

A NATURAL TRANSFORMATION

ANNUAL REPORT 2022 - 2023

NATIONAL PARKS

CONTENTS

Chairman's Message	04
Members of the Board	06
Management Team	08
Organisation Structure	10
Transforming Into a City in Nature	12
Conservation in Transformation	24
Empowering Transformation	36
Garden City Fund	46
Sustainability Report	54
Facts & Figures	60
Corporate Governance	66
Publications	68
Financial Review	74
Financial Statements	78

A NATURAL TRANSFORMATION

Nature is constantly evolving, shaping our city, ecosystems, and community. And we, in turn, are inspired to transform Singapore into a City in Nature.

Guided by scientific principles, our latest green spaces employ nature-based solutions and biophilic landscapes, enhancing the well-being of all who visit them. We have intensified research and embraced digitalisation to break new ground in park operations, conservation strategies and animal management. Empowered by technology, we have also raised industry standards, bolstered biosurveillance efforts, and taken significant strides against illegal wildlife trade. Supported by the community, we hit the halfway mark in the OneMillionTrees movement and enjoyed more in-person events in our green spaces as we eased out of the pandemic.

All these efforts are key to ensuring sustainability and enhancing liveability in Singapore. As our city undergoes a natural transformation, we too are transformed by the many benefits of nature.

CHAIRMAN'S MESSAGE



After three years of the Covid-19 pandemic, Singapore exited its acute phase and entered an endemic phase in February 2023. What this meant for all of us in practical and simple terms is that we could now finally catch up with old friends, attend public events and travel overseas again freely.

Even though life returned to normal or near normal, things are not completely the same. For instance, our workplace and daily work routine are not the same as before. Working out of necessity from home during the pandemic demonstrated that in fact it was actually not only doable and productive but also personally valued by staff. And so, hybrid flexible work arrangements have become the new norm.

In the case of NParks, one of the positive things that grew out of the pandemic is the substantially increased number of visitors to our green spaces. To cope with the challenges of living largely isolated and physically restrictive lives during the pandemic years, Singaporeans sought and found relief in our green spaces.

While the pandemic may have up-ended many things, it taught many of us to appreciate first-hand the therapeutic effects of greenery in boosting our mental well-being and resilience. It has amplified and reinforced the Singaporean's love for Nature. Our attachment to and value for Nature is growing strongly to become a staple part of our society's culture. This is key to our truly becoming a City in Nature and what it means in terms of a genuine and distinctive Singaporean way of life.

NParks has invested much over many years and will continue to invest in deepening its research and application of science and technology.

While the pandemic may have up-ended many things, it taught many of us to appreciate first-hand the therapeutic effects of greenery in boosting our mental well-being and resilience. It has amplified and reinforced the Singaporean's love for Nature.

Our attachment to and value for Nature is growing strongly to become a staple part of our society's culture. This is key to our truly becoming a City in Nature and what it means in terms of a genuine and distinctive Singaporean way of life.

Today our officers oversee multiple ongoing research, operations technology and digitalisation projects under our Science and Technology workstreams. NParks' Centre for Wildlife Forensics, for instance, is now a CITES-listed lab, making it one of the few facilities in Asia to achieve this distinction. In species recovery efforts, we have made headway with the first captive breeding of the Swamp Forest Crab (*Parathelphusa reticulata*), an endemic species that is highly secretive in the wild. Its successful ex-situ breeding has helped researchers better understand its mating characteristics and resulted in the release of its second generation back to Nee Soon Swamp Forest.

Scholarship and research constantly help inform the way we do and improve on our work. For instance, our collaboration with the National University of Singapore and the Singapore Institute for Clinical Sciences have led to findings suggesting that urban green spaces which offer views of far-away scenery and those that adopt more naturalistic planting amongst other design elements, add the most value to a visitor's well-being. Such features have now been incorporated into new green spaces such as the Therapeutic Garden at Bedok Reservoir Park and Nature Playgarden at Pasir Ris Park.

To support a balanced and informed approach to urban planning for development and protection of our natural heritage at the same time, we completed the island-wide Ecological Profiling Exercises for terrestrial and marine environments. This has provided crucial insights into long-term ecological connectivity to ensure the persistence of biodiversity.

Another key research track is the Long-Term Socio-Ecological Research Programme, which emphasises the long-term monitoring of socio-ecological impacts in our City in Nature efforts. The findings will help shape future conservation work, use of recreational spaces and programmes.

This year, NParks is commemorating 60 years of Singapore's greening journey. We are especially happy to be able to resume public events such as tree planting, NParks Concert Series in the Park: Rockestra, as well as Gardeners' and Pets' Day Out activities. We have also opened more green spaces for visitors to explore, such as Rifle Range Nature Park, along with the completion of the Tyersall-Gallop Core of the Singapore Botanic Gardens and 21 km of seamless connectivity along the Rail Corridor.

The enthusiastic public support received for our various programmes and our new green spaces is gratifying. Noteworthy is the OneMillionTrees movement which saw over 575,000 trees planted by some 75,000 members of public, schools, agencies, and corporate entities, since its launch in 2020. This in fact puts us ahead of schedule to reach our goal of planting a million more trees by 2027, three years ahead of the original 2030 target.

We remain ever grateful for the support of Singaporeans for the work NParks does. We look forward with confidence that we will work and grow together strongly to achieve the vision of a Singapore that is truly a City in Nature.

Mr Benny Lim
Chairman, National Parks Board

MEMBERS OF THE BOARD (As of September 2023)



Benny Lim
CHAIRMAN

Mr Lim was Permanent Secretary of the Ministry of National Development from 2011 to 2016, and held concurrent appointments as Permanent Secretary in the Prime Minister's Office and for National Security & Intelligence Coordination. Prior to that, he was Permanent Secretary of the Ministry of Home Affairs from 2005 to 2011. He retired from the Civil Service in 2016. He is presently Chairman of Temasek Foundation, Temasek Life Sciences Laboratory and Housing and Development Board. He also serves as a special advisor to the Centre for Liveable Cities (MND) and to the National Security Studies Programme, RSIS (NTU). He was awarded the Meritorious Service Medal in 2010 and the Distinguished Service Order in 2021.



Cheng Hsing Yao
BOARD MEMBER

Mr Cheng is the Group Chief Executive Officer of GuocoLand. Prior to that, he held leadership positions at the Centre for Liveable Cities (CLC) and Urban Redevelopment Authority. He is a member of URA's International Panel of Experts, Design Advisory Committee as well as Heritage and Identity Partnership, and is a member of the CLC Advisory Panel. He also co-chairs the Building and Construction Authority's Central Procurers Panel, and sits on the board of the Institute of Real Estate and Urban Studies, National University of Singapore.



Ms Shantini Ramachandra
BOARD MEMBER

Ms Ramachandra was formerly a Business Tax Partner of Deloitte. She also held the role of Tax Leader of Deloitte Private and led the Deloitte Law Firm Services Singapore tax practice. She has a Bachelor of Laws degree from the National University of Singapore and a Master of Laws degree from the University of London, King's College. She has been admitted as an Advocate and Solicitor of the Supreme Court of Singapore and is also an Accredited Tax Advisor (Income Tax) with the Singapore Chartered Tax Professionals. She practised law in the area of commercial and corporate law before joining a Big Four accounting firm and has about 25 years of international tax experience.



Musa Fazal
BOARD MEMBER

Mr Musa is a Senior Director of the Futures, Strategy and Plans Division in the Ministry of Trade & Industry where he oversees strategic planning activities, from sensing and sense-making, to strategy development, work planning, strategic resourcing, and inter-agency coordination to transform Singapore's economy. Prior to this, he served in various agencies in the public service, including SkillsFutureSG, Ministry of Manpower, Ministry of Finance and Monetary Authority of Singapore.



Professor David Chan
BOARD MEMBER

Prof Chan is Lee Kong Chian Professor of Psychology and Director of the Behavioural Sciences Initiative at the Singapore Management University as well as Adjunct Principal Scientist and Scientific Advisor at A*STAR. To date, his works have been cited over 15,000 times in various disciplines. A 2020 study by Stanford University on researcher impact among all scientists across all disciplines named him in the top one percent worldwide. He is Elected Fellow of six international psychological associations. He has received numerous international achievement awards and he is the first Asian to receive the prestigious Raymond Katzell Award from the Society for Industrial and Organizational Psychology. He has served on numerous national councils and boards, and is currently a member of the Social Science Research Council.



Ms Tham Loke Kheng
BOARD MEMBER

Ms Tham is CEO and Board Director of Mediacorp. A media industry veteran, she has held leadership roles in broadcast, media and telecommunications services in leading Asian companies. In September 2017, she returned to Mediacorp as CEO, coming full circle to the organisation where she started her career. Prior to that, she was Head of Content and Marketing at StarHub, President of Taiwan Broadband Communications and Head of NOW TV, the largest Pay TV operator in Hong Kong. She is also a Board Director of the Singapore Chinese Cultural Centre, a member of the SG Cares Steering Committee, and a member of the Yellow Ribbon Singapore Board.



Lee Chee Koon
BOARD MEMBER

Mr Lee is Group CEO of CapitaLand Investment, one of Asia's largest listed real estate investment managers with a global presence across over 30 countries. Prior to this, Mr Lee was President and Group CEO of CapitaLand Group from 2018. His previous appointments since he joined CapitaLand Group in 2007 include Group Chief Investment Officer and CEO of The Ascott Limited.



Ms Nur Hidayah Abu Bakar
BOARD MEMBER

Ms Nur Hidayah is Dean of the Faculty of Design at LASALLE College of the Arts, Singapore. She is a member of the Museum Education Advisory Panel at National Gallery Singapore, the Monetary Authority of Singapore's Singapore Note and Coin Advisory Committee, the Design Education Review Committee Workgroup and DesignSingapore Council (Ministry of Communications and Information). She believes in the interconnectedness of design aesthetics, education and industry/community, and has initiated several partnerships with Asian communities to develop design capability programmes and support social enterprises that promote a more inclusive design culture. She has also led the research and study of design cultures in contemporary Asian cities such as Singapore, Seoul and Shanghai.



Gerald Tan Kwong Ming
BOARD MEMBER

Mr Tan is the Head of Reputational Risk, Asia-Pacific for Credit Suisse (Singapore) Ltd. He has over 20 years of international experience in legal private practice, banking and risk management. He is a member of the Advisory Board of the National Museum of Singapore. He has also previously served as a board member of Gardens by the Bay and Credit Counselling Singapore, and as Co-Chair of the Asia Pacific Commodities Committee of the International Swaps and Derivatives Association, Inc.



Ms Eu Chin Fen
BOARD MEMBER

Ms Eu is the Chief Executive Officer of Frasers Hospitality and oversees the international hospitality and lodging business of the Frasers Property Group. She joined the Frasers Property Group in 2011 and was formerly the CEO of the Managers of Frasers Hospitality Trust from its listing in July 2014 to June 2019 and April 2021 to January 2023. She was the Chief Investment Officer of Frasers Hospitality International Pte. Ltd. from July 2019 to April 2021 where she assisted the CEO in developing and implementing the business and investment strategies of the hospitality business, in line with the broad directions of the Frasers Property Group. Prior to joining Frasers Property Group, she was Senior Vice President of the Asset-Backed Securitisation team at DBS Bank Ltd., responsible for the origination and listings of real estate investment trusts and business trusts in Singapore. A Chartered Financial Analyst, she holds a Bachelor of Business degree in Financial Analysis from Nanyang Technological University, Singapore.



Ms Hwang Yu-Ning
BOARD MEMBER AND CHIEF EXECUTIVE OFFICER (FROM 1 JUNE 2023)

Ms Hwang is CEO of the National Parks Board. She has over 20 years of experience in public service including with the Urban Redevelopment Authority as Singapore's Chief Planner and stints in the Strategy Group of the Prime Minister's Office and the Ministry of National Development. She is a board member of the Land Transport Authority, the Science Centre Board, Gardens by the Bay and IJ Board of Management. She currently serves on the Scientific Advisory Committee of the Singapore-ETH Centre's Future Cities Lab Global Research Programme and the Asia-Pacific Executive Committee of the Urban Land Institute.

MANAGEMENT TEAM (As of September 2023)



Dr Chang Siow Foong
GROUP DIRECTOR
Professional & Scientific Services and Community Animal Management

Dr Kiat W Tan
ADVISOR TO NPARKS

Ms Hwang Yu-Ning
CHIEF EXECUTIVE OFFICER

Dr Leong Chee Chiew
EXECUTIVE DIRECTOR
National Parks, Gardens & Nature Reserves Cluster and Commissioner of Parks & Recreation

Ryan Lee
GROUP DIRECTOR
National Biodiversity Centre and Wildlife Management
SENIOR CURATOR
Istana

***Dr Lena Chan**
SENIOR DIRECTOR
International Biodiversity Conservation

Ms Kartini Omar
GROUP DIRECTOR
Parks Development and Jurong Lake Gardens
SENIOR DIRECTOR (COVERING)
Design



Ms Ang Wei Ping
GROUP DIRECTOR
Policy & Planning

Bin Hee Jum
GROUP DIRECTOR
Finance & Procurement

Dr Yap Him Hoo
DEPUTY CHIEF EXECUTIVE OFFICER
Professional Development & Services Cluster
DIRECTOR-GENERAL
Animal & Veterinary Service Cluster

Lim Teck Lee
GROUP DIRECTOR
Industry/CUGE

Kong Yit San
EXECUTIVE DIRECTOR
Jurong Lake Gardens

***Lim Liang Jim**
GROUP DIRECTOR
Conservation

Ms Lee Pin Pin
GROUP DIRECTOR
Communications & Community Engagement

*Dr Lena Chan is retiring in September 2023. Lim Liang Jim is appointed Group Director/International Biodiversity Conservation as of 11 September 2023.



Ms Tan Lai Kheng
SENIOR DIRECTOR
Lifestyle Business

Dr Chua Tze Hoong
GROUP DIRECTOR
Veterinary Health

Tan Chong Lee
ASSISTANT CHIEF EXECUTIVE OFFICER
Corporate Development & Services Cluster

Ms Sophianne Mohd Araib
GROUP DIRECTOR
Parks Central and Horticulture & Community

Dr Tan Puay Yok
GROUP DIRECTOR
Singapore Botanic Gardens

Oh Cheow Sheng
GROUP DIRECTOR
Streetscape



Yeo Meng Tong
SENIOR DIRECTOR
Design Research & Development
ASSOCIATE DIRECTOR
CUGE

Ms Chua Yen Ling
GROUP DIRECTOR
Corporate Strategy & Planning and Parks West

Ng Boon Gee
GROUP DIRECTOR
Fort Canning Park & Istana

Tang Tuck Weng
ASSISTANT CHIEF EXECUTIVE OFFICER
Park Management & Lifestyle Cluster

Chia Seng Jiang
GROUP DIRECTOR
Parks East

Jessica Kwok
GROUP DIRECTOR
Industry Standards & Regulatory

Francis Lim
GROUP DIRECTOR
Corporate Services

The Management Team photos were taken at Jurong Lake Gardens.
Not in picture: Mr Chuah Hock Seong, Senior Director, Ops Process & Risk Management and Ops Tech & Development; Associate Director, CUGE

ORGANISATION STRUCTURE

(As of Sep 2023)

Ms Hwang Yu-Ning
CHIEF EXECUTIVE OFFICER

Dr Kiat Tan
ADVISOR TO NPARKS

Tan Choon Lin
DIRECTOR
Internal Audit*

Paul Chia
DIRECTOR
Prosecution

Internal Audit reports functionally to the Audit Committee

Tan Chong Lee
ASSISTANT CHIEF EXECUTIVE OFFICER
Corporate Development & Services Cluster

- **Ms Lee Pin Pin** (Concurrently as QSM) — GROUP DIRECTOR, Communications & Community Engagement
  - **Ms Nazeera Begam** — DIRECTOR, Communications
  - **Ms Ng Li-San** — DIRECTOR, Communications
  - **Ms Gina Leong** — DIRECTOR, Community Engagement
  - **Ms Ng Hui Bing** — DIRECTOR, Service Quality & Engagement
  - **Ms Jacqueline Teo** — DIRECTOR, Garden City Fund
- **Francis Lim** — GROUP DIRECTOR, Corporate Services
  - **Lew Chee Keong** — DIRECTOR, Facilities Mgt & Facilities (Singapore Botanic Gardens, Fort Canning Park & Jurong Lake Gardens)
  - **Ms Chang Siau Hoon** — DIRECTOR, Human Resource
  - **Foong Chee Leong** — DIRECTOR, IT
  - **Ms Elaine Phua** — DIRECTOR, Legal
  - **Ms Dawn Lin** — CHIEF RECORDS OFFICER, Office Administration
- **Ms Chua Yen Ling** — GROUP DIRECTOR, Corporate Strategy & Planning
  - **Ms Trina Chua** — DIRECTOR, Corporate Policy & Planning
  - **Lim Kian Loo** — DIRECTOR, Emergency Planning & Risk Management
  - **Dr Kelvin Lim** — DIRECTOR, Science & Technology Planning
- **Bin Hee Jum** — GROUP DIRECTOR, Finance & Procurement
  - **Ms Lim Bee Peng** — FINANCIAL CONTROLLER, Finance
  - **Danny Tan** — DIRECTOR, Procurement
- **Chuah Hock Seong** — SENIOR DIRECTOR, Ops Process & Risk Management (Corporate Strategy and Planning)

Dr Yap Him Hoo
DEPUTY CHIEF EXECUTIVE OFFICER
Professional Development & Services Cluster

- **Lim Teck Lee** — GROUP DIRECTOR, Industry & CUGE
  - **Chuah Hock Seong** — ASSOCIATE DIRECTOR, CUGE (Concurrently CEO, Singapore Garden City)
  - **Yeo Meng Tong** — ASSOCIATE DIRECTOR, CUGE
  - **Ms M Pungkothai Kay** — DIRECTOR, CUGE (Industry Development & Grants)
  - **Chong Whye Keet** — DIRECTOR, CUGE (Land Planning & Development)
  - **Shamril bin Jamil** — DIRECTOR, CUGE (Manpower Development)
  - **Jeff Seow** — DIRECTOR, CUGE Research
- **Lim Liang Jim** — SENIOR DIRECTOR, International Biodiversity Conservation
  - **Ms Wendy Yap** — DIRECTOR, International Biodiversity Conservation
- **Ryan Lee** — GROUP DIRECTOR, National Biodiversity Centre
  - **Dr Karenne Tun** — DIRECTOR, Terrestrial
  - **Ms Cheryl Chia** — DIRECTOR, Biodiversity Information & Outreach
  - **Dr Karenne Tun** — DIRECTOR, Coastal & Marine
- **Ms Ang Wei Ping** — GROUP DIRECTOR, Policy & Planning
  - **Ms Emelyne Looi** — DIRECTOR, Greenery & Development Planning
  - **Ms Stephanie Ng** — DIRECTOR, Park Planning Central
  - **Ms Justine Tay** — DIRECTOR, Park Planning East
  - **Cheong Kok Hwee** — DIRECTOR, Park Planning West
- **Chuah Hock Seong** — SENIOR DIRECTOR, Ops Tech & Development (Streetscape)
  - **Ow Siew Ngim** — DIRECTOR, Ops Tech
- **Oh Cheow Sheng** — GROUP DIRECTOR, Streetscape
  - **Abdul Hamid bin Mohd** — DIRECTOR, Arboriculture
  - **Damien Qiu** — ACTING DIRECTOR, Streetscape (Landscape)
  - **Chan Chung Leong** — DIRECTOR, Streetscape (North East)
  - **Lee Jia Hwa** — DIRECTOR, Streetscape (South East)
  - **Bryan Yeo** — DIRECTOR, Streetscape (North West)
  - **Ms Ow Siew Ngim** — DIRECTOR, Streetscape (South West)
  - **Lu Jilun** — DIRECTOR, Streetscape (Central North)
  - **Eric Ong** — DIRECTOR, Streetscape (Central South)
- **Lim Kian Loo** — DIRECTOR, Enforcement

Tang Tuck Weng
ASSISTANT CHIEF EXECUTIVE OFFICER
Park Management & Lifestyle Cluster

- **Yeo Meng Tong** — SENIOR DIRECTOR, Design Research & Development
- **Ms Kartini Omar** — SENIOR DIRECTOR (COVERING), Design
  - **Jason Matthew Wright** — DIRECTOR, Design
- **Ms Sophianne Mohd Araib** — GROUP DIRECTOR, Parks Central
  - **Ms Nanthini d/o Elamgovan** — DIRECTOR, Parks (Central North)
  - **Ms Jessalyn Tan** — DIRECTOR, Parks (Central South)
- **Chia Seng Jiang** — GROUP DIRECTOR, Parks East
  - **Ms Kalthom bte Abd Latiff** — DIRECTOR, Parks (North East)
  - **Tan Jun Chao** — DIRECTOR, Parks (South East)
- **Ms Chua Yen Ling** — GROUP DIRECTOR, Parks West
  - **Ms Wee Khee Li** — DIRECTOR, Parks (North West)
  - **Thomas Yee** — DIRECTOR, Parks (South West)
  - **Joseph Chua** — DIRECTOR, Parks (Special Projects)
- **Ms Kartini Omar** — GROUP DIRECTOR, Parks Development
  - **Ms Ang Chiean Hong** — COORDINATING DIRECTOR, Parks Development (Development Management 1)
  - **Ms Ang Chiean Hong** — COORDINATING DIRECTOR, Parks Development (Development Management 2)
- **Ms Tan Lai Kheng** — SENIOR DIRECTOR, Lifestyle Business
  - **Ms Claire Ng** — DIRECTOR, Lifestyle Business
  - **Ms Lee Yi Yinn** — DIRECTOR, Lifestyle Business
- **Wayne Gui** — DIRECTOR, Programming & Events

Dr Leong Chee Chiew
(COMMISSIONER OF PARKS & RECREATION)
EXECUTIVE DIRECTOR
National Parks, Gardens & Nature Reserves Cluster

- **Lim Liang Jim** — GROUP DIRECTOR, Conservation
  - **Mervyn Tan** — DIRECTOR, Bukit Timah Nature Reserve
  - **Ling Han** — DIRECTOR, Central Catchment Nature Reserve
  - **Robert Teo** — DIRECTOR, Pulau Ubin
  - **Ms Yang Shufen** — DIRECTOR, Sungei Buloh
- **Ng Boon Gee** — GROUP DIRECTOR, Fort Canning Park & Istana
  - **Koh Poo Kiong** — DIRECTOR, Fort Canning Park
  - **Ryan Lee** — SENIOR CURATOR, Istana
  - **Ms G Kannagi** — DIRECTOR, Development Management (Nature Parks, Gardens & Nature Reserves)
- **Dr Tan Puay Yok** — GROUP DIRECTOR, Singapore Botanic Gardens
  - **Ms Terri Oh** — DIRECTOR, Education
  - **Dennis Lim** — COORDINATING DIRECTOR, Festivals, Events & Exhibitions and Visitor Management & Security
  - **Dr Thereis Choo** — COORDINATING DIRECTOR, Living Collections & Facilities Management and Centre Director/ Forest Discovery Centre
  - **Ms Leong Cheng Yee** — DIRECTOR, Events and Exhibitions
  - **Vacant** — COORDINATING DIRECTOR, Research & Conservation and Keeper of Herbarium
- **Ryan Lee** — GROUP DIRECTOR, Wildlife Management
  - **Dr Anna Wong** — DIRECTOR, Wildlife Trade
  - **How Choon Beng** — DIRECTOR, Wildlife Management & Outreach
  - **Dr Anna Wong** — DIRECTOR, Center for Wildlife Rehabilitation
  - **Dr Malcolm Soh** — PRINCIPAL RESEARCHER, Wildlife Management Research
- **Ms Sophianne Mohd Araib** — GROUP DIRECTOR, Horticulture & Community
  - **Ms Lilian Kwok** — COORDINATING DIRECTOR, Horticulture & Community
  - **Ms Shirley Ling** — DIRECTOR, HortPark
  - **Ms Jenny Yap** — DIRECTOR, Plant Science & Health
  - **Woo Wee Meng** — DIRECTOR, Community Projects (Planning & Programmes)
  - **Thomas Lee** — DIRECTOR, Community Projects (Engagement)
  - **Ms Jeanine Tan** — DIRECTOR, Community Projects (Community Stewardship)
  - **Ang Wee Foong** — DIRECTOR, Hort Excellence & Nursery Management

Kong Yit San
EXECUTIVE DIRECTOR
Jurong Lake Gardens

- **Ms Kartini Omar** — GROUP DIRECTOR, Jurong Lake Gardens
  - **Ms Nah Bee Luan** — DIRECTOR, Jurong Lake Gardens Development
  - **Koh Soon Kiong** — DIRECTOR, Jurong Lake Gardens Operations

Dr Yap Him Hoo
DIRECTOR-GENERAL
Animal & Veterinary Service Cluster

- **Dr Chang Siow Foong** — GROUP DIRECTOR, Professional & Scientific Services
  - **Dr Diana Chee** — DIRECTOR, Animal & Veterinary Programme Office
  - **Dr Audrey Chen** — DIRECTOR, Centre for Animal Rehabilitation
  - **Dr Charlene Judith Fernandez** — DIRECTOR, Centre for Animal & Veterinary Sciences
  - **Ms Irene Liu** — DIRECTOR, Planning & Quality Assurance
- **Dr Chang Siow Foong** — GROUP DIRECTOR, Community Animal Management
  - **Dr Lin Anhui** — DIRECTOR, Veterinary Science Programmes
  - **Joshua Teoh** — DIRECTOR, Community Animal Management Operations
  - **Wayne Gui** — DIRECTOR, Education & Engagement
- **Ms Jessica Kwok** — GROUP DIRECTOR, Industry Standards & Regulatory
  - **Poh Yew Kwang** — DIRECTOR, Compliance Management
  - **Joshua Teoh** — DIRECTOR, Investigation
  - **Wang Ming Yuan** — DIRECTOR, Licensing
- **Dr Chua Tze Hoong** — GROUP DIRECTOR, Veterinary Health
  - **Dr Kelvin Lim** — DIRECTOR, Biorisk & Biosurveillance
  - **Dr Alwyn Tan** — DIRECTOR, Quarantine & Biosecurity Services

TRANSFORMING INTO A CITY IN NATURE

Greenery is essential in strengthening Singapore's environmental resilience and mitigating the effects of climate change. Backed by science, empowered by technology and supported by the community, NParks' greening effort is key to providing a quality living environment for all in Singapore.

