis over the lease term.

Subleases

In classifying a sublease, the Group as an intermediate lessor classifies the sublease as a finance or an operating lease with reference to the right-of-use asset arising from the head lease, rather than the underlying asset.

When the sublease is assessed as a finance lease, the Group derecognises the right-of-use asset relating to the head lease that it transfers to the sublessee and recognises the net investment in the sublease within "Lease Receivables". Any differences between the right-of-use asset derecognised and the net investment in sublease is recognised in the statement of comprehensive income. Lease liability relating to the head lease is retained in the balance sheet, which represents the lease payments owed to the head lessor.

When the sublease is assessed as an operating lease, the Group recognises lease income from the sublease in the statement of comprehensive income within "other income". The right-of-use asset relating to the head lease is not derecognised.

As lessor

Leases in which the Group does not transfer substantially all the risks and rewards of ownership of the asset are classified as operating leases. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognised over the lease term on the same bases as rental income.

Property, plant and equipment and depreciation

All items of property, plant and equipment are initially recorded at cost. Subsequent to recognition, property, plant and equipment are measured at cost less accumulated depreciation and any accumulated impairment losses.

Depreciation is computed on a straight-line basis over the estimated useful lives of the assets as follows:

Leasehold land	— Over the lease periods of 87 to 99 years
Buildings, structures, capital and other improvements	— 20 years
Office equipment, furniture and fittings	— 5 to 10 years
Laboratory and gardening equipment	— 7 years
Motor vehicles	— 8 to 10 years

Construction-in-progress included in property, plant and equipment is not depreciated as these assets are not available for use. These are carried at cost, less any recognised impairment loss.

The carrying amount of property, plants and equipment are reviewed for impairment when events or changes in circumstances indicate that the carrying amount may not be recoverable.

The estimated useful lives, residual values and depreciation method are reviewed at the end of each reporting period, with the effect of any changes in estimates accounted for on a prospective basis.

An item of property, plant and equipment is de-recognised upon disposal or when no future economic benefits are expected from its use or disposal. The gain or loss arising on disposal or retirement of an item of property, plant and equipment is determined as the difference between the sales proceeds and the carrying amounts of the asset and is recognised in the statement of comprehensive income.

Impairment of non-financial assets

The Group assesses at each reporting date whether there is an indication that an asset may be impaired. If any indication exists, or when an annual impairment testing for an asset is required, the Group makes an estimate of the asset's recoverable amount.

An asset's recoverable amount is the higher of an asset's or cash-generating unit's fair value less costs of disposal and its value in use and is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. Where the carrying amount of an asset or cash-generating unit exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount.

Impairment losses are recognised in the statement of comprehensive income, except for assets that are previously revalued where the revaluation was taken to other comprehensive income. In this case, the impairment is also recognised in other comprehensive income up to the amount of any previous revaluation.

A previously recognised impairment loss is reversed only if there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised. If that is the case, the carrying amount of the asset is increased to its recoverable amount. That increase cannot exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognised previously. Such reversal is recognised in the statement of comprehensive income unless the asset is measured at revalued amount, in which case the reversal is treated as a revaluation increase. Impairment losses relating to goodwill cannot be reversed in future periods.

Provisions

Provisions are recognised when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

The amount recognised as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. Where a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows. If it is no longer probable that an outflow of economic resources will be required to settle the obligation, the provision is reversed. If the effect of the time value of money is material provisions and discounted using a current pre-tax rate that reflects, where appropriate, the risk specific to the liability when discounting is used, the increase in the provision due to the passage of time is recognised as a finance cost.

Government grants

Government grants are not recognised until there is reasonable assurance that the Group will comply with the conditions attaching to them and the grants will be received. Government grants whose primary condition is that the Group should purchase, construct or otherwise acquire non-current assets are recognised as deferred capital grant in the statement of financial position and transferred to income or expenditure on a systematic and rational basis over the useful lives of the related assets. This treatment also applies to assets transferred from other government organisations and other donated assets.

Other government grants are recognised as income over the periods necessary to match them with the costs for which they are intended to compensate, on a systematic basis. Government grants that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Group with no future related costs are recognised in the statement of comprehensive income in the period in which they become receivable.

The value of land at the Singapore Botanic Gardens and the Fort Canning Park that was vested in NParks when it was established in June 1990 was taken to the deferred capital grants account. The value of all other assets net of liabilities transferred from the former Parks and Recreation Department of Ministry of National Development (PRD) to NParks in June 1990 and July 1996 amounting to \$4,528,275 was taken to the capital account.

Trust and agency funds

Trust and agency funds are set up to account for funds held in trust where NParks is not the owner and beneficiary of the funds received from the Government and other organisations. The receipts and expenditure in respect of agency funds are taken directly to the funds accounts and the net assets relating to the funds are shown as a separate line item in the statement of financial position. Trust and agency funds are accounted for on the accrual basis.

NParks administers the funds on behalf of the holders of these funds. Upon dissolution of these funds, the remaining moneys in these funds shall be returned to the owners of the funds.

Revenue recognition

Revenue is measured based on the consideration to which the Group expects to be entitled in exchange for transferring promised goods or services to a customer, excluding amount collected on behalf of third parties.

Revenue is recognised when the Group satisfies a performance obligation by transferring a promised good or service to the customer, which is when the customer obtains control of the good or service. A performance obligation may be satisfied at a point in time or over time. The amount of revenue recognised is the amount allocated to the satisfied performance obligation.

Rental income

Rental income receivable under operating leases is recognised in the statement of comprehensive income on a straight-line basis over the term of the lease. Lease incentives granted are recognised as an integral part of the total rental income, over the term of the lease.

Admission charges

Admission charges in relation to the National Orchid Garden are recognised at a point in time upon the sale of admission tickets. For event admission tickets which are sold in advance, revenue is recognised on the date of event.

Plan fees

Plan fees are recognised at a point in time when the services have been performed and rendered.

Course fees

Course fees are recognised over the duration of the course.

Agency fees

Agency fees are recognised over the period in which the services are completed.

Interest income

Interest income is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable.

Carpark income

Carpark income is recognised at a point in time when transacted.

Licence, certificate and permit fees

Licence, certificates and permit fees are recognised at a point in time when licences, certificates or permits are issued.

Laboratory, inspection and quarantine fees

These fees are recognised at a point of time when the services have been performed and rendered.

Miscellaneous income

Miscellaneous income comprising income derived from consultancy fees, sale of publications, souvenirs and orchid plantlets, and park usage and barbeque permit fees are recognised at a point in time in which they are earned. Liquidated damages are recognised as income when the right to claim such liquidated damages from contractors are established. Compensation collected from contractors whose work resulted in damage to trees and plants are recognised upon issuance of the notice of offence.

Retirement benefits costs

Payments to defined contribution plans are charged as an expense when employees have rendered the services entitling them to the contributions. Payments made to state-managed retirement benefit schemes, such as the Singapore Central Provident Fund, are dealt with as payments to defined contribution plans where the Group's obligations under the plans are equivalent to those arising in a defined contribution retirement benefit plan.

Defined benefit obligations due to pensionable officers are recognised in the statement of financial position in accordance with the Pensions Act 1995. Provision for pension costs for eligible retired employees is estimated by management.

For pension costs, the cost of providing benefits is determined using the projected unit credit method. Remeasurement, comprising actuarial gains and losses is reflected immediately in the statement of financial position with a charge or credit recognised in other comprehensive income in the period in which they occur.

Remeasurement recognised in other comprehensive income is reflected immediately in accumulated surplus and will not be reclassified to income or expenditure. Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit liability or asset. Defined benefit costs are categorised as follows:

- Service cost (including current and past service cost);
- Net interest expense or income; and
- Remeasurement.

For all active members of the scheme, the "projected accrual benefit" is based on the scheme's accrual formula and upon service as of the valuation date, but using the employee's scheme salary, projected to the age at which the employee is assumed to leave active service. For inactive members, it is the total benefit.

The defined benefit obligation/project benefit obligation/plan liability is the discounted present value of the "projected accrued benefits". The service cost is the corresponding value of benefits earned by active members over the year as a result of one more year of service.

Employee leave entitlement

Employee entitlements to annual leave are recognised when they are accrued to employees. A provision is made for the estimated liability for annual leave as a result of services rendered by employees up to the end of the reporting period.

Contribution to consolidated fund

Under Section 13(1)(e) and the First Schedule of the Singapore Income Tax Act, Chapter 134, the income of the Group is exempt from income tax.

In lieu of income tax, NParks is required to make contribution to the Government Consolidated Fund in accordance with the Statutory Corporations (Contributions to Consolidated Fund) Act, Chapter 319A. The provision is based on the guidelines specified by the Ministry of Finance and is computed based on the net surplus of the Group for each of the financial year at the prevailing corporate tax rate for the Year of Assessment. Contribution to consolidated fund is provided for on an accrual basis.

Cash and cash equivalents

Cash and cash equivalents comprise cash at bank and deposits placed with the Accountant-General's Department ("AGD") that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value.

Deferred revenue

Income from rental and lease premium received in advance are stated at initial amount less accumulated amortisation. Amortisation is calculated on a straight-line basis to reduce the initial amount over the lease term and is recognised in the statement of comprehensive income.

Income from plan fees received in advance is stated at initial amount collected and is recognised in the statement of comprehensive income when services are performed and rendered.

Contingencies

A contingent liability is:

- (a) a possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group; or
- (b) a present obligation that arises from past events but is not recognised because:
 - (i) It is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation; or
 - (ii) The amount of the obligation cannot be measured with sufficient reliability.

A contingent asset is a possible asset that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group.

Contingent liabilities and assets are not recognised on the statement of financial position of the Group.

Funding for government projects

Government projects funded using NParks' accumulated surplus are considered distribution to owners. Accordingly, the amounts are recognised directly in the statement of changes in equity.

Other reserve

Other reserve represents the accumulated surplus transferred from the former Agri-Food and Veterinary Authority of Singapore ("AVA") NParks on 1 April 2019 when AVA transferred its non-food functions to NParks. The accumulated surplus comprised surpluses arising from unutilised grants that were previously received by AVA for future acquisitions of and capital improvements on property, plant and equipment.

The Group has earmarked this reserve to fund future acquisition of property, plant and equipment for the Animal and Veterinary Service ("AVS"). Depreciation charge on such property, plant and equipment will be transferred from other reserves to accumulated surplus. The transfer will cease when this reserve is fully utilised.

3 Property, plant and equipment

	LEASEHOLD LAND	BUILDING, STRUCTURES, CAPITAL AND OTHER IMPROVEMENTS	OFFICE EQUIPMENT, FURNITURE AND FITTINGS	MOTOR VEHICLES	LABORATORY AND GARDENING EQUIPMENT	CONSTRUCTION- IN-PROGRESS	TOTAL
	\$	\$	\$	\$	\$	\$	\$
THE GROUP							
At 1 April 2022	70,086,377	214,565,196	68,540,725	1,539,316	4,711,191	33,412,026	392,854,831
Additions	—	245,875	616,988	—	691,548	12,731,205	14,285,616
Transfers	—	9,936,995	1,835,399	—	2,035,672	(13,808,066)	—
Disposals	—	(79,687)	(304,402)	(45,728)	(92,543)	—	(522,360)
At 31 March 2023	70,086,377	224,668,379	70,688,710	1,493,588	7,345,868	32,335,165	406,618,087
Additions	—	156,186	72,126	176,640	79,017	11,311,945	11,795,914
Transfers	—	13,749	6,169,319	—	—	(6,183,068)	—
Disposals	—	(34,053)	(2,222,806)	(151,287)	(561,435)	—	(2,969,581)
At 31 March 2024	70,086,377	224,804,261	74,707,349	1,518,941	6,863,450	37,464,042	415,444,420
Accumulated depreciation							
At 1 April 2022	19,234,223	126,955,889	47,768,504	1,106,854	2,004,958	—	197,070,428
Depreciation for the year	1,126,158	8,502,009	5,738,800	110,122	710,471	—	16,187,560
Disposals	—	(65,410)	(282,226)	(45,728)	(86,527)	—	(479,891)
At 31 March 2023	20,360,381	135,392,488	53,225,078	1,171,248	2,628,902	—	212,778,097
Depreciation for the year	1,126,149	8,594,701	6,423,414	88,054	861,814	—	17,094,132
Disposals	—	(12,106)	(1,562,147)	(145,194)	(378,084)	—	(2,097,531)
At 31 March 2024	21,486,530	143,975,083	58,086,345	1,114,108	3,112,632	—	227,774,698
Carrying amount							
At 31 March 2024	48,599,847	80,829,178	16,621,004	404,833	3,750,818	37,464,042	187,669,722
At 31 March 2023	49,725,996	89,275,891	17,463,632	322,340	4,716,966	32,335,165	193,839,990