OneMillionTrees movement stands strong

The benefits of trees are well documented – they improve the physical, mental and social aspects of community well-being while enhancing our resilience towards climate change. The OneMillionTrees movement that began in 2020 achieved a milestone in April 2023 with more than 500,000 trees planted throughout Singapore, thanks to the efforts of some 75,000 members of the community. At this pace, the initiative is on track to achieve its goal of planting one million additional trees by 2027, three years ahead of schedule.

Scan to learn more about the OneMillionTrees movment



A

THE SCIENCE BEHIND PLANTING TREES

Greenery not only improves air quality by absorbing carbon dioxide and releasing oxygen during photosynthesis, but also brings about other benefits. The planting of trees and shrubs provides habitats and food for native wildlife, enhances the ecological connectivity of green spaces and creates conditions for native species to survive.



The native *Cratoxylum maingayi* planted along streetscapes attracts butterflies and other insects into our urban areas.

Enabling access across the Tyersall-Gallop Core

The opening of the 200 m HPL Canopy Link on 17 November 2022 marked the completion of the Tyersall-Gallop Core of the Singapore Botanic Gardens, extending its forest habitats and plant collections while buffering the UNESCO World Heritage Site from urban development. Visitors can now use the 2.4 m wide barrier-free pedestrian bridge that crosses Tyersall Avenue to move easily to all parts of the Gardens including the ridgetop forest habitats at Mingxin Foundation Rambler's Ridge.

Over at the Gallop Extension, the Botanical Art Gallery hosted an exclusive exhibition on “Flower Obsession: Plant Collecting in East Asia, 1600s–1900s”. This was the first time the Gallery featured artwork from overseas institutions. Many books, manuscripts and photographs dating as far back as the late 1600s from the Higashiyama Botanical Gardens and the private Soukaen Bunko in Nagoya, Japan, were exhibited outside Japan for the first time.

The latest exhibition at the Gallery, "Tropical Forest Sceneries: Singapore & Beyond" encapsulates the changing forest landscapes in the region and showcases for the first time, the stunning photographs of Edred John Henry Corner, a botanist and former Assistant Director of the Singapore Botanic Gardens.

These exhibitions gave visitors insight into the importance of plant documentation and botanical art to the Gardens’ research collection



B



C

Naturalising the Istana Landscape

In the heart of the city, President Halimah Yacob officially opened the enhanced Swan Pond at the Istana. Originally constructed in 1968, sensitive enhancements made around the Swan Pond include the naturalisation of its drainage channel into a garden stream that acts as a bioswale.

A | In the year since its launch in March 2022, more than 450 families have participated in the FamilyTrees initiative.
B | The HPL Canopy Link connects the Gallop Extension to rest of the Singapore Botanic Gardens via a scenic elevated walkway that weaves through trees that can be found in the lowland deciduous forests of continental Southeast Asia.
C | Enhancements to the swan pond in the Istana include naturalising the landscape and the addition of a new viewing deck.

Creating park experiences for all

NParks has completed the development of the 60 ha Lakeside Garden, one of three gardens within Jurong Lake Gardens which will also include the upcoming Chinese and Japanese Gardens. The community can now enjoy the new northern section of Lakeside Garden, an active zone with youth-oriented amenities that expand the range of experiences for visitors.

Advancing its reputation as a people's garden, Jurong Lake Gardens hosted several family-centric events in 2022. The Lights by the Lake festival made a strong comeback after two years of pandemic restrictions, drawing more than 400,000 visitors with its lantern displays.



A

Gardening enthusiasts also returned to the Gardens for SustainableFest SG, enjoying gardening workshops, musical performances, guided walks and craft sessions for children over two weekends in May and June 2022.

Scan to discover new attractions in the Lakeside Garden



B

JURONG LAKE GARDENS PIONEERS NEW TECHNOLOGIES

Jurong Lake Gardens provides a platform for partners to test-bed smart solutions that support sustainable park operations, with a view to scaling their deployment if they prove to be successful.

An example is the Integrated Garden Management System to which various environmental and facilities monitoring sensors are integrated, allowing for enhanced situational awareness, faster operational response, and improved visitor experience.

Another project is the deployment of autonomous robot "JuLee" to assist visitors with directions and essential information. JuLee is also equipped with advanced video analytics capabilities and alerts officers to prohibited activities in the Gardens.



Curious park users can 'talk' to JuLee about what to do in Jurong Lake Gardens or even where to find the nearest toilet.

Digging into the history of Fort Canning Park

200 years on, landscaping and greening works continue to revitalise Fort Canning Hill. Two new attractions were launched at Fort Canning Park to highlight the park's historical and natural heritage. The Fort Canning Heritage Gallery, which opened in August 2022, allows visitors to explore the 700-year history of Fort Canning Hill. Highlights include archaeological artefacts such as glass shards, ceramic fragments and coins excavated from sites within Fort Canning Park.

Park goers can also expand their botanical knowledge with a visit to the enhanced Spice Garden, which sits on the site of Singapore's first botanical and experimental garden established in 1822.



C



D

A | President Halimah Yacob (left) greets visitors at Lights by the Lake 2022. The festival was organised in conjunction with the President's Challenge to celebrate the nation's strength and resilience against diversity.
B | Designed in consultation with the community, SkatePark @ Lakeside Garden features the largest outdoor skate park in Singapore as well as a parkour park and bouldering wall set within nature.
C | Animated stories and games on interactive screens around the Fort Canning Heritage Gallery bring history to life for young visitors.
D | Visitors to the Spice Garden at Fort Canning Park can appreciate botanical artwork and dried specimens of select spices through the interpretive panels in the garden.

Orchard Road goes green

Plans are underway to transform the Orchard Road shopping belt into a verdant urban corridor. As part of plans to “Bring Back the Orchard”, greenery along Orchard Road will be enhanced to feature pocket parks, gardens, and multi-layered planting of shrubs and trees. The 1.3 ha Istana Park will be expanded to thrice its current size, incorporating existing green spaces such as Dhoby Ghaut Green and the Penang Road Open Space.

ION Orchard and Ngee Ann City, together with the Singapore Botanic Gardens, also served as the venue for the 8th Singapore Garden Festival which took place from 30 July to 9 August 2022. An event highlight was the Community Garden Edibles Competition at ION Orchard, which featured more than 400 fruit and vegetable entries submitted by gardening enthusiasts.


A

As part of the Festival, the Singapore Gardeners’ Cup 2022 was held at the Eco-Garden at the Singapore Botanic Gardens. Community in Bloom (CIB) gardening groups from public and private estates, schools, and organisations came together to create garden showcases with the theme Gardeners’ Fantasia.


B

Community gardening flourishes

Strong community involvement is vital for Singapore's transformation into a City in Nature. It is also a core pillar of the Singapore Green Plan 2030, the national movement to advance sustainable development and combat climate change.

The CIB movement aims to promote a gardening culture and cultivate community spirit among Singaporeans of all ages. Its gardening framework includes allotment gardening, gardening with edibles and corridor gardening which targets households.

In 2022, the CIB Awards were introduced to recognise the efforts of gardeners in enhancing the living environment, horticultural excellence and social outreach. A total of 373 community gardens from private and public housing estates participated in the competition, and 10 were recognised as Gardens of the Year.

To date, more than 1,900 community gardens have been established, including 80 that were launched in 2022. Some 110 new allotment plots were also built and offered at Ang Mo Kio Town Garden West, Kent Ridge Park and Sembawang Park, bringing the total to 2,200 allotment plots in 25 parks islandwide.

NParks continues to work with the Housing & Development Board (HDB), town councils and grassroots organisations to scale up the construction of allotment gardens in heartland areas, and facilitate community-led initiatives such as the development of the West Coast and East Coast Greenery Plans, as well as the Boon Lay and Taman Jurong Allotment Garden Masterplans, among others.

Scan to virtually visit the ActiveSG Woodlands Sports Centre Community Garden

Skyrise greenery reaches new heights

In other greening efforts, more than 12 ha of skyrise greenery were incorporated into buildings in the past year, expanding the total footprint to 155 ha.

Under the Skyrise Greenery Incentive Scheme which seeks to encourage the installation of vertical greenery on existing buildings, a multi-storey carpark rooftop at Bishan was converted into a thriving rooftop community garden with 350 gardening plots for residents. Another notable project was the building of an over 910 sqm green wall facade at Keppel Infrastructure @ Changi, which demonstrates the co-location of green walls and vertical photovoltaic panels.

USING NATURE TO IMPROVE CLIMATE RESILIENCE

Skyrise greenery is a nature-based strategy aimed at mitigating urban heat and noise through the greening of facades, balconies, as well as mid-level and roof spaces. Vertical greenery on building facades can lower surface temperatures by up to 11°C and reduce noise levels in the building by up to 10dB by absorbing sound. With rooftop gardens and sky terraces also acting as community spaces, skyrise greenery has the potential to enhance our climate, social and ecological resilience.



Studies have shown that green roofs, such as those found at select bus stops in Singapore, can reduce ambient temperatures by about 2°C.


C

A | A miniature fruit orchard was the theme of one of the Gardeners' Cup displays for the Singapore Garden Festival held at the Singapore Botanic Gardens.
B | Minister in the Prime Minister's Office, and Second Minister for Finance and Second Minister for National Development Indranee Rajah (left) visits the Orchid Competition at the National Orchid Garden as part of the 8th Singapore Garden Festival, where the region's best orchid varieties and hybrids were put on display by dedicated hobbyists and professional growers.
C | Community gardens like this one in Bishan have been sprouting up on carpark rooftops, expanding Singapore's skyrise greenery coverage.

Greening industrial zones

To mitigate the urban heat island effect, particularly in the warmer industrial zones, NParks planted over 22,000 trees in industrial estates over the past year and completed the greening of Jurong Island by planting an additional 8,200 trees in collaboration with Jurong Town Corporation (JTC). This brought the total number of trees in industrial estates to over 100,000, including 34,000 trees on Jurong Island.

Such greening efforts extend beyond the industrial zones. NParks implemented landscape enhancements of nine newly-constructed MRT stations along the Thomson-East Coast Line. Together with the Land Transport Authority, over 5 km of new covered linkways were also greened up, expanding the coverage of Singapore's sheltered walkway network. Green roofs have been installed on 29 bus shelters in neighbourhoods like Ang Mo Kio and Pasir Ris and will be progressively rolled out to more bus shelters islandwide over the next two years.

Connecting people and parks

In 2022, 10 km of Park Connector Network (PCN) routes were completed at Pang Sua North Bank, Tampines Avenue 10 and Simpang Kanan among other locations, bringing the total length of park connectors to 380 km. The PCN links up housing estates with parks, bringing nature closer to Singaporeans' doorstep.



A



B

THE SCIENCE OF PLAY

Nature playgardens encourage experiential learning and unstructured play among children. They are based on the biophilia hypothesis that humans possess an innate tendency to seek connections with nature. To date, there are 26 nature playgardens islandwide, including the latest ones in Pasir Ris Park and Pasir Panjang Park.



Built with natural materials and nestled among greenery, Nature Playgardens provide children with a closer experience with nature.

Greening for wellness

As of March 2023, there are now 10 therapeutic gardens across Singapore. NParks is also collaborating with grassroots organisations, agencies like HDB and healthcare institutions to co-create therapeutic horticulture nodes in public community spaces. In the past year, 24 such nodes were added, bringing the total number across the island to 56. These nodes provide easier access to greenery and nature for more in the community.

Within these spaces, healthcare professionals and caretakers can conduct horticultural therapy, a nature-based therapy specially designed to promote low intensity exercise, improve motor skills and foster positive social interactions amongst the elderly in particular.



C

Scan to try your hand at a simple horticultural therapy project.

A | Prime Minister Lee Hsien Loong plants a tree during Clean and Green Singapore 2022, contributing to the OneMillionTrees movement.
B | After periods of intense rain, the Trumpet Tree (*Tabebuia rosea*) also known as Singapore's version of the 'Sakura', grace our Park Connectors and streetscapes.
C | Therapeutic Gardens are outdoor gardens designed to meet the physical, psychological, and social needs of park users, incorporating design principles derived from scientific evidence. Visiting therapeutic gardens and participating in therapeutic horticulture programmes boast many benefits, from reducing depression to improving immunity and forging social connectedness.

Planting seeds of nature stewardship in youth

Youth and children also have a part to play in greening Singapore. The Every Child A Seed programme has been going strong for a decade, providing a platform for students as young as seven to appreciate the challenges of the planting process while experiencing the joy of seeing their plants grow, contributing in their small way to Singapore's greening journey. 42,000 Primary 3 students received a plant starter kit consisting of a pack of seeds, soil, a pot and learning resources. To celebrate the programme's 10th anniversary, students also received an additional seed pack of native herbaceous plant species.

For the young adults, the Youth Stewards for Nature (YSN) initiative gives them the opportunity to work in groups on real-world projects related to horticulture, landscape architecture and environmental studies, amongst others. A total of 16 projects were undertaken by 120 youths in YSN 2023. Both NParks staff and YSN alumni provided guidance and support by serving as mentors. Since 2021, more than 300 youths have worked on over 60 projects.

Stemming from a YSN project, a group of passionate youths went on to lead the World Wildlife Day Regional Youth Symposium in Singapore, in March 2023, coinciding with World Wildlife Day. In line with the symposium's theme of 'Partnerships for Wildlife Conservation', the symposium brought together some 170 like-minded participants from around the region to learn from one another and share their aspirations for youths in the nature and biodiversity conservation realm. A panel of experts were invited to share on wildlife management, policy development and other pressing wildlife related issues.

On the local front, youths who took part in the Green Friends Forum had the opportunity to interact with a horticulturist, an arborist and a landscape architect and took part in various hands-on activities. Within the span of the forum, participants were able to learn about the core skills and sciences that form the guiding principles to grow and sustain our verdant gardens, parks and streets.

With the lifting of most Covid-19 related restrictions, NParks resumed face-to-face learning journeys, school talks and teachers' training sessions, reaching out to over 10,000 students, educators and teacher trainees in the past year. Through these engagements, NParks staff were able to reach out to the younger generation on a range of topics from responsible pet ownership to marine biodiversity, and welcomed many more students into our green spaces.

Scan to meet one of NParks' Youth Stewards for Nature alumni





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Making 'friends' that support greenery

An important community initiative is Friends of the Parks. In 2022, NParks completed 11 engagement projects under this programme for the design or redevelopment of parks such as Clementi Woods Park, Compassvale Park and Mount Faber Park.

The Friends of Clementi-Ulu Pandan Nature Corridor group was formed in 2021 to work on forest restoration and habitat enhancement works to strengthen the ecological resilience of two new recreational trails along the corridor. The group also developed walks to introduce residents to the area's flora and fauna.

In other engagement efforts, the third in a series of City in Nature Conversations was held in January 2023. The workshops provided a platform for action groups to suggest ideas and co-create projects with NParks to restore nature into the urban environment.

Apart from in-person interactions, NParks also extended its digital reach, amassing a strong social media following across various social media channels such as LinkedIn (over 10,000 followers), TikTok (more than 11,000 followers and over 1.1 million views), Instagram Reels (61,700 followers and over 1.2 million views) and YouTube (more than 2 million views since April 2020).



C



D

Scan to listen to Park Beats playlist

A | Young students show off the fruits of their labour, having tended to their plants for several weeks. The Every Child A Seed programme enables all students to experience growing a plant from the seed stage.
B | Minister for National Development and Minister-in-charge of Social Services Integration Desmond Lee (left) joins volunteers to examine results from a biodiversity survey, part of programmes where youths can actively contribute towards biodiversity conservation efforts.
C | The Friends of Clementi-Ulu Pandan Nature Corridor group together with other volunteers carry out a BioBlitz along the Clementi Forest Stream, part of the upcoming Clementi Nature Trail. Results from the survey will guide sensitive habitat enhancements in the area.
D | To raise awareness of City in Nature, recycled wooden Spotify 'codes' were installed in five parks in early 2023. Visitors can scan the code to enjoy our specially curated Park Beats playlist as they spend time in our green spaces.

CONSERVATION IN TRANSFORMATION

NParks harnesses scientific advancements and technology for biodiversity and nature conservation. The opening of Rifle Range Nature Park, Singapore's first net positive energy nature park, is testament to its push for sustainability in line with the Singapore Green Plan 2030.

Strengthening ecological connectivity

Scan to learn more about ecological connectivity

An important aspect of biodiversity conservation is the strengthening of islandwide ecological connectivity. NParks' work in this area is undergirded by scientific studies such as the Ecological Profiling Exercise (EPE) which helps identify ecological corridors used by wildlife as they move between green spaces. The results of the EPE helps NParks in planning our Nature Park Networks and integrating nature into our urban landscape.

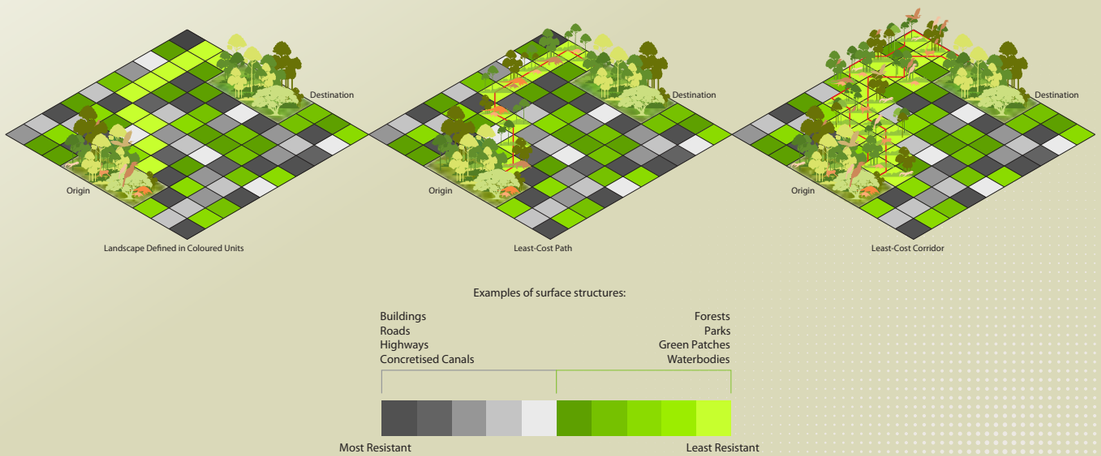


A

ECOLOGICAL PROFILING TO IDENTIFY LEAST-RESISTANCE PATHWAYS

The Ecological Profiling Exercise uses least-resistance pathway modelling to identify and assign a numerical value to each surface structure (for example, a forest or a building) between core habitats. The lower the value, the less resistance an animal encounters in moving across it. By linking up structures of the lowest value, the model projects the least-resistance pathway that an animal is likely to use to travel between core habitats.

The model was applied to six target species that are under threat, and their pathways of least resistance were combined to produce an overall map of Singapore's islandwide ecological connectivity.





B

Nature Corridors

Four new nature corridors in northern, north-western and north-eastern Singapore were identified based on the EPE findings. Among them is the Khatib Nature Corridor which will comprise forested sites at Springleaf, Tagore and Miltonia Close and along Lower Seletar Reservoir, and at the existing Springleaf Nature Park. Three new parks – Nee Soon Nature Park, Miltonia Nature Park and a park extension along Lower Seletar Reservoir – will be designated as stepping-stone habitats for the nature corridor.

Nature Ways

As part of its ongoing efforts to enhance ecological connectivity, NParks has completed 20 km of Nature Ways at Simei and Pandan, bringing the total coverage of Nature Ways to approximately 185 km. Rewilding work was also carried out at 10 sites across the island including the Upper Thomson Nature Way, South Buona Vista Road, and slopes along the Pan-Island Expressway (PIE) and Kranji Expressway (KJE).

Rail Corridor

With the opening of Rail Corridor (North), which stretches to Kranji MRT station, the Rail Corridor now provides over 21 km of continuous connectivity with over 30 access paths. Amenities were also enhanced with the opening of the Bukit Timah Railway Station community node which features a heritage gallery and a café housed in the restored railway station and Railway Staff Quarters

The Rail Corridor runs along the length of the former KTM rail line from Kranji MRT station to Spooner Road where sections of the train track have been preserved.

To monitor species diversity, participants from NParks' Youth Stewards for Nature programme conducted biodiversity surveys along the Rail Corridor in early 2023. Their findings will be shared on the NParks website and incorporated into educational signs along the Rail Corridor to highlight the rich biodiversity in the area.