4 Investment in a subsidiary

	2024	2023
	\$	\$
NPARKS		
Unquoted equity investment, at cost	2	2

Details of the subsidiary at the end of the reporting period are as follows:

NAME OF SUBSIDIARY	COUNTRY OF INCORPORATION / PRINCIPAL PLACE OF BUSINESS	PROPORTION OF OWNERSHIP INTEREST AND VOTING POWER HELD		PRINCIPAL ACTIVITIES
		2024	2023	
		%	%	
Singapore Garden City Pte. Ltd. ^(a)	Singapore	100	100	Landscape planning, advisory services and business consulting services

(a) Audited by JPL WONG & CO.

5 Leases

As lessee

The Group has lease contracts for leasehold land and buildings, and office premises. There are lease contracts that include extension options which are further discussed below.

The Group has certain leases with lease terms of 12 months or less and leases of low value. The Group applies the ‘short-term lease’ and ‘lease of low-value assets’ recognition exemptions for these leases.

(a) Right-of-use assets

The carrying amounts of the right-of-use assets and movement during the years are disclosed as follows:

	LEASEHOLD LAND AND BUILDINGS	OFFICE PREMISES	TOTAL
	\$	\$	\$
GROUP AND NPARKS			
At 1 April 2022	5,160,921	4,791,270	9,952,191
New leases	—	402,050	402,050
Transferred to finance lease receivable upon subleases (Note 5(b))	(686,243)	—	(686,243)
Depreciation expense	(1,891,581)	(815,381)	(2,706,962)
At 31 March 2023	2,583,097	4,377,939	6,961,036
Transferred to finance lease receivable upon subleases (Note 5(b))	(66,174)	—	(66,174)
Lease modification	319,081	(3,851)	315,230
Depreciation expense	(1,852,403)	(814,593)	(2,666,996)
At 31 March 2024	983,601	3,559,495	4,543,096

(b) Lease receivables

As intermediate lessor

The Group has entered into subleases on one of its premises. The lease terms of these subleases constitute a major part of tenure of the head lease and accordingly, these subleases are classified as finance leases. The net investment in the sub-lease is recognised under “lease receivables”.

The following table shows the maturity analysis of the undiscounted lease payments to be received:

	2024	2023
	\$	\$
GROUP AND NPARKS		
At 1 April	8,199,805	7,678,043
Transferred from right-of-use assets upon sublease (Note 5(a))	66,174	686,243
Gain on derecognition of right-of-use assets arising from the head lease arrangement and recognition of a net investment in a sub-lease, classified as finance lease	804,077	1,577,809
Accretion of interest	266,227	258,993
Receipts	(2,598,908)	(2,001,283)
At 31 March	6,737,375	8,199,805
Within one year	2,682,581	2,366,738
After one year but not more than five years	4,470,970	6,311,302
Total undiscounted lease receivables	7,153,551	8,678,040
Unearned interest income	(416,176)	(478,235)
Total receivables at 31 March	6,737,375	8,199,805

(b) Lease receivables (Cont'd)

Represented as:

Current	2,428,298	2,141,889
Non-current	4,309,077	6,057,916
	6,737,375	8,199,805

(c) Lease liabilities*As lessee*

The carrying amounts of lease liabilities and the movements during the year are disclosed as follow:

	2024	2023
	\$	\$
GROUP AND NPARKS		
At 1 April	12,823,172	16,414,644
Additions	—	402,050
Lease modification	315,230	—
Accretion of interest	363,129	444,260
Payments (Note 5(e))	(4,483,834)	(4,437,782)
At 31 March	9,017,697	12,823,172
Within one year	2,878,691	4,437,782
After one year but not more than five years	6,325,361	8,071,711
More than five years	477,560	1,193,900
Total undiscounted lease payments	9,681,612	13,703,393
Unearned interest costs	(663,915)	(880,221)
Total liabilities at 31 March	9,017,697	12,823,172
Represented as:		
Current	2,573,254	4,104,960
Non-current	6,444,443	8,718,212
	9,017,697	12,823,172

(d) Amounts recognised in the statement of comprehensive income

	2024	2023
	\$	\$
GROUP AND NPARKS		
Depreciation of right-of-use assets	2,666,996	2,706,962
Gain on derecognition of right-of-use assets arising from the head lease arrangement and recognition of a net investment in a sub-lease, classified as finance lease	(804,077)	(1,577,809)
Interest expense on lease liabilities	363,129	444,260
Interest income on lease receivables	(266,227)	(258,993)
Lease expenses not capitalised in lease liabilities:		
- Expense relating to short-term leases	1,410,076	1,316,160
- Expenses relating to leases of low-value assets	1,849,822	1,210,770
Total lease expenses	3,259,898	2,526,930
Total amount recognised in the statement of comprehensive income	5,219,719	3,841,350

(e) Total cash outflows

During the current financial year, the Group's total cash outflows for leases are summarised as follows:

	2024	2023
	\$	\$
GROUP AND NPARKS		
Principal payments of lease liabilities	4,120,705	3,993,522
Interest paid on lease liabilities	363,129	444,260
	4,483,834	4,437,782
Lease expenses not capitalised in lease liabilities	3,259,898	2,526,930
	7,743,732	6,964,712

(f) Extension options

The group has lease contracts that include extension options. These options are negotiated by management to provide flexibility in managing the leased-asset portfolio and align with the Group's business needs.