TACKLING AIR POLLUTION WITH NATURE

Closely-planted small trees and shrubs with overlapping canopies such as those found along Nature Ways can help reduce pedestrian exposure to airborne traffic pollution by up to 15%.



Multi-tiered plantings, such as these found along Tengah Nature Way have been found to improve air quality for pedestrians.

A | Night vision camera traps enable conservation officers to record and keep track of nocturnal species within our forests.
B | The Bukit Timah Railway Station community node, found along the Rail Corridor, retains the site's built and natural heritage. Interactive exhibits are housed within several preserved heritage buildings, giving visitors a glimpse into the history of the Station.

Restoring natural ecosystems

As part of its ongoing biodiversity conservation efforts, NParks restored over 30 ha of forest, coastal and marine habitats as of March 2023, exceeding the initial target to do so by 2030. NParks announced in March 2023 that it will increase its target to 80 ha, which will contribute further to biodiversity conservation efforts.

In November 2022, NParks opened the new Rifle Range Nature Park, completing more than 370 ha of nature parks and 30 km of walking trails within the Central Nature Park Network around Bukit Timah Nature Reserve.

Nature parks aid in conservation efforts by offering alternative nature-based recreation options, reducing visitorship pressure on the Nature Reserves and providing complementary habitats for wildlife.

The secondary forests within Rifle Range Nature Park have also been sensitively enhanced as part of the Forest Restoration Action Plan. To guide these restoration efforts and the design of the nature park, a biodiversity baseline study was carried out to identify areas and species of conservation significance.

As part of NParks' efforts to naturalise urban gardens and parks, habitat enhancement works were also carried out in 28 parks and gardens in 2022, including neighbourhood parks such as Yishun Pond Park and Lorong Tanggam Park.



A

SINGAPORE'S FIRST NET POSITIVE ENERGY NATURE PARK

The 66 ha Rifle Range Nature Park is Singapore's first net positive energy nature park. Energy harvested from the photovoltaic solar panels installed around the nature park exceeds the expected annual operational energy consumption of the site. The harvested energy also powers camera traps which have recorded rare fauna such as the Leopard Cat (*Prionailurus bengalensis*).

Scan to watch a virtual tour of Rifle Range Nature Park



Developing energy-efficient parks are part of NParks' push for sustainability, in line with the Singapore Green Plan 2030 that guides the country's sustainable development.

Conservation efforts fly high

Local conservation efforts to strengthen the ecological resilience of biodiversity-rich habitats are bearing fruit.

Since April 2022, there have been increased sightings of several rare species of birds such as the Black-winged Flycatcher Shrike (*Hemipus hirundinaceus*), Lesser Green Leafbird (*Chloropsis cyanopogon*), Red Knot (*Calidris canutus*), Ruby-cheeked Sunbird (*Chalcoparia singalensis*) and Scarlet-breasted Flowerpecker (*Prionochilus thoracicus*) on Pulau Ubin.

The year also saw the first documented sighting of a wild Black-headed Ibis (*Threskiornis melanocephalus*) in Singapore, at the Sungei Buloh Wetland Reserve last November.

Such sightings highlight the Reserve's significance as a stopover and wintering ground for migratory shorebirds along the East Asian-Australasian Flyway.



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IMPROVING UBIN WITH TECHNOLOGY

NParks is harnessing technology to improve the lives of villagers on Pulau Ubin. An example is the pilot deployment of personal alert buttons for elderly villagers who live alone. The project, a collaboration with the Government Technology Agency, makes it easier for these villagers to call for assistance in an emergency.

More villagers and businesses on Pulau Ubin will benefit from cleaner and more reliable electricity supply with an upgraded and expanded Pulau Ubin Micro-Grid. Supported by the Energy Market Authority (EMA), the micro-grid will feature a Solar Green Roof which can potentially meet 90% of the daily electricity demand in the Main Village using solar power. The system will also be extended to Kampong Sungei Durian, to benefit more villagers on the island.

A | Deputy Prime Minister and Minister for Finance Lawrence Wong meets students from CHIJ Our Lady Queen of Peace to learn more about their project on 'Operation No Release', an educational campaign that aims to raise awareness of the dangers of releasing animals into the wild.

B-C | Bird watching remains highly popular, with enthusiasts spotting the Ruby-cheeked Sunbird (*Chalcoparia singalensis*) at least four times in the past year. The native and Critically Endangered Lesser Green Leafbird (*Chloropsis cyanopogon*) was recorded on Pulau Ubin for the first time since its last sighting in 2019.

D | In Pulau Ubin, 21 successful occurrences of the Blue-throated Bee-eater (*Merops viridis*) nesting were recorded after the disused Ketam Quarry was converted into a bird nesting area in 2016. The project was carried out together with Friends of Ubin Network members and the community and is part of efforts under NParks' Nature Conservation Masterplan.

Documenting local biodiversity

In 2022, intact flowering specimens from the *Sindora velutina* tree were collected for the first time in Singapore. This is a critically endangered tree species that was presumed to be extinct on the island until it was rediscovered in 2019, and six mature tree specimens have since been recorded. The collection of fresh flowering specimens will help further research to support conservation efforts for the species.

NParks has also completed the red listing for birds for the third edition of the Singapore Data Book which will guide its conservation efforts. A total of 413 bird species were recorded, with 24 species downlisted in terms of their threat status when compared to the previous edition.







SOUND SOLUTIONS

NParks is working with the Tropical Marine Science Institute's Acoustic Research Laboratory to develop an acoustic system for detecting both terrestrial and marine animals.

To date, several Dugong-like vocalisations have been recorded near Chek Jawa at Pulau Ubin. The system enables the collection of baseline data on marine megafauna such as local population sizes, visiting patterns, their activities in habitats and foraging behaviour. On the terrestrial front, the system is trained to recognise bird calls. By analysing the audio recordings, researchers will be able to estimate the locations and numbers of vocalising birds.

The system uses a novel technique to capture sounds from the environment and apply machine learning to process and identify the audio recordings, which helps in the formulation of conservation approaches.



The nationally Vulnerable Short-tailed Babbler (*Pellorneum malaccensis*) is one of the birds whose call can be identified through the sound detection system.

CITIZEN SCIENCE GUIDES URBAN GREENING STRATEGY

Equipped with simple scientific data collection methods and wildlife observation etiquette, citizen scientists under NParks' Community in Nature programme conduct biodiversity surveys throughout the year, documenting species of dragonflies, butterflies, garden birds and more. Data on garden bird populations around Singapore from five years of the Garden Bird Watch Programme were collated and analysed. The findings will guide NParks in their landscape design and rewilding strategies to attract a greater diversity of birds.

Community contributes to conservation efforts

A BioBlitz was organised from 27 to 28 August 2022 to survey the flora and fauna along Clementi Forest stream. This freshwater stream, which will be part of the upcoming Clementi Nature Trail, provides habitats for a variety of native odonates, freshwater fish and amphibians. The data collected will guide habitat enhancement efforts in the area, such as the choice of plant species to support aquatic biodiversity along its banks. BioBlitz is a Community in Nature initiative to involve citizen scientists in collecting information on Singapore's biodiversity.

At the opening of the 11th edition of the Festival of Biodiversity in May 2022, NParks also announced new initiatives to strengthen conservation efforts. These included the publication of a new plant checklist and bibliography, setting up long-term study plots in the Central Catchment Nature Reserve, and an enhanced wildlife management framework to strengthen nature research while encouraging greater community stewardship.

This enhanced wildlife management framework, anchored by the community and backed by science, will focus efforts on cultivating greater public awareness and understanding of native biodiversity to better manage the community's encounters with nature.

Managing local wildlife populations

Scan to take a look at some wildlife movements monitored by camera traps

Technology plays an important role in wildlife management. NParks monitors the local macaque population to study their behaviour and track their movement and activity patterns. Individual macaques are microchipped and sterilised as part of efforts to manage their population islandwide.

NParks also works with the Otter Working Group and the community to monitor the otter population and movement patterns, and takes action to mitigate conflict especially in areas where the public may come into closer contact with otters. Some of these actions include raising awareness through outreach and signage, and erecting physical barriers.

In April 2022, "Our Wild Neighbours", a multiple stakeholder initiative including NParks, Mandai Nature, ACRES, and the Otter Working Group was launched. The initiative aims is to foster a better understanding of Singapore's wildlife and strengthen the science-based approach to wildlife conservation and management.

A-B | The Grenadier (*Agrionoptera insignis*) and Striped Albatross (*Appias libythea olferna*) are some of the resident biodiversity spotted in Singapore over the past year.
C | Specimens of the *Sindora velutina* were collected for researchers to observe and record its characteristics. Its DNA will also be extracted for genetic and taxonomic research. The specimen will then be preserved and stored in the Singapore Botanic Gardens Herbarium.

Curbing illegal wildlife trade

On the global front, NParks is tackling the issue of illegal wildlife trade in partnership with the international community under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In June 2022, the Centre for Wildlife Forensics was recognised as a CITES-listed laboratory, a testament to Singapore's expertise in wildlife forensic science and supporting the enforcement of CITES.

Later in the year, at the CITES Conference of Parties (CoP19) in Panama, Singapore partnered with Malaysia to spearhead proposals to uplist two songbird species – the Straw-headed Bulbul (*Pycnonotus zeylanicus*) and White-rumped Shama (*Copsychus malabaricus*) – which have been heavily poached and illegally traded in Southeast Asia. The proposals were subsequently adopted, with higher penalties on the illegal trade of these two species implemented.

NParks also advocated for amendments to Singapore's Endangered Species (Import and Export) Act to include stiffer penalties for the illegal trade of endangered species, stronger enforcement powers for its officers, and greater clarity on the regulations.

As part of its enforcement efforts, NParks seized 34 kg of rhinoceros horns in October 2022. The 20 pieces of rhinoceros horns, valued at about S$1.2 million, were found in baggage bound for Laos, and was Singapore's largest seizure of rhinoceros horns to date. As a major trading hub, Singapore plays a key role in intercepting such illegal movement of wildlife products.

USING TECH TO ENHANCE ROAD SAFETY FOR WILDLIFE

Another aspect of wildlife management is facilitating their safe movement. NParks' Roadway Animal Detection System (RADS) helps enhance road safety for wildlife by detecting animals crossing the road and flashing warning signs, alerting motorists to slow down. The system is being deployed at Old Upper Thomson Road and Rifle Range Road





A

'FIN'-TECH TACKLES ILLEGAL TRADE

Fin Finder is Asia's first mobile application to visually identify illegally-traded shark and ray species using artificial intelligence. Launched by NParks, Microsoft and Conservation International, the app enables officers to take photos of fins and match them against a database of over 15,000 fin images via an AI-driven algorithm in the app to provide a visual identification within seconds. This empowers officers on site to flag suspicious fin shipments for further DNA testing.



Scan to take a closer look at how NParks and partners come together to tackle illegal wildlife trade

Biosurveillance for biosecurity

Illegal wildlife and pet trade are possible sources of introduction of exotic animal diseases such as rabies, which pose a danger to public and animal health in Singapore. NParks carries out biosurveillance to detect these threats and enforces strict biosecurity standards to prevent them from entering and spreading within the country.

In FY22, under the National Biosurveillance Framework, NParks detected, and subsequently investigated and responded to outbreaks of diseases including African Swine Fever in wild boars and imported pigs, and lumpy skin disease in a local cattle farm, and conducted vector surveys in pet establishments and parks to understand the ecology of vector-borne diseases.

Horizon scans of global and regional disease events were conducted together with risk assessments for early disease threat detection. To bolster knowledge building and research in biosecurity, NParks is collaborating with the National University of Singapore Saw Swee Hock School of Public Health on disease modelling and transmission studies.

The Animal and Veterinary Service (AVS) a cluster of NParks also plays a part in Singapore's whole-of-government response to global health threats. It is co-lead for the Situational and Risk Assessment Report under the One Health framework, an internationally-recognised approach to achieving optimal health outcomes across the community, from people to animals and plants.

At the World One Health Congress, AVS presented on the topics of biosurveillance and programmes to combat rabies. AVS also conducted a rabies tabletop exercise as part of contingency preparedness. Maintaining high levels of biosecurity is key to safeguarding animal and public health. Singapore's rabies-free status since 1953 is a testament to these efforts.



B

A | A scientist loads a batch of samples into the automated DNA extractor, QIAsymphony, which is designed to perform fully automated purification and extraction of DNA in an enclosed environment with minimal human intervention. This process allows the detection of illegally traded species from just a sample of its body part.
B | By analysing x-rays of animals, doctors can detect medical conditions such as pneumonia in wild animals. The process enables our vets to treat and rehabilitate these animals to prevent the spread of diseases.

BUILDING EXPERTISE IN eDNA

NParks has been refining its capabilities in the use of environmental DNA (eDNA) technology for the early detection of diseases. Scientists can detect both animal and their pathogen DNA signals through the collection of environmental samples such as air or water. At the 1st Australian and New Zealand Environmental DNA conference in February 2023, NParks gave a presentation on the successful utility of eDNA for the detection of Chelonid Herpesvirus 5, a disease-causing agent that infects all sea turtle species globally and was recently found in Singapore's turtles as well.

Singapore's expertise in global biosurveillance technology was recognised when an NParks study on optimising eDNA and eRNA (environmental Ribonucleic Acid) protocols for the simultaneous detection of several types of fish viruses from seawater was published in the Environmental DNA journal, a global comprehensive journal for environmental DNA research.



Technological advancements enable scientists to track potential environmental and disease threats to our critically endangered sea turtles, such as this Hawksbill Turtle (*Eretmochelys imbricata*).

Science drives management of pets & community animals

Proper management of Singapore's pet and community animal population is important in ensuring biosecurity and safeguarding public health while better protecting the well-being and welfare of these animals.

An area that AVS is actively working on is the enforcement of strict breeding standards for dogs. From 1 April 2022, pet breeders and boarders will be required to abide by an improved set of licensing conditions that includes the prohibition of breeders from breeding pets with known harmful heritable conditions or carrying out in-breeding practices. To monitor this, genotyping identification is carried out during compliance inspection for parentage verification.



In September 2022, AVS launched a public consultation on its proposed framework to improve the management and welfare of cats. The proposed framework includes strategies for cat management, such as expanding the existing pet dog licensing and microchipping scheme to include pet cats, and extending the Trap-Neuter-Rehome/Release-Manage (TNRM) programme to community cats.

Another strategy in the management of pet and community animals is rehoming. In 2012, Project ADORE (Project on ADOption and REhoming of dogs) was launched to pave the way for local mixed-breed dogs to be rehomed in HDB flats. The criteria for the programme was expanded in June 2022 to include larger local mixed-breed dogs and K9 sniffer dogs. As of April 2022, the 10th anniversary of Project ADORE, more than 2,000 dogs have been rehomed under the programme.

Separately, the AVS volunteer programme is also gaining traction with members of the community getting involved in various pet-related programmes such as caring for rescued animals in the Jacob Ballas Animal Classroom and conducting talks and programmes for students on responsible pet ownership.

These opportunities empower the community in raising awareness and educating the young on the importance of responsibility to animals.





ADOPTING TNRM TO MANAGE COMMUNITY ANIMALS

The TNRM programme is a holistic, humane, and science-based approach to community animal population management that is recognised by the World Organisation for Animal Health. Under AVS' TNRM initiative, community animals are sterilised to lower their reproduction rates before being released or rehabilitated and rehomed as pets.

Scan to learn more about animal rehabilitation under the TNRM programme

A | Responsible pet owners are pivotal to upholding Singapore's biosecurity through simple actions such as ensuring their pet's vaccinations are kept up to date.
B | Senior Minister of State, Ministry of Communications and Information & Ministry of National Development Tan Kiat How taking part in the online public survey for AVS' proposed cat management framework at Pets' Day Out.
C | The public consultation on AVS' proposed cat management framework is part of the larger Forward Singapore movement that aims to refresh our social compact and build a more endearing home.

EMPOWERING TRANSFORMATION

The development of science and technology capabilities plays a key role in uplifting industry standards and advancing Singapore's City in Nature vision.

Tackling challenges with science and tech

NParks' Science & Technology (S&T) Masterplan guides overall organisational efforts in harnessing science and technology to advance our City in Nature vision. These efforts are strategically directed and overseen through distinct workstreams that represent key S&T domains integral to NParks' mission, including arboriculture, botany, conservation biology & planning, and animal health & management.

In tandem, NParks' Digitalisation Masterplan provides a roadmap for the use of technology to strengthen professionalism and to address existing and emerging challenges such as a declining labour force, rising public expectations, and the increasing scope and complexity of its work. The masterplan emphasises an ecosystem approach to developing operational technology capabilities in core areas of NParks' work such as tree and park management, conservation and biodiversity management, and park planning and development.

Multiple research, operations technology and digitalisation projects have been rolled out in the reporting year or are currently ongoing. These includes a new greenery management model for the Bishan-Ang Mo Kio district, which will leverage a suite of technological tools to transform NParks' greenery management processes, enhance work productivity and elevate the capabilities of staff and the wider landscape industry.

In line with NParks' focus on science and technology, a new Branch was set up in 2022 to enhance oversight of organisational science and technology planning, and to synergise and support efforts. Other initiatives such as a quarterly Research Colloquium and regular newsletters were introduced to keep staff updated on the latest scientific studies that NParks is involved in.

MAPPING DATA WITH MAVEN II

As part of NParks' digitalisation roadmap to transform processes and enhance productivity, NParks developed Maven II, a centralised, intuitive geospatial platform for greenery management. The map-based work platform interfaces information from various digital tools and integrated information from sensors such as bin and ammonia sensors, into a centralised dashboard.

A Contractors' Portal allows contractors to receive works order information and update photographic evidence of work done on-the-go. Officers may also carry out remote certification of work done based on data received from sensors. The system also has a self-billing function, resulting in an automated seamless end-to-end process for NParks and its contractors.

These digital tools, including the Contractor Fleet Management System and Grass Height Sensor, were piloted in the Bishan-Ang Mo Kio district together with landscape contractors as part of the Landscape Sector Transformation Plan to upskill the landscape sector.



The launch of Maven II will enhance our greenery management and increase the efficiency of park facilities management.

Advancing our research

NParks currently leads the City in Nature research vertical of the Ministry of National Development's Cities of Tomorrow Research and Development Programme, funded under the Research, Innovation and Enterprise (RIE) 2025 Plan. This research vertical seeks to deepen the scientific foundation for our City in Nature vision, by leveraging scientific expertise, technical capabilities and practitioner experience from various local research institutes, agencies, and companies to enhance ecological and climate resilience and inform nature-based solutions. The first grant call has been launched for research topics in urban greenery, nature-based solutions for inland climate change adaptation and managing human-nature relationships.

Under the RIE2025-funded Marine Climate Change Science programme, NParks has also started to award its first research projects. These upcoming studies aim to advance the scientific understanding of Singapore's blue carbon habitats and dynamics, by undertaking national blue carbon accounting, mapping and predictive modelling, and to also strengthen the ecological resilience of Singapore's urban coral reefs by examining the viability of potential ecological and microbial solutions.

NParks' Long-Term Socio-Ecological Research programme brings together a suite of ongoing and upcoming projects and research activities that will collectively enable NParks to monitor the long-term socio-ecological impacts of our City in Nature strategies. Efforts under the programme will leverage dedicated long-term study sites, repeated studies and integrated and interdisciplinary efforts, in order to generate new scientific insights to advance our City in Nature.

One of the programme's latest research projects seeks to better understand the values, beliefs, and norms of Singaporeans towards nature, and how City in Nature efforts can influence their physical, mental and social well-being.

Understanding tropical forest ecology

In the past year, significant progress was made in ecology research at the Central Catchment Nature Reserve with the establishment of the Long-Term Forest Ecological Monitoring (LTFEM) plot network. This involved restoring and resurveying 62 historical plots which were originally surveyed in 1992 by Mr Wong Yew Kwan, Singapore's first Commissioner of Parks and Recreation. Bird surveys and full deployment of camera traps were also carried out across these plots to track the movement of wildlife.

A subset of the LTFEM plots was further surveyed for aboveground biomass assessment of forests at the nature reserve. The findings of this research project emphasised the importance of conserving mature trees for their ability to sequester carbon effectively.

Resurveys of seedlings and saplings were also conducted at 40 previously established plots at the Nee Soon catchment area.

All the studies enhanced our understanding of changes in Singapore's forest ecosystems over the past three decades and contributed to our efforts in improving forest conservation and resilience.



A | The Central Catchment Nature Reserve occupies over 2,000 hectares of forest cover and is home to some of the richest forests in terms of biodiversity, which includes the endemic Swamp Forest Crab (*Parathelphusa reticulata*) and Critically Endangered Raffles Banded Langur (*Presbytis femoralis*).

MANAGING TREES REMOTELY

NParks has implemented a Remote Tree Management System which uses machine learning models to automatically extract the geospatial location and physical parameters of trees, such as their height and girth from Light Detection and Ranging (LiDAR) point cloud data.

The extracted tree parameters also update the Tree Structural Model which predicts the structural condition of trees under different wind load conditions. The digital twin, including the panoramic images collected, enable arborists to inspect the tree visually and undertake virtual inspection.

USING TECH IN BIODIVERSITY SURVEYS

In recognition of its efforts in biodiversity conservation, Singapore was chosen to host the semi-finals of the international XPRIZE Rainforest competition which took place at the Central Catchment Nature Reserve. The competition, organised by the XPrize Foundation, showcased how technologies such as autonomous vehicles and drones could be used to help conduct comprehensive biodiversity surveys in remote forest areas. The findings from the competition will be analysed for new discoveries.

Predicting plant responses to climate change

Another breakthrough study confirmed the evolutionary relationships and speciation patterns of *Syzygium*, the world's largest tree genus. *Syzygium* features the greatest diversity of species in Singapore as well as other Southeast Asian forests. The two-year study, led by the Singapore Botanic Gardens in collaboration with 26 research institutions, provided valuable insights into plant species evolution amid environmental changes.

The ability to predict plant responses to climate change will guide conservation and management efforts for plant communities. The findings from the study were published in the Nature Communication, a leading scientific journal, in September 2022.

UNCOVERING THE EVOLUTIONARY HISTORY OF PLANTS

As part of the Flora of Singapore project, baseline genomic data for some 1,300 species of native plants was generated. This sheds light on the evolutionary history of plants, enabling researchers to gain a better understanding of species relationships, genetic diversity, ancient population dynamics and even predict the impact of ecological changes on plant survival for effective intervention in plant conservation.



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Launching the definitive guide to plants in Singapore

A definitive reference guide to the native, naturalised and casual plants in Singapore was launched on 21 May 2022. Extensive research was put into producing the “Flora of Singapore: Checklist and Bibliography” which includes records of over 3,000 species from the region.

The guide accounts for all the names ever used for wild plants here, as well as their bibliographic references and conservation assessments. This was clarified from over 7,500 names used in almost 50,000 literature citations from plant research in Singapore over the last 200 years. The publishing of this guide affirms the Singapore Botanic Gardens' global position as a leading tropical botanical institute.

Making the connection between health and nature

To substantiate the health and well-being benefits of people-nature interactions, NParks conducted five research studies to explore the relationship between time spent in nature and people’s well-being. The findings from these studies were published in several scientific papers.

NParks’ Centre for Urban Greenery and Ecology (CUGE) has also published "Design Guidelines for Contemplative Landscapes" to facilitate the implementation of landscapes that enhance mental well-being. The guidelines are based on a study into the effects of landscapes on brain activity.

Uplifting the landscape industry

The adoption of a science-based approach, backed by research and the effective use of technology, enables NParks to push industry standards to a higher level.