6 Trade receivables

	2024 \$	2023 \$(RESTATED)	2022 \$(RESTATED)
GROUP			
Not due	7,980,249	3,889,466	2,881,200
Past due < 1 month	143,388	39,766	104,205
Past due 1 month to 4 months	159,245	141,342	119,643
Past due > 4 months	511,670	42,680	76,412
Receivables not impaired	8,794,552	4,113,254	3,181,460
Impaired receivables	7,127,224	7,765,446	7,693,734
	15,921,776	11,878,700	10,875,194
Allowance for impairment loss	(7,127,224)	(7,765,446)	(7,693,734)
Total	8,794,552	4,113,254	3,181,460

	2024 \$	2023 \$(RESTATED)	2022 \$(RESTATED)
NPARKS			
Not due	7,941,249	3,889,466	2,881,200
Past due < 1 month	143,388	39,766	104,205
Past due 1 month to 4 months	159,245	141,342	119,643
Past due > 4 months	511,670	42,680	76,412
Receivables not impaired	8,755,552	4,113,254	3,181,460
Impaired receivables	7,127,224	7,765,446	7,693,734
	15,882,776	11,878,700	10,875,194
Allowance for impairment loss	(7,127,224)	(7,765,446)	(7,693,734)
Total	8,755,552	4,113,254	3,181,460

Included in the Group's and NParks' "impaired receivables" as at 31 March 2024 are rental arrears due from a corporate customer of \$6,616,800 (2023 and 2022 - \$7,352,000) to be recovered over 9 (2023 - 10) annual instalment payments. Impairment losses of \$735,200 (2023 and 2022 - Nil) was reversed to profit or loss on receipt of annual instalment payments by the customer. The credit period on rendering of services is 30 days (2023 - 30 days). Other than the rental arrears owing by the corporate customer which interest is charged at 2% per annum, no interest is charged on the trade receivables and no collateral is held by the Group over the trade receivables.

Expected credit losses

The movement in allowance for expected credit losses on trade receivables computed based on lifetime ECL are as follows:

	2024 \$	2023 \$(RESTATED)
GROUP AND NPARKS		
At 1 April	7,765,446	7,693,734
Amount write-off	(38,798)	(42,323)
Impairment loss recognised	138,978	114,035
Impairment loss reversed	(738,402)	—
Impairment loss (reversed)/recognised, net (Note 21)	(599,424)	114,035
At 31 March	7,127,224	7,765,446

7 Other receivables

	GROUP		NPARKS	
	2024 \$	2023 \$	2024 \$	2023 \$
Other receivables				
- MND ⁽ⁱ⁾	1,606,540	9,966,260	1,606,540	9,966,260
- Garden City Fund ⁽ⁱⁱ⁾	1,784,306	638,754	1,784,306	638,754
- Gardens by the Bay ⁽ⁱⁱ⁾	46,795	13,193	46,795	13,193
- Other receivables	557,819	556,685	576,322	556,437
Interest receivables	6,371,030	4,417,154	6,371,030	4,417,154
Deposits	558,131	519,655	557,881	519,405
	10,924,621	16,111,701	10,942,874	16,111,203

- (i) Receivables from MND comprise development grants receivable by NParks. These amounts are unsecured and interest-free and are repayable on demand.
(ii) Non-trade amounts due from Garden City Fund and Gardens by the Bay are unsecured and interest-free and are repayable on demand.

8 Cash and cash equivalents

	2024 \$	2023 \$	2024 \$	2023 \$
Cash at bank	387,667	394,563	—	—
Deposits with AGD ⁽ⁱ⁾	447,487,118	394,417,291	447,487,118	394,417,291
	447,874,785	394,811,854	447,487,118	394,417,291

- (i) With effect from financial year 2009/2010, Statutory Boards participate in the Centralised Liquidity Management by the Accountant General's Department ("AGD") under AGD Circular 4/2009. Deposits are centrally managed by AGD, available to the statutory board upon request and earns interest at the average rate of 3.38% (2023 - 1.61%) per annum.

9 Share capital

	2024 \$	2023 \$
GROUP AND NPARKS		
Issued and fully paid up:		
At 1 April	37,092,611	34,912,734
Equity injection ⁽¹⁾	58,741	2,179,877
At 31 March	37,151,352	37,092,611

(1) Injection of capital is part of the Capital Management Framework for Statutory Boards under Finance Circular Minute M26/2008. The shares have been fully paid and are held by the Minister for Finance, a body corporate incorporated by the Minister for Finance (Incorporation) Act (Chapter 183). The holder of these shares, which has no par value, is entitled to receive dividends.

10 Capital account

Capital account represents the value of assets net of liabilities (excluding the leasehold land acquired via Government capital grants) transferred from the former Parks and Recreation Department ("PRD") of MND when NParks was established in June 1990 and when PRD merged with NParks in July 1996.

11 Other reserve

Other reserve represents the accumulated surplus transferred from the former Agri-Food and Veterinary Authority of Singapore ("AVA") NParks on 1 April 2019 when AVA transferred its non-food functions to NParks. The accumulated surplus comprised surpluses arising from unutilised grants that were previously received by AVA for future acquisitions of and capital improvements on property, plant and equipment.

The Group has earmarked this reserve to fund future acquisition of property, plant and equipment for the Animal and Veterinary Service ("AVS"). Depreciation charge on such property, plant and equipment will be transferred from other reserves to accumulated surplus. The transfer will cease when this reserve is fully utilised.

The amount utilised in the current financial year represents the depreciation charged on replacement assets of \$573,440 (2023 - \$435,726) that have been purchased as at the end of the reporting period.

12 Deferred capital grants

	2024 \$	2023 \$
GROUP AND NPARKS		
At 1 April	137,701,653	141,997,121
Amounts transferred from Government grants (Note 16)	7,674,645	8,169,759
Less: Amortisation of deferred capital grants	(13,019,132)	(12,465,227)
At 31 March	132,357,166	137,701,653
Total capital grants received (excluding donations-in-kind transferred from Garden City Fund) and utilised since establishment	343,145,847	335,471,202

13 Deferred revenue

	2024 \$	2023 \$ (RESTATED)	2022 \$ (RESTATED)
GROUP AND NPARKS			
Lease premium received in advance	715,278	798,612	881,945
Plan fees received in advance	943,375	1,023,030	1,175,594
Rental received in advance	1,680,000	1,680,000	1,680,000
Others	169,658	218,311	204,280
	3,508,311	3,719,953	3,941,819
Represented as:			
Non-current portion	1,022,130	1,139,644	1,157,261
Current	2,486,181	2,580,309	2,784,558
	3,508,311	3,719,953	3,941,819

The lease premium received in advance represents the unamortised balances of lease premium received in advance from a tenant.