For example, the Landscape Excellence Assessment Framework (LEAF), which recognises organisations’ efforts to restore nature into the built environment, is backed by studies which show how greenery can mitigate urban heat island effect and have a therapeutic effect on people.



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In 2022, 10 projects were recognised for outstanding greenery under LEAF. They included six parks and gardens as well as four developments. Two projects – the Gallop Extension at Singapore Botanic Gardens and Thomson Nature Park – received the platinum certification, which is the highest level under LEAF. In all, 90 projects have been certified since the framework was launched in 2013.

A | A flowering branch of the Sea Apple (*Syzygium grande*), one of the pioneering tree species planted along the roadside when Singapore’s nationwide greening campaign was initiated in 1963.

B | The native, Critically Engangered *Shorea bracteolata* is one of the 3,000 species featured in the Flora of Singapore catalogue that describes the diversity of all families, genera and species of bryophytes, lycophytes, ferns, gymnosperms and angiosperms that are native, naturalised or casual in Singapore.

C | One of the "Design Guidelines for Contemplative Landscapes" includes incorporating views of a body of water to encourage calmness and bring a sense of freshness and energy to the space. The site of the Therapeutic Garden at Bedok Reservoir Park was thus chosen for its scenic views of the reservoir.

D | Awarded the platinum certification under the Landscape Excellence Assessment Framework, the Gallop Extension is distinguished by the sensitive restoration and conservation of the site’s natural and cultural heritage.

Promoting skyrise greenery

NParks is stepping up efforts to work with building developers, industry players and building sector professionals to raise technical know-how and standards in skyrise greenery. This will help promote multi-functional skyrise greenery and their sustainable operations and maintenance.

Skyrise greenery technical guides will be updated and translated into micro-learning courses to raise landscape and building sector professional competencies, and a skyrise greenery technical tour has been introduced at HortPark to impart sustainable greening practices.

NParks' Centre for Urban Greenery and Ecology (CUGE) has also launched a skyrise greenery certification course while its research arm embarked on a study into the energy efficiency and thermal benefits of co-locating green roofs and solar panels.

In 2022, NParks released the third edition of its Skyrise Greenery Showcase e-booklet which highlighted exemplary skyrise greenery projects across building typologies in Singapore. A total of 15 projects were featured including CapitaSpring, Parkroyal Collection Marina Bay, Eunos Polyclinic, Pathlight School and Ang Mo Kio Court.



A

Raising standards in environmental impact assessment

To improve the quality and rigour of environmental impact assessment (EIA) work in Singapore, the engagement of EIA consultants will be carried out under a centralised NParks tender instead of standalone contracts by individual agencies. This not only minimises duplication of time and effort in the tender process but also enables NParks to work more closely with the consultants to standardise survey methodologies and develop best practice guidelines for the industry.

AVS launches accreditation for dog trainer certification

A Certified Dog Trainer Scheme accredited by NParks' Animal & Veterinary Service (AVS) was launched as part of efforts to raise the standards and professionalism in the dog training industry. It serves as a competency benchmark for dog trainers and signals a clear shift towards safe and effective training methods that are grounded in science, ensuring that the welfare of dogs is safeguarded during the training.

Accredited trainers will be required to comply with codes of conduct set by their certifying bodies. Launched in December 2022, the new certification scheme replaces the Panel for the Accreditation of Dog Trainers scheme

Licensing of dog breeders and pet boarders

Revised licensing conditions for dog breeding and pet boarding took effect from 1 April 2022 with the aim of improving the health and welfare of animals. Amongst the new conditions is the prohibition of in-breeding and the breeding of dogs with known harmful heritable conditions. They also stipulate the maximum age for breeding dogs and the maximum frequency for breeding to protect the dogs' welfare.

Engaging stakeholders in the veterinary sector

AVS has been engaging stakeholders to raise professional standards in the veterinary sector. Following a survey of the veterinary profession in 2021, AVS conducted focus group discussions with members of the industry and users of veterinary services to identify areas to work on, including upholding professional standards for the veterinary sector and the importance of promoting lifelong education in the profession. In conjunction with World Veterinary Day on 30 April 2022, the book "Vets at Work" was launched and highlights the history of the Singapore Veterinary Association and the significant contributions that Singapore's veterinary professionals have made to society over the years.

Sharing our expertise

NParks is actively involved in the sharing of expertise on the global stage, on topics ranging from biodiversity to climate change and wildlife management.

NParks participated in the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP15), held in Montreal, Canada in December 2022. At COP15, the parties present adopted the Kunming-Montreal Global Biodiversity Framework, which aims to catalyse and enable urgent transformative action by nations to halt and reverse biodiversity loss.

NParks was also invited to present at the City Summit Pavilion on the Singapore Index on Cities' Biodiversity (SI), a self-assessment tool that helps cities measure and benchmark their biodiversity conservation efforts, that is critical for parties to fulfil the implementation of the Framework, in particular Target 12 on urban green and blue spaces enhanced for human well-being.

NParks also hosted a series of international webinars in collaboration with partners and experts. Held between July and September 2022, the webinars were aimed at raising awareness and understanding of wildlife to allow communities to safely share spaces and enjoy the benefits of living close to nature. Speakers included several international subject matter experts from distinguished educational institutions and agencies.



B

A | The rooftop carpark of Ang Mo Kio Court has been transformed into a lush garden complete with over 37,000 shrubs and trees for residents to enjoy a spot of greenery and recreation.
B | The veterinary community plays a critical role in safeguarding both public health and animal health. Vets help with the early detection of viruses in our companion animals, safeguard Singapore against zioonotic diseases as well as educate pet owners on responsible pet ownership.

Upskilling the industry

In June 2022, CUGE launched a new Training Management System to streamline and enhance training administration processes for its courses, workshops and certification programmes. To date, NParks has offered about 2,300 training and assessment places for Workforce Skills Qualifications (WSQ) courses and close to 2,750 for non-WSQ courses. New CUGE courses introduced in 2022 include those on developing nature play programming as well as advanced tree decay assessment. These training modules play a crucial role in ensuring high quality work by the industry as they support our City in Nature vision.

NParks also continued to collaborate with institutes of higher learning, supporting the Student-Run Park programme with the Institute of Technical Education (ITE) and Ngee Ann Polytechnic, as well as internships, immersion programmes and learning journeys. These covered topics such as the use of digital tools, playground safety inspection, nursery practices and biodiversity management.



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Providing guidance in staff training and development

NParks has refreshed the competency framework that guides its officers in the training and development programmes that they may wish to undertake.

Collaborative learning continued to be an important aspect of staff development at NParks. Under the Hort Champs programme which facilitates the exchange of knowledge amongst staff, 12 workshops were conducted in 2022. They covered topics such as plant identification, new or uncommon plants for landscaping as well as pest and disease management. The workshops attracted about 100 participants on average, helping staff to keep their skills updated and relevant.

The quarterly Hort Colloquium also serves as a platform for staff and industry experts to share and exchange horticultural know-how. The 46th to 49th editions saw an average of 220 participants attending talks on topics such as waterlily care by Mr Danny Cox from Longwood Gardens in the United States, and Tropical Freshwater Swamp Forests by Dr Chong Kwek Yen from the Singapore Botanic Gardens.

NPARKS RECOGNISED FOR DIGITALISATION STRATEGY

NParks was presented with the International Data Corporation (IDC) Future Enterprise Award (Future of Work) for its digitalisation strategy that involves the use of a science-based approach to develop digital tools and analytics to enhance efficiency in park and horticulture management, and to strengthen the conservation and management of nature and biodiversity. An example is the automatic extraction of tree measurements to build accurate digital twins that help enhance field operations and improve tree risk management.



The Remote Tree Management System uses artificial intelligence to extract dimensions from the digital twins of trees, allowing for automatic tree inventory updates with LiDAR technology. NParks is also able to run some of our applications remotely, such as the Tree Structural Model, aiding work in managing streetscape trees.

Creating a family-friendly work culture

NParks received a commendation for the Great Companies for Dads Awards 2023, in support of the Made For Families initiative. To support staff in taking care of their families and strengthening family ties, it put in place family-friendly initiatives such as flexible work arrangements, “Back to School with Mom and Dad” to give staff with school-going children time-off during the first week of school, and “Eat With Your Family Day” to allow staff to leave work earlier to join their families for dinner.

Staff were also given “NParks Family Day” tickets to bring their families to recreational attractions such as Universal Studios and Night Safari, and a “Bring Your Family to Work Day” was organised for staff to bring their children to the workplace for fun-filled activities and to show their children what they do at work.

A | Through the NParks-ITE collaboration on curriculum enhancements, students can build up their capabilities in arboriculture tools such as the Tree Structural Model, sonic tomography, resistance drilling, laser rangefinders, drones and greenery management tools commonly used in the landscape industry,
B-C | Participants in one of CUGE’s courses learnt about developing therapeutic horticultural experiences through a hands-on workshop.

GARDEN CITY FUND

Message from the Chairman

2022 saw renewed growth in collective efforts to achieve Singapore's City in Nature vision as Singapore eased out of Covid-19 restrictions.

Corporate and community partners intensified their involvement in projects that sought to leverage nature-based solutions to mitigate climate change. An example was the collaboration with OCBC at the OCBC Mangrove Park, where NParks is piloting the Ecological Mangrove Restoration method to enhance the long-term resilience of mangrove habitats, and would be ready in 2026.

There was also strong interest in marine conservation with new partners such as KLA Foundation and PSA contributing generously to the research and restoration of corals under the Plant-A-Coral, Seed-A-Reef programme.

Support for the Plant-A-Tree programme continued to grow, putting us on course to achieve our target for the OneMillionTrees movement. To date, more than 500,000 trees have been planted since the start of the movement in 2020 – a milestone achieved with the help of over 75,000 members of the community. Of these trees, more than 14,000 were donated and planted by some 70 corporations and 1,100 individuals during this reporting period.

Our reach was greatly expanded through partnerships with both organisations and individuals. They not only raised financial capital but also engaged with their stakeholders through various platforms like events, online fundraisers and marketing collaborations that helped share our City in Nature vision and encouraged them to donate to the cause and embark on their journey to play a part for our natural heritage.

Our outreach to the young, to enable our future generation to connect with nature and our natural heritage, was another area that resonated with many of our corporate partners. The Mind the Gap 200 Fund committed its support to Every Child A Seed for 2023 and 2024 while Microsoft Singapore contributed to Green Wave 2023 and Mandai Nature enabled the World Wildlife Day Regional Youth Symposium.

It was also encouraging to see individuals coming forward to support our City in Nature vision. A legacy gift from the late Mr Gerry Essery and Mrs Jo Essery went to the Singapore Botanic Gardens' Give to the Gardens programme to fund conservation, research, education and outreach efforts. Long-time friends like Dr Rosslyn Leong and Mr Tan Jiew Hoe have continued with their generous support, as well as new friends like Mrs Tina Ou who contributed to the Gardens' Herbarium Digitisation project, and Ms Tan Poh Joo who donated towards the conservation of rare plant seedlings at Pasir Panjang Nursery.

We are thankful and humbled by the support that we have received.

In the coming year, we will be stepping up our work on nature-based projects to mitigate the effects of climate change and plant species conservation leveraging the Singapore Botanic Gardens Seed Bank. We will also continue to drive outreach and education efforts to connect people with nature in our green spaces. We look forward to the continued support of the community and corporate partners as we embark on these efforts to realise our shared vision.



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, 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 is also the Executive Director of National Parks, Gardens & Nature Reserves and Commissioner of Parks & Recreation.

Between 1 April 2022 and 31 March 2023, the total amount of cash donations through the GCF was about $12.3 million.

The 10th and 11th GCF Management Committee for the Year in Review

NAME	CURRENT APPOINTMENT	PAST APPOINTMENTS	OCCUPATION	ATTENDANCE AT MANAGEMENT COMMITTEE MEETINGS IN FY 2022
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	4/4
Dr Leong Chee Chiew*	Secretary 1 November 2022	Member since 1 November 2012	Executive Director of National Parks, Gardens & Nature Reserves and Commissioner of Parks & Recreation, NParks	3/4
Mr Gerald Tan	Member 1 November 2022	Member since 1 November 2020	Head of Reputational Risk for Asia, Credit Suisse Singapore	4/4
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	4/4
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		Retired	1/1

* 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 diverse mix of backgrounds and experience to meet the growing needs of the charity.

Mr Guy Harvey-Samuel was appointed to the 11th GCF Management Committee on 1 November 2022.

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 interests on a regular and need-to basis. Committee members also abstain and do not participate in discussion or decision-making on matters where they have a conflict of interest.

Whistle-blowing policy

GCF follows NParks' whistle-blowing policy for reporting improper conduct and to address concerns about possible wrong-doing or improprieties in financial or other matters within the charity.

All on board for the City in Nature

The transformation of Singapore into a City in Nature gained momentum with strong support from corporates and individuals in the past year.



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Enhancing our parks and gardens

UNESCO World Heritage site Singapore Botanic Gardens continued to strengthen its conservation, research and outreach efforts with the help of contributions received through its Give to the Gardens programme.

This has enabled programmes like Singapore Botanic Gardens' annual fundraiser, Trees of the World, where individuals, corporations and embassies donated and decorated native trees in the Gardens, some of which were in partnership with schools, hospitals and non-profit organisations to spread messages of hope and inspiration. This created a festive display for visitors to enjoy from 4 December 2022 to 2 January 2023. Collectively, more than S$265,000 was raised from 52 corporate donors and 71 individual donors. This included a contribution from Equinix and its strategic alliance partners that contributed S$60,000 to support the Gardens.

A S$9,000 donation also came from EZ-Link through a collaboration to produce four limited-edition EZ-Link cards featuring botanical illustrations inspired by the flora in the Gardens; and the launch of a limited-edition sustainable bamboo charm featuring a *Dipterocarpus* species seed.



B

In other park enhancement projects, the Spice Gallery at Fort Canning Park was developed with generous support from Nomanbhoy & Sons, one of Singapore's oldest spice companies. The gallery showcases the history of spice trade, various spice plants that were traded and their importance to Singapore's economic and social development. Together with an experiential trail, the newly-refreshed space provided visitors with an opportunity to connect with plants.

The Greening of Singapore

The Plant-A-Tree (PAT) programme continued to make strong progress in the past year, contributing to the growth of the OneMillionTrees movement. More than 70,000 trees were donated and planted by more than 800 corporations and 5,000 individuals.

Microsoft Singapore pledged to plant 1,700 trees as part of a US$150,000 donation to the GCF. The donation also supported Trees of the World and the Green Wave campaign, a programme for students to have greater appreciation and awareness of the local biodiversity that is shared with the international and local community in commemoration of the International Day for Biodiversity.

Several other organisations marked their anniversaries by supporting the PAT programme. They include Huttons Asia which pledged to raise funds to plant 500 trees to commemorate its 20th year; Energy Market Company that made a generous donation to plant 200 trees to mark the National Electricity Market of Singapore's 20th anniversary; and Schenker Singapore which pledged to contribute to the planting of 150 trees to celebrate its 150th year.

New supporters who came on board in the past year included Singlife and SAC Capital which donated S$30,000 each towards the PAT programme, and SCDA Architects which pledged to raise S$300,000 for 1,000 trees.

They joined regular contributors such as Geneco which has supported PAT since 2021 and donated another S$10,000 to the Singapore Botanic Gardens Seed Bank in 2023 in celebration of its 5th anniversary.

A fundraiser for PAT was also organised by Mediacorp in partnership with Daikin Industries. It was supported by advertisements on all nine Mediacorp radio stations and a post-event video broadcast on mainstream media in mid-November 2022.



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A | The new Spice Gallery in Fort Canning Park is planted with herbs and spices that were commonly traded in Singapore's past. Visitors can get up close to smell and observe these plants.
B | Over 120 corporate and individual donors came together to deck out the trees around the Singapore Botanic Gardens in festive decoration, as part of Trees of the World, its annual fundraiser event. The proceeds will go towards supporting research, conservation and outreach in the Gardens.
C-D | Plant-A-Tree remains a hallmark programme of the Garden City Fund, enabling organisations and individuals to green up Singapore and provide new habitats for native flora and fauna.

Boosting conservation efforts

OCBC, in its commitment to champion sustainability and mitigate climate change, has pledged to donate S$3 million towards Singapore's first large-scale project to enhance long-term resilience of mangrove habitats; and increase Singapore's capacity for carbon storage using the Ecological Mangrove Restoration method. This is part of the bank's 90th anniversary gift to Singapore, that will enable the development of the OCBC Mangrove Park at Pulau Ubin to create additional habitats for Singapore's native biodiversity.

In other conservation efforts, PSA donated proceeds from its annual golf event to support NParks' Plant-A-Coral, Seed-A-Reef programme. A total of S$50,000 was raised from the PSA Golf Invitational 2022, which would go towards improving Singapore's marine habitat through the transplanting of coral nubbins to Reef Enhancement Units at the Sisters' Islands Marine Park.

Strengthening outreach and education

After a four-year hiatus, the Singapore Garden Festival returned in 2022 to a new location at the Orchard shopping belt and Singapore Botanic Gardens. Supporting the event were platinum sponsors ION Orchard and Ngee Ann City, bronze sponsor Natural GRO, Shopee as official e-commerce partner, as well as partners Kayakasia Paddlesports Pte Ltd and Sprout Lab.


A

Another outreach and education programme, the 2nd World Wildlife Day Regional Youth Symposium 2023, was held in March with Mandai Nature, a non-profit wildlife conservation organisation, contributing S$140,000 towards it. The event, organised by members of NParks' Youth Stewards for Nature Programme, brought together over 170 youth attendees from 15 countries, including all 10 ASEAN member states, to share their aspirations and discuss how youths can play a part in nature and biodiversity conservation in Southeast Asia.

This programme is one way that NParks, as the appointed CITES Management Authority of Singapore, has adopted to create wildlife conservation awareness and further engage a younger generation to provide platforms for them to come together to participate and discuss wildlife conservation and sustainable use issues.


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Individuals step forward

Besides the corporates, GCF also received support from many individuals. A sum of S$983,000 was received from the estate of Jo and Gerry Essery to support the Singapore Botanic Gardens' Give to the Gardens programme. Other donors included Ms Tan Poh Joo who contributed S$30,000 to support the conservation of rare plant seedlings at Pasir Panjang Nursery; Mrs Tina Ou who donated S$50,000 to the Singapore Botanic Gardens Herbarium Digitisation project; and Mr Bhavesh Shukla who pledged to donate all proceeds from the sales of his photobook "God's Own Design – A Photographic Journey Through Nature" to the PAT programme.

Mr Bhavesh has also started a fundraiser "Book-A-Tree" on the giving.sg platform to raise funds for PAT.

Mr Tow Heng Tan, through his foundation Mind the Gap 200 Fund, also made a generous gift of S$250,000 to support a range of projects that included Give to the Gardens, Orchid Conservation programme and Every Child A Seed, an NParks outreach programme to cultivate the appreciation of gardening amongst primary three students.

The year ahead

GCF will continue to work closely with corporate partners and individuals and to seek community support for various projects in the coming year. Among these will be nature-based initiatives in the Mandai Mangrove Mudflat area to mitigate the effects of climate change and improve Singapore's long-term climate resilience, and the Singapore Botanic Gardens Seed Bank which will play an increasingly important role in plant species conservation.

GCF will also continue to focus on outreach and education through projects such as NParks Concert Series in the Park: Rockestra®, botanical art exhibitions and the use of the Therapeutic Gardens to demonstrate the healing powers of nature.

Through these efforts, GCF aims to strengthen corporate and community involvement in its work and connect people more closely with nature. Visit www.gardencityfund.gov.sg for more information.

A | Situated outside Ngee Ann City, one of the Singapore Garden Festival's show gardens themed 'In the far, far away future' immersed visitors in a world of towering vegetation and insects overtaking the space. A total of six show gardens transformed Orchard Road into a lively garden oasis.

B | Alongside the World Wildlife Day Regional Youth Symposium, the youths also organised a complementary suite of learning journeys, workshops, invasive species management and a crash-course on spotting illegally traded wildlife products online.

C | The upcoming Mandai Mangrove and Mudflat is one of the richest wetlands in Singapore and a rich feeding ground for migratory shorebirds. It will be conserved as a Nature Park, adding to the existing Nature Park Network around Sungei Buloh Wetland Reserve.

D | NParks' Concert Series in the Park: Rockestra® made a strong post-pandemic comeback. Designed to bring visitors into our parks, the event held on 23 February 2023 attracted a 10,000 strong audience to Bishan-Ang Mo Kio Park.

GARDEN CITY FUND DONOR'S ACKNOWLEDGEMENT FY2022

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

- Keppel Care Foundation
- Magical Bridge Foundation
- Peter Lim

S$100,000 and above

- AIA Singapore
- Aramco Asia Singapore Pte Ltd
- City Developments Limited
- Estate of Essery Gerald Stephen
- Goh Foundation Limited
- Hotel Properties Limited
- Leong Sou Fong Rosslyn
- LU Foundation
- Mandai Nature
- Microsoft
- Ocean Network Express Pte Ltd
- Oversea-Chinese Banking Corporation Limited
- Schenker Singapore (Pte) Limited

S$10,000 and above

- AECOM Singapore Pte Ltd
- AIA Investment Management Pte Ltd
- AirTrunk Singapore Pte Ltd
- Akiko Shaw
- Alfa Tech Vestasia Pte Ltd
- Allen & Gledhill LLP
- Allianz SE Reinsurance Branch Asia Pte Ltd
- Allied World Assurance Company, Limited
- Amgen Singapore Manufacturing Pte Ltd
- Ang Tian Chua
- Anshu Govil
- APM Property Management Pte Ltd
- ARC Marine Pte Ltd
- Boehringer Ingelheim Singapore
- Buddha Tooth Relic Temple (Singapore)
- Call Lade Enterprises Pte Ltd
- Capgemini Singapore Pte Ltd
- China Construction Bank Corporation
- CIMB Bank Berhad
- Cirrus Logic International (S) Pte Ltd
- Project Starfish Fund
- Consumer Journeys Pte Ltd
- DBS Bank Limited
- Deutsche Bank AG
- Digital Investment Management Pte Ltd
- Dymon Asia Capital (Singapore) Pte Ltd
- Eastport Maritime Pte Ltd
- Edrington Singapore Pte Ltd
- EFG Bank AG
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- Equinix Asia Pacific Pte Ltd
- Equinix Singapore Pte Ltd
- ExxonMobil Asia Pacific Pte Ltd
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- Geh Min
- Geneco
- GIC Private Limited
- Goh Jia Le
- Ho Peng Leong
- Hong Bee Lan
- Infineum Singapore LLP
- Interflux Singapore Pte Ltd
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- Kinokuniya Book Stores
- KLA Foundation
- KPI OceanConnect Pte Ltd
- KTC Civil Engineering & Construction Pte Ltd
- Kulicke & Soffa Pte Ltd
- Lanxess Pte Ltd
- Lasalle Investment Management Asia Pte Ltd
- Lee Kheng Nam
- Lee Sao Wei
- Leong Wai Leng
- Lim Kim Hoe
- Masjid Al-Falah
- Maybank Singapore Limited
- Metro Holdings Limitd
- Micron Technology Singapore
- Motul Asia Pacific Pte Ltd
- Musarubra Singapore
- Ng Chin Siao
- NTUC Income Insurance Co-Operative Limited
- OCP Asia (Singapore) Pte Ltd
- Onn Wah Precision Engineering Pte Ltd
- Onn Wah Precision Machining Pte Ltd
- Onn Wah Tech Pte Ltd
- Ou Tsung Ming and Ou Chen Li Chin
- PetroChina International (Singapore) Pte Ltd
- Procter & Gamble International Operations SA Singapore Branch
- PSA Corporation Limited
- PSA International Pte Ltd
- Robeco Singapore Pte Ltd
- Sanchoon Builders Pte Ltd
- SCDA Architects Pte Ltd
- Schroders Investment Management (Singapore) Limited
- Sea Consortium Pte Ltd
- Singapore Life Ltd
- SP Group Pte Ltd
- Singapore Telecommunications Limited
- Sompo Insurance Singapore Pte Ltd
- Spirax Sarco Pte Ltd
- ST Logistics Pte Ltd
- Standard Chartered Bank (Singapore)
- Starhub Limited
- Sushi Express Group Pte Ltd
- Tan Jiew Hoe
- Tan Kwang Hwee
- Tan Li Ping
- Tan Poh Joo
- Teng Wen Lien Matthew
- The Hongkong and Shanghai Banking Corporation Limited
- Uniqlo (Singapore) Pte Ltd
- Unisteel Technology Limited
- Virtuos Holdings Pte Ltd
- WWF Singapore
- Yap Soo Jin
- Yong Kon Yoon Eugene
- ZIM Singapore Pte Ltd

S$10,000 and below

- 2TPC Pte Ltd
- Aaron Shahril Yusoff Maniam
- Activecool Fashion
- Afterhurst Limited
- Ajinkya Kunal Arvind
- Alexander Shalen
- Alexey Rumyantsev
- Alisdair John Ferrie
- Alison Ng
- Alstom Transport (S) Pte Ltd
- Amazon Web Services
- Andrea Scipioni
- Ang Chi Hoe
- Ang Chun Gay
- Arrow Electronics Asia (S) Pte Ltd
- Ashland Singapore Pte Ltd
- Aspen Tech Pte Ltd
- Audi Singapore Pte Ltd
- Berkley Insurance Company (Singapore Branch)
- Bey Soo Khiang
- Bharmaiah Shivakumar Shayer
- Bridgestone Asia Pacific Pte Ltd
- Broad Peak Investment Advisers Pte Ltd
- Buddha's Light Association (Singapore)
- Bu Puay Siang
- Cai Li
- Cantonment Primary School
- Celanese Singapore Pte Ltd
- Chan Sia Lin
- Chan Tuck Keng
- Chang Pei-Yao
- Chen Hongyi
- Chen Kok Sing
- Cheng Shing Chow
- Chew Seng Chye
- Chionh Sze Chyi Mavis
- Chong Ik Wei
- Chong Lo Lan Pearlyn
- Christopher Quek
- Chua Choong Tze
- Chua Wah Ann
- Chua Yuaw Hong Edwin
- Crawford & Company International Pte Ltd
- CTC Global Pte Ltd
- Curie Holdings Pte Ltd
- Daryl Lim
- Dell Global B.V. (Singapore Branch)
- Digital Core Reit Management Pte Ltd
- DPEX Worldwide Express (S) Pte Ltd
- DTCC Data Repository (Singapore) Pte Ltd
- EIG Dermal Wellness (S) Pte Ltd
- EisnerAmper PAC
- Emerson Asia Pacific Pte Ltd
- Eng Leong Medallic Industries Pte Ltd
- Envista Forensics Pte Ltd
- Epam Systems Pte Ltd
- Eurokars Habitat Pte Ltd
- Evan Tan
- EZ-Link Pte Ltd
- Fairfield Chemical Carriers Pte Ltd
- Fendy Lee
- First REIT Management Limited
- Fo Guang Shan (Singapore)
- Foo Kok Hwee
- Foo Siang Keng
- Fortinet Singapore Pte Ltd
- Four Seasons Asia Investment Pte Ltd
- Fox Victoria Elizabeth Lan
- Fu Mao Holdings Pte Ltd
- Fu Yuan International Holdings Pte Ltd
- Fung Yuit Leng Juanna-Gaby
- Gan Wen-Jian
- GlaxoSmithKline Pte Ltd
- Goh Eck Meng
- Goh Liu-Ying (Wu Liying)
- Gorrepati Chaitanya
- Grab Taxi Holdings Pte Ltd
- Grand Venture Technology Limited
- Green Forest Landscape Pte Ltd
- Gwee Lay Peng Anna
- H.A.M. Creations Pte Ltd
- Hako Technology Pte Ltd
- Hilton Global Foundation
- Hitachi Elevator Asia Pte Ltd
- HKA Global (Singapore) Pte Ltd
- Ho Bee (One-North) Pte Ltd
- Hoong Bee Lok
- Hu Ping
- Hyphens Pharma Pte Ltd
- Hyundai Fuels Pte Ltd
- IEEE Asia-Pacific Limited
- iFast Corporation Limited
- Irving Tan
- Jackie Mang
- Jeffrey Heng
- Jiang Ke-Yue
- Jonathan Yap
- Kang Wen Ling
- Kanto Kagaku Singapore Pte Ltd
- Kao Singapore Pte Ltd
- Karen Fawcett
- Kevin Geow
- Khoo Ken Hui
- Killem Pest Pte Ltd
- Koh Chew Li
- Koh Qin Wen
- KOSÉ Singapore Pte Ltd
- KPI OceanConnect Global Accounts Pte Ltd
- Kwan Qian Yun
- Kwong Shiyang
- Lai Chon Yin Jason
- Lai Chung Han
- Lee Ti Seng Desmond
- Lem Jit Min Andy
- Li Jiehan
- Lim Bee Choo
- Lim Soon Hock
- Lim Xuan
- Lin Jinze
- Lingaraj Krishna
- Liu Fenghua
- Luba Marine Survey Pte Ltd
- Mandom Corporation (Singapore) Pte Ltd
- Marcellinus Simon Hendrikus
- Mary Tan
- Maximilian Ajit Singh Shau
- Melita Teo More May
- Mettler-Toledo (S) Pte Ltd
- MindChamps Preschool
- Miranda Clark
- Moo Yi Sin Jason
- Muhammad Fadhli Bin Borhan
- N&E Innovations Pte Ltd
- National University of Singapore
- Neo Huey Wen
- Neo Soh Kheng Florence
- Neu Ming Wei Kelvin
- Ng Ee Han Ivan
- Ng Wei Yong
- Ogilvy Singapore Pte Ltd
- Oh Kim Yeow
- Ong Liyi
- Oo Kian Kwan Kenneth
- Optiver Singapore Trading Pte Ltd
- OVOL Singapore Pte Ltd
- Pacer Water Polo Academy
- Pandan Crescent Pte Ltd
- Peggy Ngiam
- Pico International (HK) Limited
- Prosidon Pte Ltd
- PT Puninar Sarana Raya
- QBE Insurance (Singapore) Pte Ltd
- Quek Hong Hui Richard
- Rajah & Tann Singapore LLP
- Regina Lee Yong Cho
- Rex Tan
- Risis Private Limited
- Rohini d/o Amarthalingam
- Rotary Club of Marina City, Singapore
- Sake Ramaakanth
- Samudera Shipping Line Limited
- Sato Asia Pacific Pte Ltd
- Schappler Fanny Elsbeth
- Sciente International Pte Ltd
- Sealand Turbo-Diesel Asia Pte Ltd
- SECC Holdings Pte Ltd
- See Weng Keong Irwin
- Sharon Chan Sau Luen
- Shukla Bhaveshkumar Pravinchandra
- Sidley Austin LLP
- Singapore Customs
- Sofina Asia Pte Ltd
- Software-One Pte Ltd
- Soh Qi Rui
- Soh Qi Xu
- Spacebib Pte Ltd
- Starcom Media Worldwide
- Steve Hawkes
- Stuart Chng
- Students of BW Monastery
- Sumitomo Rubber Asia (Tyre) Pte Ltd
- Summit Power International Limited
- Tan Boon Hui
- Tan Kay Jin
- Tan Kian Loy
- Tan Suat Hua
- Tan Toh Hui Leonard
- Tan Yee Tiong
- Tang Chuan Ann
- Tay Hui Hian Kenny
- Tay Mui Hoon
- Telstra Singapore
- Teo Lok Tsong Terence
- Tern Yuh Sheng Joseph
- Tony Teo
- Too Chien Kuoh Elvin
- T. Rowe Price Singapore Pte Ltd
- Tuas South Avenue Pte Ltd
- Tuas West Drive Pte Ltd
- Unison Construction Pte Ltd
- Vance Chemicals Pte Ltd
- Wan Chee Foong
- Wee Kia Wah Daisy
- William Heng
- Wilmar International Limited
- Winnie Cheah
- Wolfgang Josef Neeser
- Wong Tan & Molly Lim LLC
- Xia Yiren
- Yap Chien Ting Livia
- Yap Wee Ling
- Yee Ming Innes Bridges
- Yeo Boon Pian
- Yeung Leung Ming @ Thomas
- Yong Shao Fung
- Yong Shao Onn
- Zedra Trust Company (Singapore) Limited
- Zurich Foundation

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 Commitment

NParks is committed to conserving nature and biodiversity, nurturing greater community stewardship, and building capabilities within the organisation and industry to uphold Singapore's reputation and standing as we transform into a City in Nature. In February 2021, the Government unveiled the Singapore Green Plan 2030, a whole-of-nation movement to advance the national agenda on sustainable development. City in Nature, as one of the five key pillars of the Green Plan, will create a green, liveable and sustainable home for Singaporeans.

2022 Achievements	Key Sustainability Targets by 2030
Park Provision Ratio of 0.81 ha/1,000 population	**Park Provision Ratio of 0.8 ha/1,000 population**
155 ha of skyrise greenery	**200 ha**
380 km of park connectors	**500 km**
190 km of Nature Ways	**300 km**
94% households within a 10 min walk to a park	**100%**
1,900 Community in Bloom Gardens	**3,000**
540,000 trees planted	**1 million more trees**

Our Sustainability Strategies

Sustaining our City in Nature



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

Nurturing Communities



Strengthening Singapore's greenery and biodiversity in partnership with the community.

Creating a Great workplace



Developing our staff and taking care of their well-being.

Sustaining Our City in Nature

Conserving and Extending Singapore's 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 native biodiversity. They are also primary providers of ecosystem services like clean air and water. Nature parks have been established on the margins of the Nature Reserves, serving as complementary habitats and buffers. These buffers provide expanded habitats for Singapore's native flora and fauna beyond the Nature Reserves, and also provide spaces for nature-based recreation.

In April 2022, the establishment of a new Labrador Nature Park Network was announced. The network will comprise more than 200 ha of green spaces, or almost 1.5 times the size of Bukit Timah Nature Reserve. In November 2022, NParks opened Rifle Range Nature Park which serves as a green buffer to protect Bukit Timah Nature Reserve from edge effects and abutting developments. Its opening completes the Central Nature Park Network around the nature reserve. NParks will continue to grow its network of nature parks, which will help conserve and enhance natural carbon sinks across the island. NParks will continue to expand



Figure 1: Map showing islandwide ecological connections, as identified through NParks' EPE.

Strengthening Connectivity between Green Spaces

our islandwide connectivity networks so that Singaporeans will have greater access to green spaces near their homes. Today, over 380 km of park connectors have been established – more than seven times the length of Singapore from East to West. The Rail Corridor (North) was opened in February 2023, and is part of overall plans to curate a 360 km islandwide network of recreational routes, which will contribute towards enabling every household to live within a 10-minute walk to a park by 2030.

The Ecological Profiling Exercise (EPE) was launched in 2021 to study the ecological profile of green spaces in Singapore, and to better understand their role in strengthening ecological connectivity. Through the EPE, NParks has identified four new ecological corridors around northern, northwestern and northeastern Singapore at Khatib, Kranji, Lim Chu Kang and Seletar (see Figure 1). With the identification of these new ecological corridors, NParks will ensure that key biodiversity areas, as well as ecological connectivity, will be maintained when development is needed at existing green spaces within the ecological corridors. This is done by implementing measures to support the ecological connectivity, including retaining key existing forested patches, or by incorporating nature parks, park connectors or Nature Ways within the development to facilitate ecological connectivity. NParks has completed 190 km of Nature Ways, which mimic the multi-tiered structure of a natural forest, to better connect our green spaces for animals like birds and butterflies and also beautify our city, provide shade, cool our surroundings, and improve air quality.

NParks will also be establishing a new Khatib Nature Corridor. This allows ecological connectivity to be maintained and enhanced between the Central Catchment Nature Reserve and Khatib Bongsu Nature Park.

Intensifying Nature in Gardens and Parks

More than 40 percent of Singapore is covered in greenery, in the form of Nature Reserves, parks, gardens, roadside greenery, skyrise greenery and vacant statelands. NParks will be developing and redeveloping more than 300 ha of new and redeveloped parks which will feature more lush vegetation and natural landscapes by 2026, allowing Singaporeans to benefit from greater access to nature and its associated benefits on health and well-being.

The waterbodies within our gardens and parks will also be naturalised where possible, like how we have done so in Bishan-Ang Mo Kio Park and Jurong Lake Gardens. In addition, NParks is restoring mangroves in parks along Singapore's coasts, such as Kranji Coastal Nature Park. These mangroves will function in tandem with engineering solutions to serve as coastal protection measures, to mitigate the effects of erosion brought about by storm surges and rising sea levels. NParks will continue to incorporate nature-based solutions in its coastal and riverine parks, to help build resilience against sea-level rise and inland flooding.

Beyond these, NParks will establish more contemplative landscapes in gardens and parks, which can be programmed for seniors and children as well as cater to diverse conditions such as dementia and mood disorders. In addition, more Nature Playgardens with biophilic elements and natural materials will be introduced, for the young to engage in child-directed spontaneous play.

To allow more people to reap the benefits of nature, we will also create more contemplative landscapes within our urban spaces.



A concrete drain leading from Yuan Ching Road to Jurong Lake has been naturalised into a series of streams known as Neram Streams that channel stormwater runoff from the surrounding area.

Restoring Nature into the Urban Landscape

We have also pressed on with efforts to restore nature into our urban landscape. In FY2022, we restored and enhanced over 30 ha of forest, coastal, and marine habitats, well ahead of the target to do so by 2030. Ongoing habitat restoration and species recovery efforts have enabled Singaporeans to encounter and enjoy once-rare species of plants and animals in our green spaces, such as the Singapore Ginger (*Zingiber singapurense*) and the Sunda Slow Loris (*Nycticebus coucang*).

Under NParks' Species Recovery Programme, we will continue to increase recovery efforts for 160 species by 2030 as a key part of NParks' efforts to strengthen the conservation of Singapore's native flora and fauna.

We will also continue to promote the implementation of skyrise greenery (including vertical green walls, green roofs, and rooftop gardens) to building owners and continue to green up covered linkways with trellis plantings, while enhancing landscape plantings at MRT stations. We will continue to intensify our greening efforts in Singapore's industrial estates as well, which are currently among the hotter areas on the island. NParks is working with various stakeholders to increase the total number of trees in industrial estates, including Jurong Island, to almost three times as many, from nearly 90,000 trees to about 260,000 trees by 2030.

Nurturing Communities

Strengthening Community Stewardship

The support and involvement of the community are key to the success of our City in Nature vision. With the relaxation of Covid-19 measures, we have resumed many of our physical events to engage the community. Singapore Garden Festival 2022 was held along Orchard Road at ION Orchard and Ngee Ann City as well as Singapore Botanic Gardens



Senior Minister of State, Ministry of Foreign Affairs & Ministry of National Development Sim Ann (right) admires the floral displays at ION Orchard, part of the Singapore Garden Festival that returned after a four-year hiatus.

As part of the Singapore Green Plan conversations to engage Singaporeans on sustainable development, five webinars and three workshops under the City in Nature Conversations initiative were organised between November 2021 to January 2023. Covering a variety of topics, the webinars have garnered over 7,000 views to date. Through the workshops, close to 50 members of the public, including youths, came together to brainstorm and work on projects to transform Singapore into a City in Nature.

Since the launch of the OneMillionTrees movement in 2020 to plant a million more trees across Singapore by 2030, NParks has worked closely with its key partners including NParks volunteers in the Friends of the Parks communities, Community in Nature schools, Community in Bloom (CIB) gardeners, nature groups, corporate partners, other organisations, as well as members of the public to champion initiatives surrounding the tree planting efforts. More than 75,000 members of the community have joined us in tree-planting activities across the island, some of whom have also been involved in the processes leading up to and following tree planting. For instance, over 600 native tree saplings and 1,500 native seeds have been delivered to community nurseries in 43 schools. These plants will be nurtured within the school compounds and planted across Singapore when matured.

The nationwide CIB gardening movement aims to bring residents together to foster community spirit and active stewardship of our City in Nature. Today, there are more than 1,900 community gardens across Singapore, set up and managed by our community gardeners. NParks will continue to facilitate the set-up of CIB gardens across Singapore to meet the target of 3,000 CIB gardens by 2030.

Social Enterprise Community Urban Farms (SECUFs) aim to further promote edibles gardening in the community, and also provide micro-employment and volunteering opportunities to residents, especially seniors and the less privileged. In October 2022, NParks awarded the tender for the first SECUF site at West Coast Park to City Sprouts.

To extend our reach and engagement touchpoints further into the community to grow a network of nature-centric volunteers at the grassroots level, NParks launched the Nature Kakis Network in January 2023. The Nature Kakis Network is a new touchpoint centred at the heart of local communities that brings together passionate like-minded individuals to become stewards of nature. This follows the first group of Nature Kakis established in April 2022, which comprises volunteers from the Boon Lay area. Between January and March 2023, NParks intensively engaged various grassroots organisations and volunteers to encourage new Nature Kakis Chapters to be formed. Interested constituencies included Bukit Gombak, Moulmein-Cairnhill, Nee Soon South, Pasir Ris Central and Punggol. NParks will continue to facilitate the interests from the community and work towards establishing new Nature Kakis Chapters.

Creating a Great Workplace

Learning and development

Staff are encouraged to grow their professionalism, build capabilities and provide service excellence. NParks develops staff through a competency development framework focusing on business, operational and people excellence.

CUGE and professional certification bodies conduct in-depth training for operational staff, including formulating a specialised roadmap to develop professional arborist competency.

Corporate staff can get certified by industry-recognised agencies such as the Institute of Singapore Chartered Accountants and Institute for Human Resource (HR) Professionals.

HR has also rolled out the refreshed NParks Competency Framework to guide staff in identifying suitable development opportunities for upskilling and reskilling.

Expanded Vocational and Skills Allowance Framework

To encourage officers to deepen their professional expertise in NParks' core job areas and facilitate greater deployability of staff, officers who possess certifications recognised under NParks' Vocational and Skills Allowance Framework are eligible for a monthly allowance.

The list of certifications that qualify officers for the allowance also includes certifications such as those in Field Epidemiology (Veterinary & Animal Health) and Advanced Animal Welfare & Behaviour (Cat and Dog).

Competency-Based Remuneration

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 remuneration. We will also continue to support and encourage continuous movement of officers (horizontal as well as vertical) throughout their career. Officers will be encouraged to pick up additional competencies relevant to NParks' work, which will be supported by the enhanced vocational allowance framework.

Staff with Professional Operational Certifications (as of March 2023):

105	Certified Park Managers
126	Certified Practising Horticulturists
248	ISA Certified Arborists
33	Certified Playground Safety Inspectors
16	Project Management Professionals



Staff are encouraged to pick up new skills or earn professional certification to build up capabilities and better themselves for new work challenges.

Staff Well Being

The Staff Well-Being Committee (SWBC) works with the Human Resource branch and Staff Union to organise activities that engage our workforce. There are three sub-committees:

Healthy Lifestyle
Promotes active and healthy living by encouraging staff to participate in sports interest groups and through lunchtime talks.

Social & Recreation
Provides avenues for self-improvement and learning while networking with others through learning journeys and workshops.

Kindness Movement
Nurtures a culture of kindness, compassion and volunteerism among staff for the less privileged in our society.

In FY2022, as Covid-19 Safe Management Measures started to ease up, more in-person activities were organised for staff to bond. These include holding our first Year-End-Get-Together after a three-year hiatus where staff bonded over food, games and activities.

About 30 events were carried out in FY2022. Some of the events that were organised aimed to encourage across the board participation, including sports interest groups, Round Island Challenge Virtual Cycle 2022, health screening, food collection drive, and lunch food trucks.

As staff can telecommute on certain days each week, the committee continued to deliver some of these programmes and activities on e-platforms as well, which helped to engage staff while they worked from home. Some of these activities planned were related to ensuring staff mental and physical well-being.

Recognition and Awards

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 2022, 36 staff were commended for providing excellent service to internal and external customers.

This past year, 200 staff received their Long Service Award at the Staff Appreciation Award Ceremony held in March 2023 for their contributions towards building and caring for our City in Nature.



As staff can telecommute on certain days of the week, they can also enjoy more time with their family, allowing for a stronger worklife balance.