14 Provision for pension costs

	2024 \$	2023 \$
GROUP AND NPARKS		
At 1 April	1,575,317	1,783,290
Provision reversed for the year (Note 20)	(114,006)	(87,973)
Payments during the year	(120,000)	(120,000)
At 31 March	1,341,311	1,575,317
Represented as:		
Non-current portion	1,221,311	1,455,317
Current	120,000	120,000
	1,341,311	1,575,317

As at the beginning and the end of the financial year, no existing employees of NParks were eligible for the pension scheme.

15 Trade and other payables

	GROUP		NPARKS	
	2024	2023	2024	2023
	\$	\$	\$	\$
Trade payables	28,026,976	9,909,695	28,026,976	9,909,695
Other payables				
- MND ⁽ⁱ⁾	4,365,309	4,633,651	4,365,309	4,633,651
- Garden City Fund ⁽ⁱⁱ⁾	148,731	146,382	148,731	146,382
- Others	14,183,195	25,247,460	14,182,634	25,246,977
Rental and other deposits	8,641,702	9,070,481	8,641,702	9,070,481
Accrual expenses	24,768,962	27,351,422	24,763,662	27,346,122
Financial liabilities at amortised cost	80,134,875	76,359,091	80,129,014	76,353,308
GST payable	8,272,842	8,472,692	8,272,842	8,472,692
	88,407,717	84,831,783	88,401,856	84,826,000

(i) Payables to MND comprise primarily state revenue collections received on behalf of the Ministry. The amounts are unsecured and interest-free and are repayable in cash on demand.
(ii) Non-trade amounts due to Garden City Fund are unsecured and interest-free.

16 Government grants received in advance

GROUP AND NPARKS	OPERATING GRANTS ⁽ⁱ⁾	DEVELOPMENT GRANTS ⁽ⁱⁱ⁾	OTHER GRANTS ⁽ⁱⁱⁱ⁾	TOTAL
	\$	\$	\$	\$
At 1 April 2022	35,471,499	(1,505,712)	(495,826)	33,469,961
Grants received during the year	422,904,031	90,997,937	2,867,887	516,769,855
Grants receivable		969,239	(1,907)	967,332
Interest income earned		72,019	—	72,019
Transfer to deferred capital grants (Note 12)	(7,792,516)	(377,243)	—	(8,169,759)
Unutilised grants returned	(9,417,638)	(324,362)	(3,205)	(9,745,205)
Payment on behalf (Note 24)	—	(91,977,799)	(24,112)	(92,001,911)
Transfer to statement of comprehensive income	(419,786,106)	—	(3,199,489)	(422,985,595)
At 31 March 2023	21,379,270	(2,145,921)	(856,652)	18,376,697
Grants received during the year	432,817,290	102,201,529	1,491,225	536,510,044
Grants receivable	—	—	772,554	772,554
Interest income earned	—	114,166	—	114,166
Transfer to deferred capital grants (Note 12)	(7,645,406)	(29,239)	—	(7,674,645)
Unutilised grants returned	(751,842)	(124,748)	—	(876,590)
Payment on behalf (Note 24)	—	(100,868,719)	—	(100,868,719)
Transfer to statement of comprehensive income	(416,958,131)	—	(1,504,070)	(418,462,201)
At 31 March 2024	28,841,181	(852,932)	(96,943)	27,891,306

Notes
(i) Total operating grants received/receivable less transferred to deferred capital grants since establishment are \$5,169,434,858 (2023 - \$4,744,262,974).
(ii) Development grants received from MND for State projects running by NParks on behalf of MND.
(iii) Other grants comprise grants received from other government agencies.
(iv) Transfer from accruals related to grants previously received from MND to settle certain expenses, no longer deemed necessary.

17 Net assets of Garden City Fund

National Parks Board ("NParks") is the trustee of Garden City Fund ("GCF"). GCF is managed and administered by the Garden City Fund Management Committee, comprising staff from NParks and members of the public appointed by NParks, in accordance with the provisions of the Third Amended and Restated Garden City Fund Trust Deed dated 18 May 2021 (the "Deed").

The GCF comprises the Garden City Endowment Fund ("GCEF") and the Garden City Non-Endowment Fund ("GCNEF"). The GCNEF comprises all moneys transferred from the specific funds of NParks upon the formation of the Garden City Fund on 1 July 2002 and all other contributions to the GCNEF. There has been no contribution to the GCEF since establishment.

The GCNEF and the income from the GCEF will be used to further the objectives of the Garden City Fund.

The objectives of GCF are exclusively to enhance the enjoyment of the Garden City, for amenities and special features at the national parks, nature reserves and green areas in Singapore and also for community activities and programmes that promote awareness of nature, art and culture, conservation, research and education and, through involving the citizens to enhance ownership of the Garden City, facilitating a sense of rootedness to the nation.

Upon dissolution of the Garden City Fund, the remaining moneys in the fund shall be donated to charitable organisations which have been designated as Institutions of a Public Character under the Income Tax Act (Chapter 134) and registered under the Charities Act (Chapter 37).

GCF's accounts are prepared in accordance with Financial Reporting Standards in Singapore ("FRS").

GROUP AND NPARKS

Income:

	2024	2023
	\$	\$
Donations	7,979,841	9,254,038
Sales of publications/souvenirs/merchandise	108,172	77,295
Course/tour fees	71,805	62,382
Interest income	997,169	465,589
Other income	—	743
	9,156,987	9,860,047

Amounts disbursed for:

Costs of charitable activities:

Conservation projects	48,012	61,666
Enhancements of parks, gardens and facilities	2,036,726	2,400,370
Outreach, education and research programmes	3,274,825	3,854,276
Publication	38,816	15,065
Administrative costs	860,408	23,255
	6,258,787	6,354,632
Surplus for the year	2,898,200	3,505,415
Accumulated fund at 1 April	22,537,607	19,032,192
Accumulated fund at 31 March	25,435,807	22,537,607

Represented as:

Current assets

Other receivables and prepayments	444,553	552,453
Cash and bank balances	40,328,621	32,596,225
	40,773,174	33,148,678

Current liabilities

Trade payables	376,054	41,459
Other payables	2,106,966	1,064,579
Deferred donations	12,854,347	9,505,033
	15,337,367	10,611,071

Net assets

25,435,80722,537,607

18 Net assets of National Productivity Fund

NParks also administers the following fund on behalf of the Productivity Fund Administration Board ("PFAB").

GROUP AND NPARKS

Grants received

Interest income

Less: Expenditure

Staff related costs

General Administration

Grant disbursements

Surplus for the year

Accumulated fund at 1 April

Less: Return of funds

Accumulated fund at 31 March

Represented as:

Cash and bank balances

Accruals

Net assets

20242023\$ \$

19,6622,254,394145947—(305,087)—(64,574)—(1,672,500)—(2,042,161)

19,807213,180217,1874,007(236,994)—

—217,187

73,390290,388(73,390)(73,201)

—217,187

The funded projects were completed during the year, and the accumulated surplus were returned to PFAB.

19 Income

	GROUP		NPARKS	
	2023/2024	2022/2023	2023/2024	2022/2023
	\$	\$	\$	\$
Operating income	34,335,388	25,607,783	34,327,637	25,604,117
Barbeque permit fees	456,136	523,468	456,136	523,468
Consultancy fees	39,000	149,000	—	12,500
Events income	263,423	129,363	254,823	129,363
Express services	270,015	352,357	270,015	352,357
Gain on derecognition of right-of-use assets (Note 5(b))	804,077	1,577,809	804,077	1,577,809
Liquidated damages	156,709	476,579	156,709	476,579
Merchandise	39,960	59,546	39,960	59,546
Park usage fees	327,568	366,874	327,568	366,874
Publication and plant sales	49,911	225,294	49,911	225,294
Tour fees	89,558	32,537	89,558	32,537
Others	1,053,625	812,330	1,073,892	853,345
Miscellaneous income	3,549,982	4,705,157	3,522,649	4,609,672
Total income	37,885,370	30,312,940	37,850,286	30,213,789
Timing of transfer of goods or services:				
At a point in time	16,724,620	16,499,131	16,697,287	16,540,146
Overtime	8,620,054	8,370,358	8,620,054	8,233,858
	25,344,674	24,869,489	25,317,341	24,774,004
Add: Interest income	12,540,696	5,443,451	12,532,945	5,439,785
Total income	37,885,370	30,312,940	37,850,286	30,213,789

20 Staff costs

	2023/2024	2022/2023
	\$	\$
GROUP AND NPARKS		
Wages and salaries	131,299,472	128,402,749
Contributions to defined contribution plans	19,066,155	17,942,014
Provision for pension costs reversed (Note 14)	(114,006)	(87,973)
Other staff benefits	729,797	1,259,821
	150,981,418	147,516,611

21 Deficit from operations

The following item has been included in arriving at deficit from operations:

	2023/2024	2022/2023
	\$	\$
GROUP AND NPARKS		
Loss on disposal of property, plant and equipment	154,646	16,334
Impairment loss on trade receivables (reversed)/recognised (Note 6)	(599,424)	114,035

22 Funding for government projects

During the financial year ended 31 March 2024, \$766,457 (2023 - \$1,028,292) was incurred to fund the capital expenditure for government projects, namely, Redevelopment of Park Connector Network, SBG Gallop Road Extension and SBG Children's Garden Extension.

As these projects were funded using NParks' accumulated surplus, they are considered distribution to owners. Accordingly, the amounts are recognised directly in the statement of changes in equity.

23 Commitments

Capital commitments

	2023/2024	2022/2023
	\$	\$
GROUP AND NPARKS		
Contracted but not provided for	162,598,943	239,715,495
Less: Development expenditure on behalf of government	(162,598,943)	(234,257,092)
	—	5,458,403
Authorised but not contracted for	494,307,654	498,683,196
Less: Development expenditure on behalf of government	(460,956,608)	(476,123,200)
	33,351,046	22,559,996
	33,351,046	28,018,399

NParks is the agent to develop, upgrade, manage and maintain the public parks on behalf of the government. Amounts contracted but not provided for comprise mainly work relating to Jurong Lake Gardens, park developments and the Park Connector Network. Amounts authorised but not contracted for comprise mainly work relating to new park developments, the Park Connector Network and redevelopment programmes.

24 Related party transactions

Some of the Group’s transactions and arrangements are with related parties and the effect of these on the basis determined between the parties is reflected in these financial statements. The balances are unsecured, interest-free and repayable on demand unless otherwise stated.

The Group and NParks entered into the following significant transactions with its parent Ministry, MND, and other related parties during the year, which are reimbursable in full:

	2023/2024	2022/2023
	\$	\$
GROUP AND NPARKS		
MND		
Revenue collected on behalf of and remitted to MND	42,739,090	38,604,283
Development expenditure paid on behalf		
- Other state projects	100,868,719	91,977,799
Other Ministries and Statutory Boards		
Expenses paid on behalf	6,635,102	18,157,259
Garden City Fund		
Expenses paid on behalf	2,194,960	1,738,581
Gardens by the Bay		
Expenses paid on behalf	338,773	184,142

Compensation of key management personnel

The remuneration of key management personnel during the financial year were as follows:

	2023/2024	2022/2023
	\$	\$
GROUP AND NPARKS		
Salaries and other short-term employee benefits	2,970,227	3,274,336
Post-employment benefits	83,871	95,026

25 Financial risk management objectives and policies

The Group is exposed to financial risk arising from its operations which include interest rate risk, credit risk and liquidity risk. The Group has written policies and guidelines, which set out its general risk management framework as discussed below.

There has been no change to the Group’s exposure to these financial risks or the manner in which it manages and measures the risk.

Credit risk

Credit risk is the risk of financial loss to the Group if a customer or counterparty to a financial instrument fails to meet its contractual obligations.

The Group's credit risk is primarily attributable to its trade and other receivables. For cash at bank, the Group minimises credit risk by dealing exclusively with high credit rating counterparties.

The Group's objective is to minimise losses incurred due to increased credit risk exposure. The Group trades only with recognised and creditworthy third parties. In addition, receivable balances are monitored on an ongoing basis with the result that the Group’s exposure to bad debts is not significant.