FACTS & FIGURES FY2022

National Day Awards

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

Public Administration Medal (Silver)

Ms Sophianne Mohamad Araib
Group Director / Parks Central & Horticulture and Community Gardening
Parks Central

Public Administration Medal (Bronze)

Ms Jacqueline Teo
Director / Garden City Fund
Communications and Community Engagement

Dr Thereis Choo
Coordinating Director / Living Collections and Facilities Management & Centre Director / Forest Discovery Centre
Singapore Botanic Gardens

Dr Lim Zhi Jian, Kelvin
Director / Biorisk and Biosurveillance & Quarantine and Biosecurity Services & Science and Technology Planning
Veterinary Health

Ms Ow Siew Ngim
Director / Streetscape (South West) & Ops Tech
Streetscape

Commendation Medal

Mr Choo Guoping Mark
Assistant Curator / National Orchid Garden
Singapore Botanic Gardens

Mr Hong Zhongzhi
Senior Manager / Community in Bloom
Horticulture and Community Gardening

Ms Lai Simin
Deputy Director / Horticulture
Singapore Botanic Gardens

Mr Matthias Ang
Deputy Director / Investigations
Enforcement

Mr Seah Hong Meng
Deputy Director / Development Management
Parks Development

Ms Wendy Sng Beng Guat
Deputy Director
Veterinary Health

Mr Xia Yixuan
Senior Manager / Emergency Planning & Risk Management
Corporate Strategy and Planning Division

Ms Xie Renhui
Deputy Director / International Relations
Wildlife Management

Efficiency Medal

Mr Azlin bin Mohd Noor @Yazid bin Mohd Noor
Senior Executive / Jurong Lake Gardens Development
Jurong Lake Gardens

Mr Goh Sze Pu Joshua
Senior Officer / Facilities
Corporate Services

Mr Izzul Haq bin Abdullah
Manager / Nursery Management
Horticulture and Community Gardening

Ms Lim Mui Hiang Pamela
Senior Manager
Community Animal Management

Ms Seri Hayuni binte Hadi
Senior Executive / Education
Singapore Botanic Gardens

Ms Sheralee binte Mohamed Saniff
Manager / Greenery and Development Planning
Policy & Planning

Long Service Medal

Mr Aminurashid bin Eksan
Manager / CUGE
Industry & CUGE

Ms Chan Yang Sun
Senior Executive / Communications
Communications and Community Engagement

Ms Koh Seok Lan Jeanette
Senior Executive / Development Management
Parks Development

Mr Mishak bin Shunari
Senior Officer / Conservation
Conservation

Mr Mohamad Ali bin Amat
Senior Executive / Park Planning
Policy & Planning

Mr Mohamad Idrus bin Mohamad Noor
Senior Officer / Streetscape
Streetscape

Mr Mohammad Budiman bin Jamail
Acting Deputy Director / Facilities
Corporate Services

Mr Shahrizal bin Sidi
Principal Ranger / Tactical
Enforcement

Mr Shamril bin Jamil
Director / CUGE (Manpower Development)
Industry & CUGE

Mr Soh Swee Meng
Senior Officer / Conservation
Conservation

Awards and Accolades

Excellent Service Award 2022

Attractions
4 Star, 1 Gold and 1 Silver

May Day Awards 2023

Model Worker
Mr Peter Tan Poh Tai
Executive / Security Management
Singapore Botanic Gardens

IT Awards

Recognition of Excellence Award
Singapore Recognition of Excellence (Public Sector) 2022
Use of Sensors for Safe Distancing Operations

Special Achievement in GIS (SAG) Award
Awarded in recognition for the development of the SafeDist@Parks portal in response to Covid-19

IDC Future Enterprise Awards 2022
Best in Future of Work (Singapore)
Digitalisation of Parks, Greenery & Biodiversity and Conservation Management

Commendation for the Great Companies for Dads Awards 2023

MND Minister's Award

Ecological Profiling Exercise

Development of Round Island Route (Phase 1)

Leveraging Technologies to Enhance Singapore's Border Biosurveillance

Animal Quarantine Centre, Home Quarantine Technology and Border Inspection

Municipal Services Awards 2022

Community Category
Developing Bukit Gombak Park with the Community

Individual Category
Cheryl Wong Yoke Keng
Manager / Community Animal Management Operations
Community Animal Management

FACTS & FIGURES FY2022

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, and 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

Workshops

- Animal Population Density Modelling using the Random Encounter Model (REM)
- Canine Training and Behaviour Workshop (for Private Trainers)
- Chainsaw Operations and Maintenance (Refresher)
- Developing and Adapting Therapeutic Horticulture Activities for Multiple Client Groups
- Formative Pruning for Young Trees
- Handling Public Feedback with Poise (for NParks officers)
- How to Develop Inclusive Nature Play Programmes
- Landscape Safety Orientation Programme (Bengali)
- Landscape Safety Orientation Programme (English)
- Landscape Safety Orientation Programme (Tamil)
- Mountain Bike Trail Workshop
- Odonata Species of Singapore — Ecology
- Resistance Drilling Equipment
- Therapeutic Horticulture for Seniors
- Tree Climbing and Aerial Rescue (Refresher)
- Tree Failure Profiling for Common Wayside Trees in Singapore
- Tree Felling
- Tree Inspection — Advanced
- Tree Inspection — The Basics
- Trees & Construction — Understanding The Arboriculture Impact

Certification Programmes

- Animal Management Professional Certification Programme (Basic Module)
- Animal Health Professional Certification Programme
- Animal Management Intermediate Elective (Dog Module)
- Animal Management PCP Intermediate Elective (Mammal Module)
- Animal Welfare and Behaviour
- Certificate for Basic Plant Recognition (Module 1 to 6)
- Certificate in Field Epidemiology (Veterinary & Animal Health)
- Certified Playground Safety Inspector Examination
- Certified Practising Horticulturist (CPH)*
- Dog Welfare Assessment Skills Cert
- ISA Certified Arborist Preparatory Programme
- ISA Tree Risk Assessment Qualification (TRAQ) Renewal programme
- Skyrise Greenery Certification Programme Part 1

Seminar/Webinar & International Programmes

- Animal Management PCP Intermediate Elective — Wildlife Management in Development
- City EXCEL Programme (CLC-CUGE)
- Managing Nature in Developments
- SMU-Pakistani Programme
- Tree Decay — The Fundamentals
- Tree Inspection — Failure Documentation & Analysis
- Tropical Tree Identification, Biology & Physiology
- URA-Integrated Land Use Planning Course (ILUP)

* Programmes with Assessment Only Pathway (AOP) option

FACTS & FIGURES FY2022

(As of 31 Mar 2023)

Regional Parks Maintained by NParks

REGIONAL PARK NAME	MAINTAINED AREA (HA)
Admiralty Park	25.67
Ang Mo Kio Linear Park	6.24
Ang Mo Kio Town Garden East	4.88
Ang Mo Kio Town Garden West	20.63
Ann Siang Hill Park	0.32
Armenian Street	0.35
Bedok Reservoir Park	36.14
Bedok Town Park	13.66
Bishan-Ang Mo Kio Park	62.00
Bukit Batok Nature Park	35.74
Bukit Batok Town Park	41.60
Bukit Timah Nature Reserve	162.64
Central Catchment Nature Reserve	455.00
Changi Beach Park	28.85
Chestnut Nature Park	81.00
Choa Chu Kang Park	10.41
Clementi Woods Park	11.48
Coney Island Interim Park	33.30
Coney Island Park	43.50
Dairy Farm Nature Park	75.32
Dhoby Ghaut Green	1.00
Duxton Plain Park	1.28
East Coast Park	179.21
Empress Place	1.52
Esplanade Park	2.62
Fort Canning Park	22.61
Hampstead Wetlands Park	3.23
Handy Road Open Space	0.27
Hindhede Nature Park	9.90
Hong Lim Park	1.28
HortPark (including Pasir Panjang Nursury)	24.04
Istana Park	1.29
Jurong Central Park	7.98
Jurong Lake Gardens	84.69
Kallang Riverside Park	5.16
Kent Ridge Park	48.40
Kranji Marshes Park	56.29
Kranji Reservoir Park	4.13
Labrador Nature Reserve and Park	23.26
Lower Peirce Reservoir Park	10.00
Lower Seletar Reservoir Park	6.98
MacRitchie Reservoir	15.00
Marsiling Park	11.35
Mount Faber Park	58.80
one-north Park	8.90
Orchard Fountain Corner	0.06
Pasir Panjang Park	1.07
Pasir Ris Park	73.39
Pasir Ris Town Park	12.06
Pearl's Hill City Park	8.50
Penang Rd Open Space	0.49
Pulau Ubin	1005.91
Punggol Park	16.86
Punggol Waterway Park	12.25
Raffles Place Park	0.88
Rail Corridor	75.37
Rifle Range Nature Park	65.70
Sembawang Hot Spring Park	1.12
Sembawang Park	15.58
Sengkang Riverside Park	20.98
Singapore Botanic Gardens	82.00
Sisters' Islands Marine Park	47.68
Springleaf Nature Park	18.28
Sun Plaza Park	9.60
Sungei Buloh Wetland Reserve	193.31
Tampines Eco-Green	36.61
Telok Ayer Green Park	0.11
Telok Ayer Park	0.49
Telok Blangah Hill Park	36.88
Tiong Bahru Park	3.33
Thomson Nature Park	51.17
Toa Payoh Town Park	4.91
Tras Link Park	0.47
Upper Peirce Reservoir Park	4.00
Upper Seletar Reservoir Park	15.00
War Memorial Park	1.74
Waterboat House Garden	0.07
West Coast Park	50.13
Windsor Nature Park	60.00
Woodlands Town Park East	5.04
Woodlands Waterfront Park	11.22
Yishun Park	13.22
Youth Olympic Park	0.66
Zhenghua Park	17.30
TOTAL	**3,711.10***

* Subject to rounding adjustments

NUMBER OF REGIONAL PARKS MANAGED BY NPARKS
84

NUMBER OF NEIGHBOURHOOD PARKS MANAGED BY NPARKS
320

TOTAL AREA MAINTAINED	AREA (HA)
Parks, playgrounds, open spaces, fitness corners and park connectors**	3235.62
Nature reserves (Gazetted)	3347
Istana and Parliament House Grounds	42
Roadside Greenery	2,102.35
State land taken over as at Mar 2023***	4,330.14

TOTAL MILEAGE OF THE PARK CONNECTORS MAINTAINED IS 380KM

Plant Health

IMPORT, PERMITS AND INSPECTIONS	
Import permits issued	50,334
Post-entry inspections conducted	850

Animal Health & Welfare

LICENCES, PERMITS, AND HEALTH CERTIFICATES ISSUED FOR ANIMAL IMPORTS	
Animals (excluding livestock)	5,534
Biologics	306
Birds	148
Eggs for research	0
Products (blood, sera, urine, clinical specimens)	1,388
Ornamental fish (export health certificates)	3,621
Ornamental fish (import permits)	5,522
TOTAL	**16,892**

LICENSING VETERINARIANS AND VETERINARY CENTRES	
Number of veterinarians	540
Number of veterinary centres	115

GRADING OF PET SHOPS	
Grade A	291
Grade B	9
Grade C	3
Grade D	0
Not graded****	63

DOG LICENSING AND ENFORCEMENT	
Dog licences issued	~88,000
New licences	~15,500
Renewed licences (includes multi-year licences)	~72,500

TYPES OF ANIMAL DISEASE SURVEYED IN LOCAL FARMS	
Captive bird farms surveyed • Bird flu • Newcastle disease	3
Ornamental fish farms surveyed • *Aeromonas salmonicida* • 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

ANIMAL DISEASES UNDER NPARKS BIOSURVEILLANCE PROGRAMMES

- *Aeromonas salmonicida*
- 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
- *Escherichia coli* O157:H7
- Ehrlichiosis
- Epizootic ulcerative syndrome
- Foot-and-mouth disease
- Heartworm
- Koi herpes virus
- Leishmaniosis
- Leptospirosis
- Lyme disease
- Newcastle disease
- Nipah virus disease
- Parvovirus
- *Plasmodium knowlesi*
- Psittacosis
- Rabies
- Rickettsial disease
- *Salmonella* Enteritidis
- 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.

**** Newly licensed pet shops that have not been graded yet.

CORPORATE GOVERNANCE FY2022

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.

Chairman
Ms Shantini Ramachandra

Members
Mr Musa Fazal
Mr Gerald Tan
Ms Eu Chin Fen

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.

Chairman
Mr Benny Lim

Members
Ms Tham Loke Kheng
Mr Lee Chee Koo

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
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 Public Character, to plan, develop, promote and manage the Garden City Fund in accordance with its Trust Deed.

Please refer to pg 46 for the work of 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 (Act 5 of 2018).



Coastal PlayGrove, East Coast Park

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.

Internal Control Framework

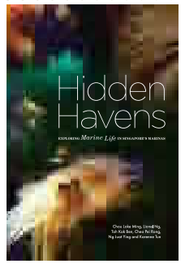
NParks' internal control system ensures that assets are safeguarded, proper accounting records are maintained, and financial information is reliable. The overall control framework includes:

- 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 (Chapter 198A), Public Sector (Governance) Act (Act 5 of 2018), 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

SCAN QR CODE TO VIEW
FULL LIST OF PUBLICATIONS

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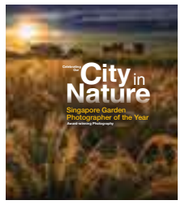

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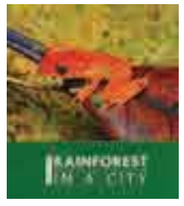

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BOOKS

1 **Tropical Plants in Focus – Botanical Illustration at the Singapore Botanic Gardens**
By Michele Rodda

2 **Hidden Havens – Exploring Marine Life in Singapore's Marinas**
By Chou Lok Ming, Lionel Ng, Toh Kok Ben, Cheo Pei Rong, Ng Juat Ying and Karenne Tun

3 **A Review of Garden Bird Watch (2015–2019)**
By Low Bing Wen, Joy Wong Shu Yee, Linda Goh and Kenneth Er

4 **A Guide to the Bees of Singapore**
By Zestin W.W. Soh and John S. Ascher
Published in collaboration with NUS.

5 **1001 Garden Plants in Singapore – A New Compendium**
By Soh Weijing, Tamako Kobayashi, Dr Jennie Tang, Jessica Teo, Pauline Tay and Low Wei Teng

6 **A Guide to the Sculptures of the Singapore Botanic Gardens**
By Grace Lee, Ada Davis, Tan Miao Yuan and Tan Wan Xin

7 **Celebrating Our City in Nature – Singapore Garden Photographer of the Year**
Edited by Wong Tuan Wah, Linda Goh, Ada Davis and Victoria Cheong

8 **Singapore Garden Photographer of the Year**
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).

9 **Rainforest in a City**
By Chua Ee Kiam
Rainforest in a City 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.

10 **Footprints on an Island – Rediscovering Pulau Ubin**
By Chua Ee Kiam, Choo Mui Eng and Wong Tuan Wah
Footprints on an Island – Rediscovering Pulau Ubin 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.

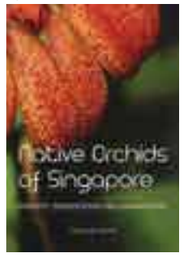
11 **Gingers of Cambodia, Laos & Vietnam**
By Jana Leong-Škorničková and Mark Newman

12 **A Walk Through History – A Guide to the Singapore Botanic Gardens**
By Nigel Taylor and Ada Davis

13 **Migratory Birds of Sungei Buloh Wetland Reserve**
By James Gan, Mendis Tan and David Li

14 **My Green Space: Indoor Gardening**
By Lily Chen, Ng Shan Jun, Ang Wee Foong, et al.

15 **A Guide to the Common Epiphytes and Mistletoes of Singapore**
By Jean W.H. Yong, James Wang Wei, Joanne Y.T. Khew, Sheue Chiou Rong and Wong Wei San

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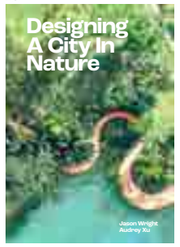

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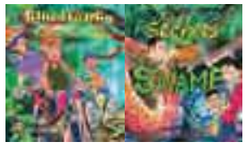

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16 **Native Orchids of Singapore – Diversity, Identification and Conservation**
By Yam Tim Wing

17 **Dragonflies of Our Parks and Gardens**
By Robin Ngiam

18 **Trees of Our Garden City**
Edited by Tee Swee Ping

19 **Caterpillars of Singapore's Butterflies**
By Horace Tan and Khew Sin Khoon

20 **Birds of Our Wetlands – A Journey Through Sungei Buloh Wetland Reserve**
Edited by Wong Tuan Wah, Victoria Cheong, Ada Davis, How Choon Beng, David Li, Low Bing Wen, Florence Sim and Yang Shufen

21 **The Nature of Poetry**
Edited by Edwin Thumboo and Eric Tinsay Valles

22 **Flora of Singapore, Volume 1 (Introduction), Volume 7 (Poales), Volume 13 (Gentianales)**
Edited by David Middleton, Stuart Lindsay and Jana Leong-Škorničková

23 **Designing a City in Nature**
By Jason Wright and Audrey Xu

24 **Fort Canning Park: Heritage and Gardens**
By Chng Mun Wye and Sara-Ann Ang

25 **A Photographic Guide to Singapore Spiders**
By Joseph KH Koh, David K Court, Chris SP Ang and Parul YC Ng

26 **Design Guidelines for Contemplative Landscapes**
By Agnieska Olszewska-Guizzo, Alicia Soh, Dr Angelia Sia, Jason Wright and Jeff Seow

27 **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.

28 **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, May 2022 (Supplement), Jun 2022 & Dec 2022

Timonius in Borneo, Jan 2023

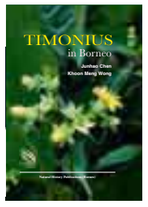
PERIODICALS

Gardenwise, Aug 2022 & Mar 2023

CITYGREEN, Issue 20
The CUGE publication CITYGREEN won APEX Awards for Publication Excellence for 11 consecutive years (2012–2022).

Journals





Periodicals







STAFF PUBLICATIONS

Books and Reports

Chen, J., & **Wong, K.M.** (2023). *Timonius in Borneo*. Natural History Publications (Borneo) in association with National Parks Board Singapore.

Khoo, E., Barstow, M., Maycock, C., Bodos, V., **Chong, K.Y.**, Chua, L.S.L., Cicuzza, D., Deepu, S., Dhyani, A., Divina, A.N., Eduarte, G.T., Evangelista, V.M., **Ganesan, S.K.**, Gibe, R.C., Gunatilleke, N., Gunatillke, S., Haji Berudin, Z., Hamidi, A., Hoo, P.K., Jimbo, T., Juiling, S., Kusuma, Y.W.C., Kusumadewi, Y., Ling, C.Y., **Lim, R.C.J.**, **Lua, H.K.**, Magbuo, J.M.P., Malabrigo Jr., P.L., Majapun, R., Maryani, A., **Ng, X.Y.**, Nilus, R., Pereira, J.T., Sang, J., Rachmat, H.H., Ranasinghe, S., Randi, A., Robiansyah, I., Solatre, J.S., Strijk, J.S., Sugau, J.B., Tang, J.W., Tanggaraju, S., Tating, M.M.B., Tobias, A.B., Tsen S., Umali, A.G.A., **Velautham, E.**, Xiao, Y.X., Yong, W., & Yu, W.B. (2022). *The Red List of Dipterocarpaceae*. Botanic Gardens Conservation International.

Khoo, E., Barstow, M., Maycock, C., Bodos, V., **Chong, K.Y.**, Chua, L.S.L., Cicuzza, D., Deepu, S., Dhyani, A., Divina, A.N., Eduarte, G.T., Evangelista, V.M., **Ganesan, S.K.**, Gibe, R.C., Gunatilleke, N., Gunatillke, S., Haji Berudin, Z., Hamidi, A., Hoo, P.K., Jimbo, T., Juiling, S., Kusuma, Y.W.C., Kusumadewi, Y., Ling, C.Y., **Lim, R.C.J.**, **Lua, H.K.**, Magbuo, J.M.P., Malabrigo Jr., P.L., Majapun, R., Maryani, A., **Ng, X.Y.**, Nilus, R., Pereira, J.T., Sang, J., Rachmat, H.H., Ranasinghe, S., Randi, A., Robiansyah, I., Solatre, J.S., Strijk, J.S., Sugau, J.B., Tang, J.W., Tanggaraju, S., Tating, M.M.B., Tobias, A.B., Tsen S., Umali, A.G.A, **Velautham, E.**, Xiao, Y.X., Yong, W., & Yu, W. B. (2023). *The Red List of Dipterocarpaceae* [e publication]. Botanic Gardens Conservation International. www.bgci.org/wp/wp-content/uploads/2023/03/RLDipterocarpaceaeMedResReduced.pdf

Lai, S., **Tan, J.**, Deng, M., & Tan, C. (2022). *A Guide to Implementing Coastal Nature-based Solutions for Singapore*. CLC Publications.

Ngiam, T.T., Chua, T., **Lim, K.**, & Yew, T.K.B. (2022). *Vets at work: Tracing the progress of veterinarians in Singapore*. Singapore Veterinary Association.

Olszewska-Guizzo, A., **Soh, A**., **Sia, A.**, **Wright, J.**, & **Seow, J.** (2022). *Design Guidelines for Contemplative Landscapes*. National Parks Board.

Rakshit, A., **Ghosh, S.**, Vasenev, V., Pathak, H., & Rajput, V.D. (Eds.). (2022). *Soils in Urban Ecosystem*. Springer Singapore. https://doi.org/10.1007/978-981-16-8914-7

Rodda, M. (2022). *Flower Obsession: Plant Collecting in East Asia, 1600s–1900s* [exhibition catalogue]. National Parks Board.

Book Chapters

Dutta, A., Patra, A., **Ghosh, S.**, & Rakshit, A. (2022). Urban Soil: A Review on Historical Perspective. In Rakshit, A., Ghosh, S., Vasenev, V., Pathak, H., & Rajput, V.D. (Eds.), *Soils in Urban Ecosystem* (pp. 3–10). Springer Singapore. https://doi.org/10.1007/978-981-16-8914-7

Eiadthong, W., **Chen, J.**, Insura, T., & Chalermglin, P. (2022). Artabotrys. In Johnson, D., & Murray, N.A. (Eds.). *Flora of Thailand*, 16, Annonaceae (pp. 38–56). The Forest Herbarium.

Ganesan, S.K., **Chong, K.Y.**, **Lim, R.C.J.**, **Lua, H.K.**, **Ng, X.Y.**, & **Velautham, E.** (2023). Dipterocarpaceae in Singapore. In Khoo E., Barstow M., Maycock, C., et al., *The Red List of Dipterocarpaceae* [e publication] (pp. 55–56). Botanic Gardens Conservation International. www.bgci.org/wp/wp-content/uploads/2023/03/RLDipterocarpaceaeMedResReduced.pdf

Li, Y., Satyanaga, A., Rangarajan, S., Rahardjo, H., & **Lee, T.-T.D.** (2022). Unsaturated Properties of Singapore Urban Soils. In Rakshit, A., Ghosh, S., Vasenev, V., Pathak, H., & Rajput, V.D. (Eds.). *Soils in Urban Ecosystem* (pp. 321–335). Springer Singapore. https://doi.org/10.1007/978-981-16-8914-7_15

Liu, J., Kim, D.E., Nguyen, C.T.C., **Cai, Y.**, & Liong, S.Y. (2022). Stream rehabilitation design in a potentially protected forest catchment in Singapore. In Gourbesville, P., & Caignaert, G. (Eds.). *Advances in Hydroinformatics* (pp. 329–347). Springer Water. https://doi.org/10.1007/978-981-19-1600-7_21

Rodda, M. (2022). Nature Printing in Japan. In Zucker, M. & Ostlund, P. *Capturing Nature* (pp. 208–209). Zucker Art Books.

Strijk, S.J., Hinsinger, D.D., Roeder, M.M., Chatrou, L.W., Couvreur, T.L.P., Erkens, R.H.J., Sauquet, H., Pirie, M.D., **Thomas, D.C.**, & Cao, K. (2022). The Soursop Genome (*Annona muricata* L., Annonaceae). In Chapman, M.S. (Ed.). *Underutilised Crop Genomes: Compendium of Plant Genomes* (pp. 149–174). Springer. https://doi.org/10.1007/978-3-031-00848-1_9

Journal Articles

Ardi, W.H., Ardaka, I M., Kusuma, Y.W.C., Lewis, C.L., & **Thomas, D.C.** (2022). Studies of *Begonia* (Begoniaceae) from the Moluccas IV: Two new species from Halmahera, Indonesia. *Taiwania*, 67(3), 335–340. https://doi.org/10.6165/tai.2022.67.335

Ardi, W.H., & **Thomas, D.C.** (2022). Synopsis of Begonia (Begoniaceae) from the northern arm of Sulawesi, Indonesia, including three new species. *Edinburgh Journal of Botany*, 79 (Begonia special issue, article 405), 1-50. https://doi.org/10.24823/ejb.2022.405

Ardi, W.H., Campos-Domínguez, L., Chung, K.-F., Dong, W.-K., Drinkwater, E., Fuller, D., Gagul, J., Garnett, G.J.L., Girmansyah, D., Goodall-Copestake, W.P., Hughes, M., Jacques, E.L., Jara-Muñoz, O.A., Julia, S., Kidner, C.A., Kiew, R., Krishna, N., Li, R., Mar asinghe, L.D.K., Maw, M.B., Lin, C.W., Moonlight, P.W., Nguyen, H.T., Nguyen, H.Q., Phutthai, T., Pradeep, A.K., Rajbhandary, S., Rubite, R.R., Scherberich, D., Souvannakhoummane, K., Sreenath, M., Tebbitt, M.C., **Thomas, D.C.**, Tian, D., Tseng, Y.-H., & Wilson, H.P. (2022). Resolving phylogenetic and taxonomic conflict in *Begonia*. *Edinburgh Journal of Botany*, 79 (Begonia special issue, article 1928), 1–28. https://doi.org/10.24823/ejb.2022.1928

Ashokan, A., Suksathan, P., **Leong-Škorničková, J.**, Newman, M., Kress, W.J., & Gowda, V. (2022). Floral evolution and pollinator diversification in *Hedychium* J.Koenig (Zingiberaceae): Revisiting Darwin's predictions using an integrative taxonomic approach. *American Journal of Botany*, 109 (9), 1410–1427. https://doi.org/10.1002/ajb2.16039

Ashokan, A., Xavier, A., Suksathan, P., Ardiyani, M., **Leong-Škorničková, J.**, Newman, M., Kress, W.J., & Gowda, V. (2022). Himalayan orogeny and monsoon intensification explain species diversification in an endemic ginger (*Hedychium: Zingiberaceae*) from the Indo-Malayan Realm. *Molecular Phylogenetics and Evolution*, 170, 107440. https://doi.org/10.1016/j.ympev.2022.107440.

Aung, K. A., Khor, W.C., Ong, K.H., Tan, W.L., Wong, Z.N., Oh, J.Q., Wong, W.K., Tan, B.T.Y, Maiwald, M., Tee, N.W.S., Barkham, T., Koh, T.H., Dalsgaard, A., Chen, S.L., Schlundt, J., & Ng, L.C. (2022). Characterisation of *Salmonella* Enteritidis ST11 and ST1925 Associated with Human Intestinal and Extra-Intestinal Infections in Singapore. *International Journal of Environmental Research and Public Health*, 19(9), 5671. https://doi.org/10.3390/ijerph19095671

Bai, L., **Leong-Škorničková, J.**, & Xia, N.H. (2022). Typification of Adanson's generic name *Pacoseroca* (Zingiberaceae) and its implications. *Taxon*, 72 (1), 151–158. https://doi.org/10.1002/tax.12773

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Berman. L., **Li, D.**, **Yang, S.**, Kennewell, M., & Rheindt, F. (2022). Bird breeding season linked to sunshine hours in a marginally seasonal equatorial climate. *Journal of Ornithology*, 164, 125–138 (2023). https://doi.org/10.1007/s10336-022-02009-9

Biswal, B. K., Vijayaraghavan, K., **Lee, T-T. D.**, & Balasubramanian, R. (2022). Biochar-based bioretention systems for removal of chemical and microbial pollutants from stormwater: A critical review. *Journal of Hazardous Materials*, 422, 126886. https://doi.org/10.1016/j.jhazmat.2021.126886

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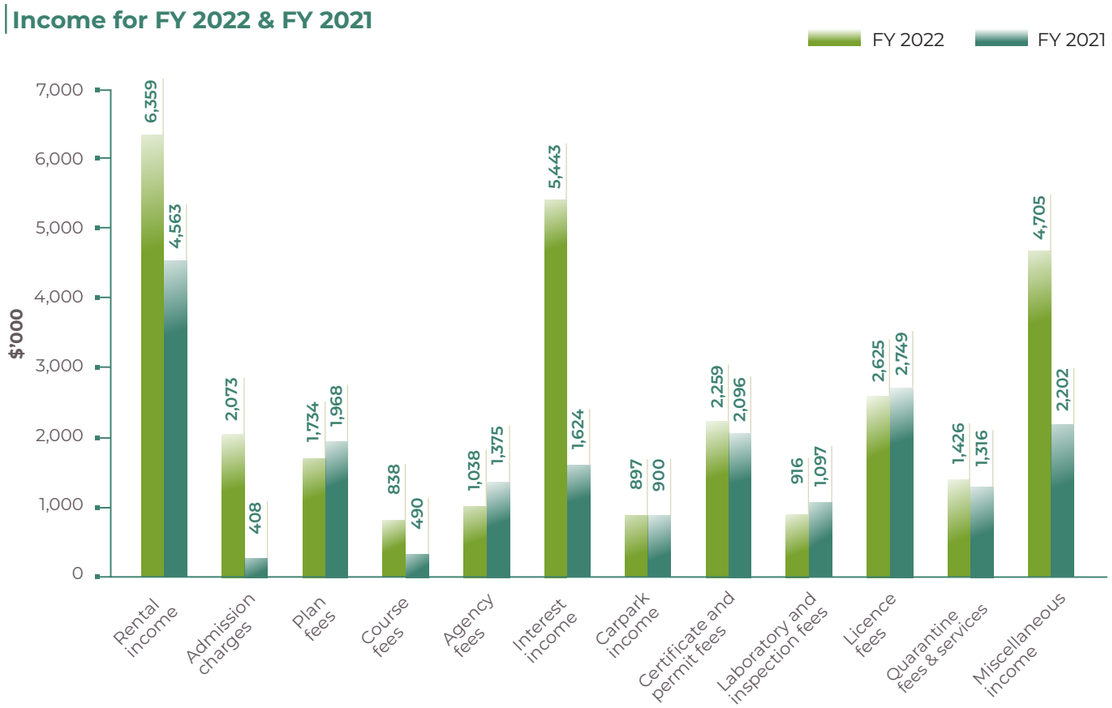
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FINANCIAL REVIEW

Income

The Group's income comprised mainly rental income from souvenir kiosks and food & beverage outlets in Singapore Botanic Gardens and Fort Canning Park. The income for the year was $30.3 million. The increase from last year's income was mainly due to increase in rental income, admission fees, interest income and other income.

Income for FY 2022 & FY 2021

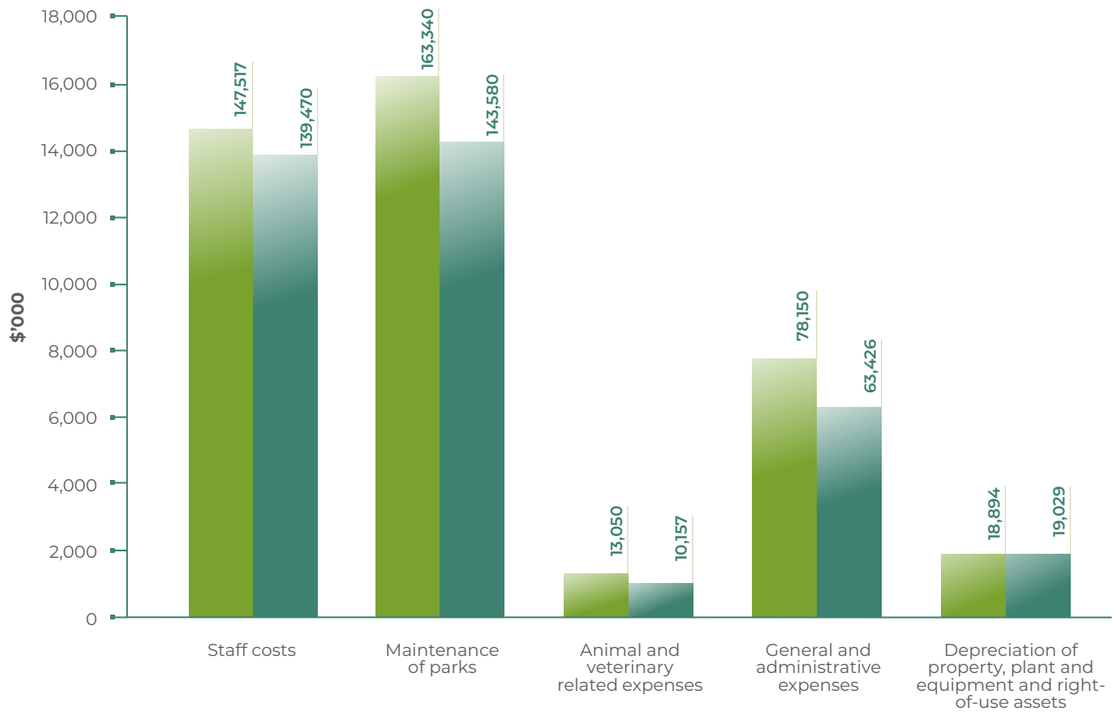


INCOME	FY 2022 $ '000	FY 2021 $ '000	INCREASE/(DECREASE) $ '000	% CHANGE
Rental income	6,359	4,563	1,796	39
Admission charges	2,073	408	1,665	> 100
Plan fees	1,734	1,968	(234)	(12)
Course fees	838	490	348	71
Agency fees	1,038	1,375	(337)	(25)
Interest income	5,443	1,624	3,819	235
Carpark income	897	900	(3)	< 1
Certificate and permit fees	2,259	2,096	163	8
Laboratory and inspection fees	916	1,097	(181)	(16)
Licence fees	2,625	2,749	(124)	(5)
Quarantine fees and services	1,426	1,316	110	8
Miscellaneous income	4,705	2,202	2,503	114
	30,313	**20,788**	**9,525**	**46**

Operating Expenditure

The Group's operating expenditure for the year was $420.9 million. The 12% increase from last year's expenditure was due to the increase in staff costs, maintenance of parks, animal and veterinary related expenses and general and administrative expenses.

Operating Expenditure for FY 2022 & FY 2021

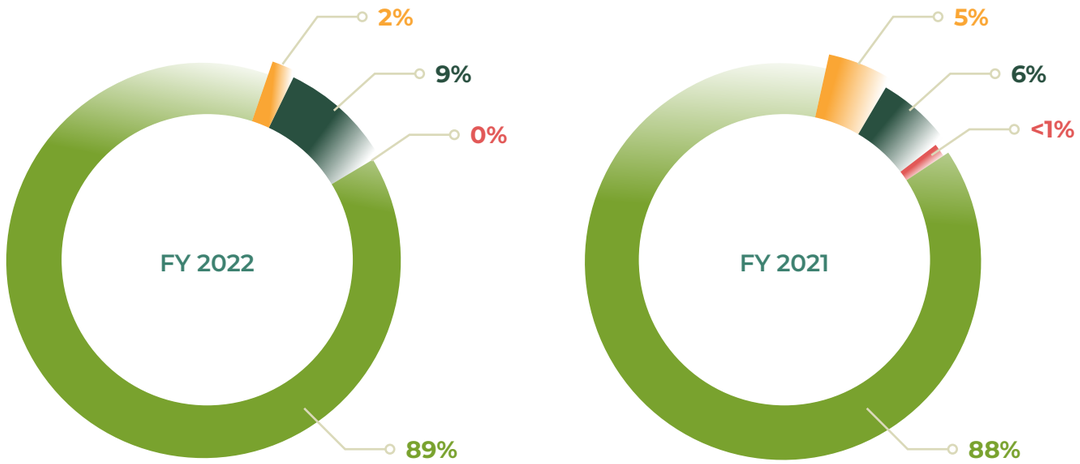


OPERATING EXPENDITURE	FY 2022 $ '000	FY 2021 $ '000	INCREASE/(DECREASE) $ '000	% CHANGE
Staff costs	147,517	139,470	8,047	6
Maintenance of parks	163,340	143,580	19,760	14
Animal and veterinary related expenses	13,050	10,157	2,893	28
General and administrative expenses	78,150	63,426	14,724	23
Depreciation of property, plant and equipment and right-of-use assets	18,894	19,029	(135)	(1)
	420,951	**375,662**	**45,289**	**12**

Capital Expenditure

The Group's capital expenditure for the year was $14.3 million. The decrease in capital expenditure was mainly due to the completion of most of construction works at Native Plant Nursery and Animal Quarantine Centre in FY2021.

Capital Expenditure for FY 2022 & FY 2021



CAPITAL EXPENDITURE	FY 2022 $ '000	FY 2021 $ '000	INCREASE/(DECREASE) $ '000	% CHANGE
Land and other improvements	246	1,227	(981)	(80)
Equipment	1,309	1,255	54	4
Motor Vehicles	-	117	(117)	(100)
Development work-in-progress	12,731	19,867	(7,136)	(36)
	14,286	**22,466**	**(8,180)**	**(36)**

Financial Position

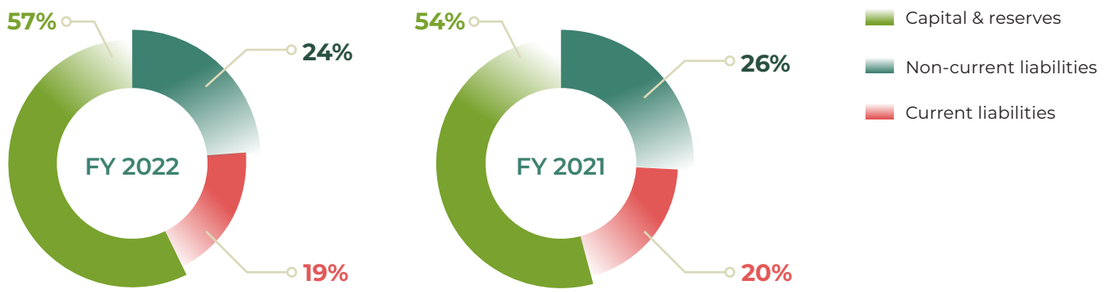
As at 31 March 2023, the Group's total assets stood at $629.4 milion, an increase of 5% over last year. Non-current assets and current assets represent 33% and 67% of total assets respectively. Non-current assets consisted mainly of leasehold land and buildings and structures at Singapore Botanic Gardens and Fort Canning Park as well as the structures at Animal & Plant Health Centre, Animal Quarantine Centre and Animal Management Centre. Capital and reserve stood at $362.1 million, while non-current liabilities and current liabilities stood at $149.7 million and $117.6 million respectively.

Total Assets



ASSETS	FY 2022 $ '000	FY 2021 $ '000	INCREASE/(DECREASE) $ '000	% CHANGE
Non-current assets	209,211	214,216	(5,005)	(2)
Current assets	420,173	385,246	34,927	9
	629,384	**599,462**	**29,922**	**5**

Total Liabilities & Equity



EQUITY & LIABILITIES	FY 2022 $ '000	FY 2021 $ '000	INCREASE/(DECREASE) $ '000	% CHANGE
Capital & reserves	362,074	323,719	38,355	12
Non-current liabilities	149,687	158,025	(8,338)	(5)
Current liabilities	117,623	117,717	(94)	< 1
	629,384	**599,461**	**29,923**	**5**

FINANCIAL STATEMENTS

Contents

79 Statement by National Parks Board

80 Independent Auditor's Report

84 Statement of Financial Position

86 Statement of Comprehensive Income

87 Statement of Changes in Equity

89 Consolidated Statement of Cash Flows

90 Notes to the Financial Statements

STATEMENT BY THE NATIONAL PARKS BOARD

For the financial year ended 31 March 2023

In our opinion,

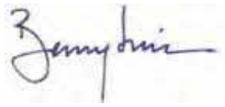
(a) the accompanying financial statements of National Parks Board ("NParks") and its subsidiary (the "Group"), are properly drawn up in accordance with the provisions of the National Parks Board Act, 1996 (the "Act"), the Public Sector (Governance) Act 2018 and Statutory Board Financial Reporting Standards ("SB-FRS") so as to present fairly, in all material respects, the financial position of the Group and NParks as at 31 March 2023, 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



BENNY LIM
Chairman



HWANG YU-NING
Chief Executive Officer

Dated: 26 July 2023

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 2023, 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 a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements of the Group, the statement of financial position, statements of comprehensive income and statements 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 2023 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.

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF NATIONAL PARKS BOARD

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.
- 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.

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF NATIONAL PARKS BOARD

- 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:

(a) 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

(b) 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.

INDEPENDENT AUDITOR'S REPORT TO THE MEMBERS OF NATIONAL PARKS BOARD

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, 26 July 2023

STATEMENT OF FINANCIAL POSITION

As at 31 March 2023

	Note	Group 2022/2023 $	Group 2021/2022 $	NParks 2022/2023 $	NParks 2021/2022 $
ASSETS					
Non-Current					
Property, plant and equipment	3	193,839,990	195,784,403	193,839,990	195,784,403
Investment in a subsidiary	4	-	-	2	2
Right-of-use assets	5(a)	6,961,036	9,952,191	6,961,036	9,952,191
Lease receivables	5(b)	6,057,916	6,127,745	6,057,916	6,127,745
Trade receivables	6	2,352,000	2,352,000	2,352,000	2,352,000
		209,210,942	214,216,339	209,210,944	214,216,341
Current assets					
Lease receivables	5(b)	2,141,889	1,550,298	2,141,889	1,550,298
Trade receivables	6	4,113,254	3,181,460	4,113,254	3,181,460
Other receivables	7	16,111,701	9,557,822	16,111,203	9,566,709
Prepayments		2,994,453	2,718,889	2,992,878	2,717,539
Cash and cash equivalents	8	394,811,854	368,237,278	394,417,291	367,882,350
		420,173,151	385,245,747	419,776,515	384,898,356
Total assets		629,384,093	599,462,086	628,987,459	599,114,697
EQUITY AND LIABILITIES					
Capital and other funds					
Share capital	9	37,092,611	34,912,734	37,092,611	34,912,734
Capital account	10	4,528,275	4,528,275	4,528,275	4,528,275
Other reserve	11	18,024,180	18,039,559	18,024,180	18,039,559
Accumulated surplus		302,429,124	266,238,664	302,038,273	265,899,761
		362,074,190	323,719,232	361,683,339	323,380,329
Non-current liabilities					
Lease liabilities	5(c)	8,718,212	12,535,744	8,718,212	12,535,744
Deferred capital grants	12	137,701,653	141,997,121	137,701,653	141,997,121
Deferred revenue	13	1,811,644	1,829,261	1,811,644	1,829,261
Provision for pension costs	14	1,455,317	1,663,290	1,455,317	1,663,290
		149,686,826	158,025,416	149,686,826	158,025,416

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

STATEMENT OF FINANCIAL POSITION

As at 31 March 2023

	Note	Group 2022/2023 $	Group 2021/2022 $	NParks 2022/2023 $	NParks 2021/2022 $
Current liabilities					
Lease liabilities	5(c)	4,104,960	3,878,900	4,104,960	3,878,900
Deferred revenue	13	2,580,309	2,784,558	2,580,309	2,784,558
Provision for pension costs	14	120,000	120,000	120,000	120,000
Trade and other payables	15	84,831,783	77,170,802	84,826,000	77,162,316
Government grants received in advance	16	18,376,697	33,469,961	18,376,697	33,469,961
Contribution to consolidated fund		7,609,328	293,217	7,609,328	293,217
		117,623,077	117,717,438	117,617,294	117,708,952
Total liabilities		267,309,903	275,742,854	267,304,120	275,734,368
Total equity and liabilities		629,384,093	599,462,086	628,987,459	599,114,697
Net assets of the Garden City Fund	17	22,537,607	19,032,192	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 2023

	Note	Group 2022/2023 $	Group 2021/2022 $	NParks 2022/2023 $	NParks 2021/2022 $
INCOME OR EXPENDITURE					
Operating income					
Rental income		6,358,587	4,562,944	6,358,587	4,562,944
Admission charges		2,073,529	408,279	2,073,529	408,279
Plan fees		1,733,918	1,967,623	1,733,918	1,967,623
Course fees		837,681	489,758	837,681	489,758
Agency fees		1,037,589	1,375,352	1,037,589	1,375,352
Interest income		5,443,451	1,624,473	5,439,785	1,624,348
Carpark income		897,332	899,777	897,332	899,777
Certificates and permit fees		2,258,835	2,095,815	2,258,835	2,095,815
Laboratory and inspection fees		915,843	1,096,911	915,843	1,096,911
Licence fees		2,624,980	2,748,533	2,624,980	2,748,533
Quarantine fees and services		1,426,038	1,316,279	1,426,038	1,316,279
Miscellaneous income	19	4,705,157	2,202,369	4,609,672	2,189,996
Total income	19	30,312,940	20,788,113	30,213,789	20,775,615
Operating expenditure					
Staff costs	20	(147,516,611)	(139,469,685)	(147,516,611)	(139,469,685)
Maintenance of parks		(163,340,320)	(143,580,204)	(163,340,320)	(143,580,204)
Animal and veterinary related expenses		(13,050,047)	(10,157,165)	(13,050,047)	(10,157,165)
General and administrative expenses		(78,149,561)	(63,426,388)	(78,102,358)	(63,417,405)
Depreciation of property, plant and equipment and right-of-use assets	3, 5(a)	(18,894,522)	(19,028,584)	(18,894,522)	(19,028,584)
		(420,951,061)	(375,662,026)	(420,903,858)	(375,653,043)
Deficit from operations	21	(390,638,121)	(354,873,913)	(390,690,069)	(354,877,428)
Government operating grants	16	419,786,106	339,056,632	419,786,106	339,056,632
Other government grants	16	3,199,489	4,500,595	3,199,489	4,500,595
Deferred capital grants amortised	12	12,465,227	13,045,006	12,465,227	13,045,006
		435,450,822	356,602,233	435,450,822	356,602,233
Surplus before contribution to consolidated fund		44,812,701	1,728,320	44,760,753	1,724,805
Contribution to consolidated fund		(7,609,328)	(293,217)	(7,609,328)	(293,217)
Surplus for the year, representing total comprehensive income for the year		37,203,373	1,435,103	37,151,425	1,431,588

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

STATEMENTS OF CHANGES IN EQUITY

For the financial year ended 31 March 2023

	Share Capital $	Capital account $	Other reserve $	Accumulated surplus[1] $	Total equity $
NPARKS					
At 1 April 2021	27,946,236	4,528,275	18,049,937	267,512,709	318,037,157
Surplus for the year, representing total comprehensive income for the year	-	-	-	1,435,103	1,435,103
Transactions with owners, recognised directly in equity					
Equity injection (Note 9)	6,966,498	-	-	-	6,966,498
Transfer from other reserve (Note 11)	-	-	(10,378)	10,378	-
Funding for government projects (Note 22)	-	-	-	(1,887,526)	(1,887,526)
Dividend (Note 28)	-	-	-	(832,000)	(832,000)
Total transactions with owners, in their capacity as owners	6,966,498	-	(10,378)	(2,709,148)	4,246,972
At 31 March 2022	34,912,734	4,528,275	18,039,559	266,238,664	323,719,232
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)
Total transactions with owners, in their capacity as owners	2,179,877	-	(15,379)	(1,012,913)	1,151,585
At 31 March 2023	37,092,611	4,528,275	18,024,180	302,429,124	362,074,190

(1) Included in accumulated surplus is an amount of $72,915,867 (2021/2022 – $66,955,140) which has been earmarked by the Group to fund future replacement and capital improvement of property, plant and equipment.

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

STATEMENTS OF CHANGES IN EQUITY

For the financial year ended 31 March 2023

	Share Capital	Capital account	Other reserve	Accumulated surplus[1]	Total equity
	$	$	$	$	$
NPARKS					
At 1 April 2021	27,946,236	4,528,275	18,049,937	267,177,321	317,701,769
Surplus for the year, representing total comprehensive income for the year	-	-	-	1,431,588	1,431,588
Transactions with owners, recognised directly in equity					
Equity injection (Note 9)	6,966,498	-	-	-	6,966,498
Transfer from other reserve (Note 11)	-	-	(10,378)	10,378	-
Funding for government projects (Note 22)	-	-	-	(1,887,526)	(1,887,526)
Dividend (Note 28)	-	-	-	(832,000)	(832,000)
Total transactions with owners, in their capacity as owners	6,966,498	-	(10,378)	(2,709,148)	4,246,972
At 31 March 2022	34,912,734	4,528,275	18,039,559	265,899,761	323,380,329
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)
Total transactions with owners, in their capacity as owners	2,179,877	-	(15,379)	(1,012,913)	1,151,585
At 31 March 2023	37,092,611	4,528,275	18,024,180	302,038,273	361,683,339

(1) Included in accumulated surplus is an amount of $72,915,867 (2021/2022 – $66,955,140) which has been earmarked by NParks to fund future replacement and capital improvement of property, plant and equipment.