The Group considers the probability of default upon initial recognition of asset and whether there has been a significant increase in credit risk on an ongoing basis throughout each reporting period.

To assess whether there is a significant increase in credit risk, the Group compares the risk of a default occurring on the asset as at reporting date with the risk of default as at the date of initial recognition. The Group considers available reasonable and supportive forwarding-looking information which includes the actual or expected adverse changes in business, financial or economic conditions that are expected to cause a significant change to the debtor’s ability to meet its obligation.

The Group determines that its financial assets are credit-impaired when:

- There is significant financial difficulty of the debtors
- A breach of contract, such as a default or past due event
- It is becoming probable that the debtor will enter bankruptcy or other financial reorganisation

Financial assets are written off when there is evidence indicating that the debtor is in severe financial difficulty and the debtor has no realistic prospect of recovery. Where receivables have been written off, the Group continues to engage enforcement activity to attempt to recover the receivable due. Where recoveries are made, these are recognised in the statement of comprehensive income.

The following are credit risk management practices and quantitative and qualitative information about amounts arising from expected credit losses for each class of financial assets.

Trade receivables

The Group and NParks have recorded a reversal of impairment loss of \$735,200 (2023 – Nil) to profit or loss on receipt of annual instalment payments by the corporate customer during the current financial year. The customer has requested for an extended credit term and the amount is more than 150 days past due based on its agreed contractual repayment due date.

Management concluded that it is premature to reverse the allowance made and there is a possibility that the customer may default on the repayment and as such, there is a need to retain the provision on impairment loss as at 31 March 2024. Management will continue to recognise the reversal of the impairment loss on the amount previously recognised based on the receipt or the repayments from the corporate customer in each of the financial year.

For the remaining trade receivables, the Group has applied the simplified approach in SB-FRS 109 to measure the allowance of lifetime ECL. The Group determines the ECL by using a provision matrix, estimated based on historical credit loss experience based on the past due status of the debtors, adjusted and apportioned to reflect current conditions and estimates of future economic conditions. Based on the Group’s assessment, other than disclosed in Note 6 to the financial statements, there is no additional loss allowance made as at 31 March 2024.

Other receivables

The Group has credit policies and procedures in place to minimise and mitigate its credit risk exposure. The Group assessed the latest performance and financial position of the other counterparties, adjusted for the future outlook of the industry in which the counterparties operate in, and concluded that there has been no significant increase in the credit risk since initial recognition of the financial assets. Accordingly, the Group measured the impairment allowance using 12-month ECL and determine that the ECL is insignificant.

Excessive risk concentration

Except for receivables due from MND and other government agencies, there is no significant concentration of credit risk.

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of the Group’s financial instruments will fluctuate because of changes in market interest rate.

The Group’s exposure to changes in interest rates relates primarily to fixed deposits and non-current trade receivables. Surplus funds in NParks are placed with Accountant-General’s Department (“AGD”) as disclosed in Note 8. Other than funds placed with AGD and non-current trade receivable with fixed interest rate as disclosed in Note 6, there are no other significant interest-bearing assets or interest-bearing liabilities as at the end of the reporting period.

Sensitivity analysis for interest rate risk

Interest rate sensitivity analysis has not been presented as management does not expect any reasonable possible changes in interest rates to have a significant impact on the Group’s operations and cash flows.

Liquidity risk

Liquidity or funding risk is the risk that an enterprise will encounter difficulty in raising funds to meet commitments associated with financial instruments. Liquidity risk may result from an inability to sell a financial asset quickly at close to its fair value.

The Group and the Board receive its funds from its Parent Ministry which are drawn down on a regular basis to meet its funding requirements. All excess cash from the Group’s bank accounts are aggregated and centrally managed by the AGD on a daily basis.

Analysis of financial instruments by remaining contractual maturities

The table below summarises the maturity profile of the Group’s and NParks’ financial liabilities at the end of the reporting period based on contractual undiscounted repayment obligations.

	LESS THAN 1 YEAR \$	BETWEEN 2 AND 5 YEARS \$	OVER 5 YEARS \$	TOTAL \$
GROUP				
2024				
Financial liabilities				
Lease liabilities (Note 5(c))	2,878,691	6,325,361	477,560	9,681,612
Trade and other payables (Note 15)	80,134,875	—	—	80,134,875
Total undiscounted financial liabilities	83,013,566	6,325,361	477,560	89,816,487
2023				
Financial liabilities				
Lease liabilities (Note 5(c))	4,437,782	8,071,711	1,193,900	13,703,393
Trade and other payables (Note 15)	76,359,091	—	—	76,359,091
Total undiscounted financial liabilities	80,796,873	8,071,711	1,193,900	90,062,484
NPARKS				
2024				
Financial liabilities				
Lease liabilities (Note 5(c))	2,878,691	6,325,361	477,560	9,681,612
Trade and other payables (Note 15)	80,129,014	—	—	80,129,014
Total undiscounted financial liabilities	83,007,705	6,325,361	477,560	89,810,626
2023				
Financial liabilities				
Lease liabilities (Note 5(c))	4,437,782	8,071,711	1,193,900	13,703,393
Trade and other payables (Note 15)	76,353,308	—	—	76,353,308
Total undiscounted financial liabilities	80,791,090	8,071,711	1,193,900	90,056,701

26 Financial instruments
Fair values

The carrying amounts of the financial assets and liabilities with a maturity of less than one year are assumed to approximate their fair values.

However, the Group does not anticipate that the carrying amounts recorded at end of the reporting period would be significantly different from the values that would eventually be received or settled.

Accounting classification of financial assets and financial liabilities

The carrying amounts of financial assets and financial liabilities at the reporting date by categories are as follows:

	GROUP		NPARKS	
	2024	2023	2024	2023
	\$	\$	\$	\$
		(RESTATED)		(RESTATED)
Financial assets at amortised cost				
Lease receivables (Note 5(b))	6,737,375	8,199,805	6,737,375	8,199,805
Trade receivables (Note 6)	8,794,552	4,113,254	8,755,552	4,113,254
Other receivables (Note 7)	10,924,621	16,111,701	10,942,874	16,111,203
Cash and cash equivalents (Note 8)	447,874,785	394,811,854	447,487,118	394,417,291
	474,331,333	423,236,614	473,922,919	422,841,553
Financial liabilities at amortised cost				
Lease liabilities (Note 5(c))	9,017,697	12,823,172	9,017,697	12,823,172
Trade and other payables (Note 15)	80,134,875	76,359,091	80,129,014	76,353,308
	89,152,572	89,182,263	89,146,711	89,176,480

The carrying amounts of cash and cash equivalents, trade receivables, other receivables and trade and other payables, approximate their respective fair values due to the relatively short-term maturity of these financial instruments.

The carrying amount of long-term trade receivables approximates fair value as the interest rate approximates the market level at the end of the reporting period.

27 Capital management

The Group manages its capital to ensure that it will be able to continue as a going concern while fulfilling its objective as a statutory board.

The capital structure of the Group consists of accumulated surplus, capital account and share capital. The overall strategy of the Group remains unchanged from the previous financial year.

28 Prior year adjustments

During the current financial year, management performed a reassessment on the leasing arrangement entered with a corporate customer as disclosed in Note 6 and identified that operating lease income of \$2.88 million in respect of prior years and a corresponding impairment loss of \$2.88 million should have been recognised, which was not in accordance with the requirements under SB-FRS 116 - *Leases* and SB-FRS 109 - *Financial Instruments*. An additional receivable balance of \$1.68 million due from the corporate customer was also reassessed to not be recoverable as at 1 April 2022.

Management corrected the material prior period's error identified above retrospectively by restating the comparative amounts for the prior period's statement of comprehensive income in accordance with SB-FRS 8 *Accounting Policies, Changes in Accounting Estimates and Errors*. The prior period's adjustments do not have a financial impact of the Group's and NParks' statements of comprehensive income for the financial year ended 31 March 2024 and 31 March 2023, respectively.

The prior year adjustments and reclassifications, to the extent that they are applied retrospectively, have the following impact:

	AS REPORTED	PRIOR YEAR ADJUSTMENTS	AS RESTATE
	\$	\$	\$
STATEMENTS OF FINANCIAL POSITION			
The Group			
At 1 April 2022			
Trade receivables (Note 6)	5,533,460	(2,352,000)	3,181,460
Deferred income (Note 13)	(4,613,819)	672,000	(3,941,819)
Accumulated surplus	(266,238,664)	1,680,000	(264,558,664)
At 31 March 2023			
Trade receivables (Note 6)	6,465,254	(2,352,000)	4,113,254
Deferred income (Note 13)	(4,391,953)	672,000	(3,719,953)
Accumulated surplus	(302,429,124)	1,680,000	(300,749,124)
NPARKS			
At 1 April 2022			
Trade receivables (Note 6)	5,533,460	(2,352,000)	3,181,460
Deferred income (Note 13)	(4,613,819)	672,000	(3,941,819)
Accumulated surplus	(265,899,761)	1,680,000	(264,219,761)
At 31 March 2023			
Trade receivables (Note 6)	6,465,254	(2,352,000)	4,113,254
Deferred income (Note 13)	(4,391,953)	672,000	(3,719,953)
Accumulated surplus	(302,038,273)	1,680,000	(300,358,273)

WE THANK STAFF AND PARTNERS OF NPARKS WHO KINDLY CONTRIBUTED TO THIS ANNUAL REPORT

Photographs

Chan Chung Leong

Page 13: Photo of Pink Mempat (*Cratoxylum formosum*) in bloom

Bryan Yeo

Page 15: Photo of Pink Mempat (*Cratoxylum formosum*) in bloom

Limbang Grassroots Organisations

Page 15: Photo of then Deputy Prime Minister and Minister for Finance Lawrence Wong planting a tree in November 2023

FXRXS Pictures

Page 20: Photo of NParks Concert Series in the Park: Rockestra® at Fort Canning Park

Dr Matti A Niissalo

Page 23: Photo of *Nervilia singaporensis*

Daniel Ng

Page 27: Photo of Swamp Forest Crab (*Parathelphusa reticulata*)

Francis Yap

Page 28: Photo of Mangrove Whistler (*Pachycephala cinerea*)
Page 31: Photo of Slaty-breasted Rail (*Gallirallus striatus*)

Sebastian Ow

Page 37: Photo of Grey-headed Fish Eagle (*Haliaeetus ichthyaetus*)
Page 38: Photo of Golden Royal butterfly (*Pseudotajuria donatana*)

Dr Yam Tim Wing

Page 38: Photo of *Bulbophyllum singaporeanum*
Photo of *Pinalia bractescens* being pollinated by *Braunsapis clarihirta*

Bryan Lim

Page 38: Photo of youths at World Wildlife Day Regional Youth Symposium 2024

Dr Karenne Tun

Page 42: Aerial photo of Sisters' Islands Marine Park

Andrew Tau

Page 48: Photo of Trumpet Trees (*Tabebuia rosea*) along the Central Expressway

Front Cover

HortPark has strong ties with the gardening community and is the site of the first allotment gardens, tying in with our commemoration of 60 years of greening Singapore together and with the support of the community.

Introduction

This aerial photo of the Sungei Buloh Wetland Centre from 2020 shows the interconnectivity between the Reserve's various wetland habitats. In 2023, a partial retention of the old Main Bridge was conserved and reopened as a look-out point at the 30th anniversary celebration of Sungei Buloh Wetland Reserve. A new Main Bridge was erected just a few metres away.

Chapter Dividers

Page 13 - Greening with the Community

In 1963, founding Prime Minister Lee Kuan Yew planted a Pink Mempat (*Cratoxylum formosum*) to kickstart Singapore's greening journey. Today, Mempat trees in Singapore most commonly bloom in April or August after a prolonged dry spell followed by heavy rain.

Page 23 - Community in Conservation

The *Nervilia singaporensis* is a critically endangered native orchid species that is part of NParks' Species Recovery Programme. It was one of three species of native orchids that were successfully propagated for the first time this past year.

Page 31 - Nurturing Science, Technology and Innovation Together

The Slaty-breasted Rail (*Gallirallus striatus*) is one of over 4,500 newly included species in the 3rd Edition of the Singapore Red List. Released in 2023, this is the most comprehensive list to date, and will guide the planning and prioritisation of habitat restoration and species recovery efforts in Singapore.



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