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

CONSOLIDATED STATEMENT OF CASH FLOWS

For the financial year ended 31 March 2023

	Note	2022/2023	2021/2022
		$	$
Cash flows from operating activities			
Deficit from operations		(390,638,121)	(354,873,913)
Adjustments for:			
Depreciation of property, plant and equipment and right-of-use assets	3, 5(a)	18,894,522	19,028,584
Loss on disposal of property, plant and equipment	21	16,334	58,201
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)	(1,577,809)	(2,740)
Provision for pension costs (reversed)/ recognised	14	(87,973)	228,312
Amortisation of lease premium received in advance		(83,333)	(83,333)
Impairment loss recognised on trade receivables	6	114,035	324,334
Interest expense	5(d)	444,260	550,839
Interest income	19	(5,443,451)	(1,624,473)
Operating deficit before working capital changes		(378,361,536)	(336,394,189)
Changes in trade and other receivables		(577,573)	(332,180)
Changes in trade and other payables		8,105,084	(8,356,185)
Changes in prepayments		(275,564)	1,438,064
Changes in deferred revenue		(138,533)	1,872,835
Changes in payment for pension costs	14	(120,000)	(240,000)
Changes in amounts due from Ministry of National Development (“MND”)		(5,131,925)	1,760,714
Changes in amounts due from Garden City Fund		2,432,864	(903,920)
Cash flows used in operations		(374,067,183)	(341,154,861)
Contribution to Consolidated Fund paid		(293,217)	(9,306,976)
Net cash used in operating activities		(374,360,400)	(350,461,837)
Cash flows from investing activities			
Proceeds from disposal of property, plant and equipment		26,135	1,659
Proceeds from lease receivables		1,742,290	1,505,652
Purchase of property, plant and equipment	3	(14,285,616)	(22,466,960)
Interest received		1,715,625	1,662,412
Net cash used in investing activities		(10,801,566)	(19,297,237)
Cash flows from financing activities			
Grants received (less payment on behalf)	16	424,767,944	351,442,433
Unutilised grants returned	16	(9,745,205)	(1,033,470)
Principal payments of lease liabilities	5(e)	(3,993,522)	(3,904,640)
Interest paid on lease liabilities	5(e)	(444,260)	(550,839)
Funding from Garden City Fund	12	-	1,700,975
Dividend paid	28	-	(832,000)
Equity injection	9	2,179,877	6,966,498
Funding for government projects	22	(1,028,292)	(1,887,526)
Net cash generated from financing activities		411,736,542	351,901,431
Net increase/(decrease) in cash and cash equivalents		26,574,576	(17,857,643)
Cash and cash equivalents at the beginning of year		368,237,278	386,094,921
Cash and cash equivalents at the end of year	8	394,811,854	368,237,278

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 2023

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 the NParks for the year ended 31 March 2023 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

Determination of the lease term of right-of-use assets (Note 5(a))

The Group leases land and buildings, office premises and equipment from government agencies and third parties for its operations. In determining the lease term of right-of-use assets, management considers all facts and circumstances that create an economic incentive to exercise an extension option, or not to exercise a termination option. Extension options (or period after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated). The lease term is reassessed if an option is actually exercised (or not exercised) or the Group becomes obliged to exercise (or not exercise) it. The assessment of reasonable certainty is only revised if a significant event or a significant change in circumstances occurs, which affects the assessment, and that is within the control of the lessee.

For leases of land and buildings, office premises and equipment, the following factors are normally the most relevant:

(a) If there are significant penalties to terminate (or not extend), the Group is typically reasonably to certain to extend (or not terminate);

(b) If the leasehold land and buildings and office premises are expected to have significant remaining values, the Group is typically reasonably certain to extend (or not to terminate);

(c) Otherwise, the Group considers other factors including historical lease durations and the costs and business disruption required to replace the leased assets.

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 2022.

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). Summary of significant accounting policies

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 were 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 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's 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

GROUP AND NPARKS	Leasehold land	Building, structures, capital and other improvements	Office equipment, furniture and fittings	Motor vehicles	Laboratory and gardening equipment	Construction-in-progress	Total
	$	$	$	$	$	$	$
Cost							
At 1 April 2021	70,086,377	199,887,823	66,825,978	1,460,976	3,168,075	30,630,996	372,060,225
Additions	-	1,226,587	731,014	117,450	524,475	19,867,434	22,466,960
Transfer	-	14,087,138	1,863,660	-	1,135,606	(17,086,404)	-
Disposals	-	(636,352)	(879,927)	(39,110)	(116,965)	-	(1,672,354)
At 31 March 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
Transfer	-	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
Accumulated depreciation							
At 1 April 2021	18,108,065	119,387,916	42,302,362	1,011,419	1,651,706	-	182,461,468
Depreciation for the year	1,126,158	8,176,017	6,314,973	134,545	469,761	-	16,221,454
Disposals	-	(608,044)	(848,831)	(39,110)	(116,509)	-	(1,612,494)
At 31 March 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
Carrying amount							
At 31 March 2023	49,725,996	89,275,891	17,463,632	322,340	4,716,966	32,335,165	193,839,990
At 31 March 2022	50,852,154	87,609,307	20,772,221	432,462	2,706,233	33,412,026	195,784,403

4. Investment in a subsidiary

NPARKS	2022/2023 $	2021/2022 $
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
		2022/2023	2021/2022	
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, buildings, office premises and equipment. 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 follow:

GROUP AND NPARKS	Leasehold land and buildings	Office premises	Equipment	Total
	$	$	$	$
At 1 April 2021	6,713,799	5,592,977	7,950	12,314,726
New leases	432,893	-	-	432,893
Lease modification	-	11,702	-	11,702
Depreciation expense	(1,985,771)	(813,409)	(7,950)	(2,807,130)
At 31 March 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

(b) Lease receivables

As intermediate lessor

The Group's 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:

GROUP AND NPARKS	2022/2023 $	2021/2022 $
At 1 April	7,678,043	9,180,955
Transferred from right-of-use assets upon sublease (Note 5(a))	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	1,577,809	2,740
Accretion of interest	258,993	267,136
Receipts	(2,001,283)	(1,772,788)
At 31 March	8,199,805	7,678,043
Within one year	2,366,738	1,768,672
After one year but not more than five years	6,311,302	6,485,132
Total undiscounted lease receivables	8,678,040	8,253,804
Unearned interest income	(478,235)	(575,761)
Total receivables at 31 March	8,199,805	7,678,043
Represented as:		
Current	2,141,889	1,550,298
Non-current	6,057,916	6,127,745
	8,199,805	7,678,043

(c) Lease liabilities

As lessee

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

GROUP AND NPARKS	2022/2023 $	2021/2022 $
At 1 April	16,414,644	19,874,689
Additions	402,050	432,893
Lease modification	-	11,702
Accretion of interest	444,260	550,839
Payments	(4,437,782)	(4,455,479)
At 31 March	12,823,172	16,414,644
Within one year	4,437,782	4,316,891
After one year but not more than five years	8,071,711	11,499,560
More than five years	1,193,900	1,910,240
Total undiscounted lease payments	13,703,393	17,726,691
Unearned interest costs	(880,221)	(1,312,047)
Total liabilities at 31 March	12,823,172	16,414,644
Represented as:		
Current	4,104,960	3,878,900
Non-current	8,718,212	12,535,744
	12,823,172	16,414,644

(d) Amounts recognised in the statement of comprehensive income

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Depreciation of right-of-use assets	2,706,962	2,807,130
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	(1,577,809)	(2,740)
Interest expense on lease liabilities	444,260	550,839
Interest income on lease receivables	(258,993)	(267,136)
Lease expenses not capitalised in lease liabilities:		
Expense relating to short-term leases	1,316,160	1,657,767
Expenses relating to leases of low-value assets	1,210,770	1,272,652
Total lease expense	2,526,930	2,930,419
Total amount recognised in the statement of comprehensive income	3,841,350	6,018,512

(e) Total cash outflows

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

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Principal payments of lease liabilities	3,993,522	3,904,640
Interest paid on lease liabilities	444,260	550,839
	4,437,782	4,455,479
Lease expenses not capitalised in lease liabilities	2,526,930	2,930,419
	6,964,712	7,385,898

(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

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Not past due and not impaired	3,889,466	2,881,200
Past due but not impaired:		
< 1 months	115,003	104,205
1 months to 4 months	141,342	119,643
> 4 months	2,319,443	2,428,412
	2,575,788	2,652,260
Impaired receivables	2,533,446	2,461,734
	8,998,700	7,995,194
Allowance for impairment loss	(2,533,446)	(2,461,734)
Total	6,465,254	5,533,460
Represented by:		
Current portion	4,113,254	3,181,460
Non-current portion	2,352,000	2,352,000
Total	6,465,254	5,533,460

The credit period on rendering of services is 30 days (2021/2022 – 30 days). Other than non-current receivables 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:

GROUP AND NPARKS	2022/2023 $	2021/2022 $
At 1 April	2,461,734	2,137,400
Amount write-off	(42,323)	-
Impairment loss recognised (Note 21)	114,035	324,334
At 31 March	2,533,446	2,461,734

7. Other receivables

	Group		NParks	
	2022/2023	2021/2022	2022/2023	2021/2022
	$	$	$	$
Other receivables				
MND [i]	9,966,260	4,363,078	9,966,260	4,363,078
Garden City Fund [ii]	638,754	2,947,627	638,754	2,947,627
Gardens by the Bay [ii]	13,193	29,838	13,193	29,838
Other receivables	556,685	899,341	556,437	908,478
Interest receivables	4,417,154	689,328	4,417,154	689,328
Deposits	519,655	628,610	519,405	628,360
	16,111,701	9,557,822	16,111,203	9,566,709

(i) Receivables from MND comprise direct 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

	Group		NParks	
	2022/2023	2021/2022	2022/2023	2021/2022
	$	$	$	$
Cash at bank	394,563	354,928	-	-
Deposits with AGD [i]	394,417,291	367,882,350	394,417,291	367,882,350
	394,811,854	368,237,278	394,417,291	367,882,350

(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 1.61% (2021/2022 - 0.30%) per annum.

9. Share capital

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Issued and fully paid up:		
At 1 April	34,912,734	27,946,236
Equity injection [1]	2,179,877	6,966,498
At 31 March	37,092,611	34,912,734

(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 $435,726 (2021/2022 – $141,574) that have been purchased as at the end of the reporting period.

12. Deferred capital grants

GROUP AND NPARKS	2022/2023 $	2021/2022 $
At 1 April	141,997,121	144,964,226
Amounts transferred from Government grants (Note 16)	8,169,759	8,376,926
Amounts transferred from Garden City Fund	-	1,700,975
	150,166,880	155,042,127
Less: Amortisation of deferred capital grants	(12,465,227)	(13,045,006)
At 31 March	137,701,653	141,997,121
Total capital grants received (excluding donations-in-kind transferred from Garden City Fund) and utilised since establishment	335,471,202	327,301,443

13. Deferred revenue

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Lease premium received in advance	798,612	881,945
Deferred rental income	672,000	672,000
Plan fees received in advance	1,023,030	1,175,594
Rental received in advance	1,680,000	1,680,000
Others	218,311	204,280
	4,391,953	4,613,819
Represented by:		
Current portion	2,580,309	2,784,558
Non-current portion	1,811,644	1,829,261
	4,391,953	4,613,819

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

14. Provision for pension costs

GROUP AND NPARKS	2022/2023 $	2021/2022 $
At 1 April	1,783,290	1,794,978
Provision (reversed)/ recognised for the year (Note 20)	(87,973)	228,312
Payments during the year	(120,000)	(240,000)
At 31 March	1,575,317	1,783,290
Represented by:		
Current portion	120,000	120,000
Non-current portion	1,455,317	1,663,290
	1,575,317	1,783,290

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	
	2022/2023 $	2021/2022 $	2022/2023 $	2021/2022 $
Trade payables	9,909,695	11,911,670	9,909,695	11,911,670
Other payables				
MND (i)	4,633,651	4,162,394	4,633,651	4,162,394
Garden City Fund (ii)	146,382	22,391	146,382	22,391
Others	25,247,460	26,468,881	25,246,977	26,466,895
Rental and other deposits	9,070,481	7,292,115	9,070,481	7,292,115
Accrual expenses	27,351,422	26,628,427	27,346,122	26,621,927
Financial liabilities at amortised cost	76,359,091	76,485,878	76,353,308	76,477,392
GST payable	8,472,692	684,924	8,472,692	684,924
	84,831,783	77,170,802	84,826,000	77,162,316

(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)	Capital grants	Development grants (ii)	Other grants (iii)	Total
	$	$	$	$	$
At 1 April 2021	26,497,690	-	2,353,576	(520,562)	28,330,704
Grants received during the year	348,840,650	3,980	103,347,221	4,470,357	456,662,208
Transfer from accruals (iv)	6,574,534	-	-	-	6,574,534
Grants receivable	-	-	-	80,944	80,944
Interest income earned	-	-	8,969	-	8,969
Transfer to deferred capital grants (Note 12)	(6,377,243)	(3,980)	(1,995,703)	-	(8,376,926)
Unutilised grants returned	(1,007,500)	-	-	(25,970)	(1,033,470)
Payment on behalf	-	-	(105,219,775)	-	(105,219,775)
Transfer to statement of comprehensive income	(339,056,632)	-	-	(4,500,595)	(343,557,227)
At 31 March 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	-	-	(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

Notes:

(i) Total operating grants received/receivable less transferred to deferred capital grants since establishment are $4,744,262,974 (2021/2022 - $4,329,151,459).

(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”).

	2022/2023 $	2021/2022 $
Income:		
Donations	9,254,038	17,125,890
Sales of publications/souvenirs/merchandise	77,295	45,493
Course/tour fees	62,382	3,327
Interest income	465,589	71,956
Other income	743	1,997
	9,860,047	17,248,663
Amounts disbursed for:		
Costs of charitable activities:		
Conservation projects	61,666	275,150
Enhancements of parks, gardens and facilities	2,400,370	7,597,361
Outreach, education and research programmes	3,854,276	1,752,645
Publication	15,065	8,512
Administrative costs	23,255	37,563
	6,354,632	9,671,231
Surplus for the year	3,505,415	7,577,432
Accumulated fund at 1 April	19,032,192	11,454,760
Accumulated fund at 31 March	22,537,607	19,032,192
Represented by:		
Current assets		
Cash and cash equivalents	32,596,225	28,050,934
Other receivables and prepayments	552,453	963,620
	33,148,678	29,014,554
Current liabilities		
Trade payables	41,459	68,729
Other payables	1,064,579	3,342,643
Deferred donations	9,505,033	6,570,990
	10,611,071	9,982,362
Net assets	22,537,607	19,032,192

18. Net assets of National Productivity Fund

NParks also administers the following fund on behalf of the Productivity Fund Administration Board.

	2022/2023 $	2021/2022 $
Grants received	2,254,394	3,587,233
Interest income	947	-
Less: Expenditure		
Staff related costs	(305,087)	(288,857)
General Administration	(64,574)	-
Grant disbursements	(1,672,500)	(3,295,900)
	(2,042,161)	(3,584,757)
Surplus for the year	213,180	2,476
Accumulated fund at 1 April	4,007	1,531
Accumulated fund at 31 March	217,187	4,007
Represented by:		
Cash and bank balances	290,388	72,673
Accruals	(73,201)	(68,666)
Net assets	217,187	4,007

19. Income

	Group		NParks	
	2022/2023	2021/2022	2022/2023	2021/2022
	$	$	$	$
Operating income	25,607,783	18,585,744	25,604,117	18,585,619
Barbeque permit fees	523,468	56,284	523,468	56,284
Consultancy fees	149,000	19,500	12,500	-
Events income	129,363	1,215	129,363	1,215
Express services	352,357	383,926	352,357	383,926
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	1,577,809	2,740	1,577,809	2,740
Liquidated damages	476,579	600,333	476,579	600,333
Merchandise	59,546	35,596	59,546	35,596
Park usage fees	366,874	14,569	366,874	14,569
Publication and plant sales	225,294	604,612	225,294	604,612
Tour fees	32,537	11,037	32,537	11,037
Others	812,330	472,557	853,345	479,684
Miscellaneous income	4,705,157	2,202,369	4,609,672	2,189,996
Total income	30,312,940	20,788,113	30,213,789	20,775,615
Timing of transfer of goods or services:				
At a point in time	16,499,131	13,518,716	16,540,146	13,506,343
Overtime	8,370,358	5,644,924	8,233,858	5,644,924
	24,869,489	19,163,640	24,774,004	19,151,267
Add: Interest income	5,443,451	1,624,473	5,439,785	1,624,348
Total income	30,312,940	20,788,113	30,213,789	20,775,615

20. Staff costs

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Wages and salaries	128,402,749	119,426,386
Contributions to defined contribution plans	17,942,014	18,475,563
Provision for pension costs (reversed)/ recognised (Note 14)	(87,973)	228,312
Other staff benefits	1,259,821	1,339,424
	147,516,611	139,469,685

21. Deficit from operations

The following item has been included in arriving at deficit from operations:

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Loss on disposal of property, plant and equipment	16,334	58,201
Impairment loss on trade receivables recognised (Note 6)	114,035	324,334

22. Funding for government projects

During the financial year ended 31 March 2023, $1,028,292 (2021/2022 – $1,887,526) was incurred to fund the capital expenditure for government projects, namely, Redevelopment of Park Connector Network, SBG Gallop Road Extension and Fort Canning Master Plan.

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

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Contracted but not provided for	239,715,495	274,864,253
Less: Development expenditure on behalf of government	(234,257,092)	(271,984,619)
	5,458,403	2,879,634
Authorised but not contracted for	498,683,196	525,134,631
Less: Development expenditure on behalf of government	(476,123,200)	(500,536,455)
	22,559,996	24,598,176
	28,018,399	27,477,810

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, parks developments and park connector network. Amounts authorised but not contracted for comprise mainly work relating to new parks developments, 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:

GROUP AND NPARKS	2022/2023 $	2021/2022 $
MND		
Revenue collected on behalf and remitted to MND	38,604,283	29,774,343
Development expenditure paid on behalf		
- Other state projects	91,977,799	105,219,775
Other Ministries and Statutory Boards		
Expenses paid on behalf	18,157,259	10,614,962
Garden City Fund		
Expenses paid on behalf	1,738,581	4,038,345
Gardens by the Bay		
Expenses paid on behalf	184,142	104,540

Compensation of key management personnel

The remuneration of key management personnel during the financial year were as follows:

GROUP AND NPARKS	2022/2023 $	2021/2022 $
Salaries and other short-term employee benefits	3,274,336	3,125,440
Post-employment benefits	95,026	96,101

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 determined 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

As at 31 March 2023, the Group has recorded an impairment loss allowance of $2,120,000 (2022 – $2,120,000) on its trade receivables due from one of its debtors. The debtor 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 has assessed the amount to be credit impaired after considering the debtor's financial position.

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 2023.

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.

GROUP	Less than 1 year	Between 2 and 5 years	Over 5 years	Total
	$	$	$	$
2022/2023				
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
2021/2022				
Financial liabilities				
Lease liabilities (Note 5(c))	4,316,891	11,499,560	1,910,240	17,726,691
Trade and other payables (Note 15)	76,485,878	-	-	76,485,878
Total undiscounted financial liabilities	80,802,769	11,499,560	1,910,240	94,212,569

NPARKS	Less than 1 year	Between 2 and 5 years	Over 5 years	Total
	$	$	$	$
2022/2023				
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
2021/2022				
Financial liabilities				
Lease liabilities (Note 5(c))	4,316,891	11,499,560	1,910,240	17,726,691
Trade and other payables (Note 15)	76,477,392	-	-	76,477,392
Total undiscounted financial liabilities	80,794,283	11,499,560	1,910,240	94,204,083

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	
	2022/2023	2021/2022	2022/2023	2021/2022
	$	$	$	$
Financial assets at amortised cost				
Lease receivables (Note 5(b))	8,199,805	7,678,043	8,199,805	7,678,043
Trade receivables (Note 6)	6,465,254	5,533,460	6,465,254	5,533,460
Other receivables (Note 7)	16,111,701	9,557,822	16,111,203	9,566,709
Cash and cash equivalents (Note 8)	394,811,854	368,237,278	394,417,291	367,882,350
	425,588,614	391,006,603	425,193,553	390,660,562
Financial liabilities at amortised cost				
Lease liabilities (Note 5(c))	12,823,172	16,414,644	12,823,172	16,414,644
Trade and other payables (Note 15)	76,359,091	76,485,878	76,353,308	76,477,392
	89,182,263	92,900,522	89,176,480	92,892,036

The carrying amounts of cash and cash equivalents, trade receivables (current), 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. Dividend

In the previous financial year ended 31 March 2022, NParks paid dividend of $832,000 on the ordinary shares issued to the Minister for Finance in respect of the financial year ended 31 March 2021.

We thank staff and partners of NParks who kindly contributed photos to this annual report

Koh Soon Kiong
Page 14: Photo of *Cratoxylum maingayi*

Jacqueline Chua
Page 17: Photo of community garden in Bishan

Ang Mo Kio Town Council
Page 18: Photo of Prime Minister Lee Hsien Loong planting a tree

Francis Yap
Page 29: Photos of Ruby-cheeked Sunbird (*Chalcoparia singalensis*) and Lesser Green Leafbird (*Chloropsis cyanopogon*)
Page 31: Photo of Short-tailed Babbler (*Pellorneum malaccensis*)

Choo Le Min
Page 31: Photo of *Sindora velutina*

Dr Karenne Tun
Page 34: Photo of Hawksbill Turtle (*Eretmochelys imbricata*)

Ang Wee Foong
Page 40: Photo of *Shorea bracteolata*

Paul Leong
Page 40: Photo of Sea Apple (*Syzgium grande*)

Nature Landscapes
Page 42: Photo of rooftop garden at Ang Mo Kio Court

Energy Market Company
Page 49: Photo of Energy Market Company planting trees under the PAT programme

LJCP Photography
Page 51: Photo of NParks Concert Series in the Park: Rockestra

Front Cover

NParks is introducing a new model of greenery management for parks and streetscapes, starting at Bishan-Ang Mo Kio Park and its surrounding district. This model will use a suite of digital tools and sensors made possible by NParks' research and development efforts as well as partnerships with the industry.

Introduction

Located in the Tyersall-Gallop Core of the Singapore Botanic Gardens, the Learning Forest is an extensive restoration of the lowland forest and wetland habitats that used to surround the Gardens. It serves as an important reference for ongoing research work of restoration ecology around the region.

Chapter Dividers

Pg 10 – Transforming into a City in Nature
Visit the enhanced Spice Garden in Fort Canning Park to discover over 180 varieties of plants, including Gambier and Pepper, which were among the earliest commercial crops in Singapore.

Page 24 – Conservation in Transformation
Rifle Range Nature Park, the eighth of its kind in the Central Nature Park Network, serves as a green buffer to protect Bukit Timah Nature Reserve from edge effects and abutting developments.

Page 36 – Empowering Transformation
The dedicated effort to highlight and conserve existing trees in Thomson Nature Park was a key highlight that resulted in it receiving a platinum certification under the Landscape Excellence Assessment Framework.

NATIONAL PARKS *NParks' Publication*

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