

MND Urban Sustainability R&D E-Symposia 2021

Ecology of Cities

Nature, Liveability and Long-Term Planning

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Strategic Planning Group



Outline

1. Our Land Use Planning Process
2. Enhancing Liveability: Planning for Green and Blue Spaces
3. Moving forward



To make Singapore a great city to live, work and play in

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Our land use planning process



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About us

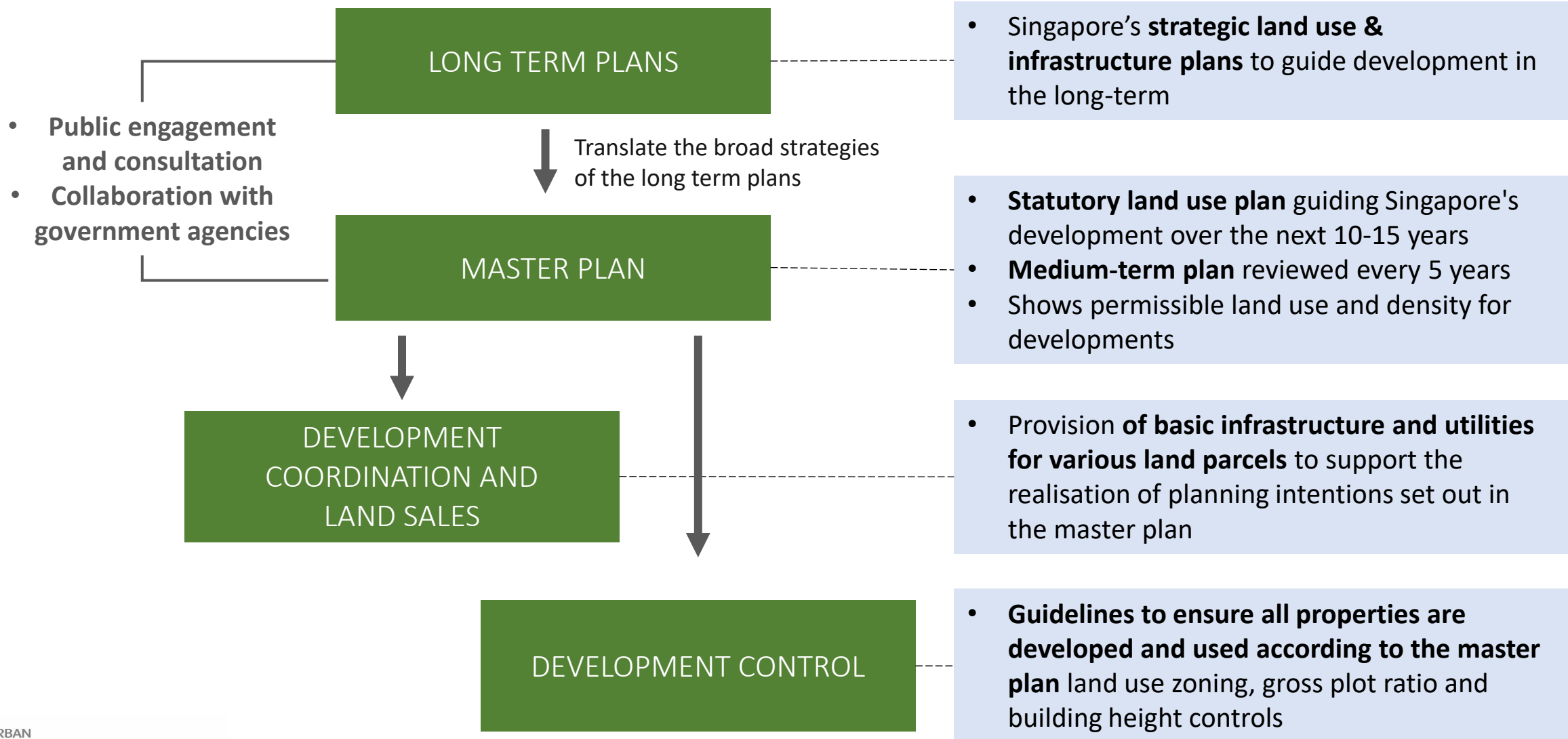


Building and Construction Authority



- Singapore's land use planning and conservation authority
- Our mission is to make Singapore a great city to live, work and play

Overview of our planning process



Balancing needs



Population: 5.7 million



London (2X)

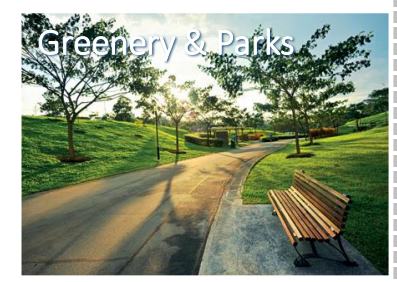
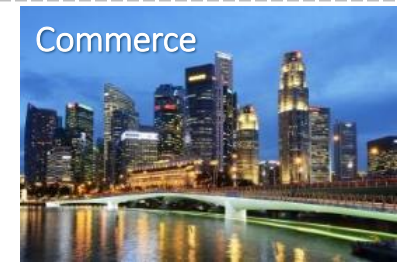


New York City (1.7X)



Hong Kong (1.5X)

LAND NEEDS



SEA NEEDS



Core Planning Principles: **Sustainability & Stewardship**



ECONOMIC

Sustain a robust and vibrant economy

SOCIAL

Provide a good quality of living and a sense of well-being for all

ENVIRONMENT

Develop in an environmentally responsible manner

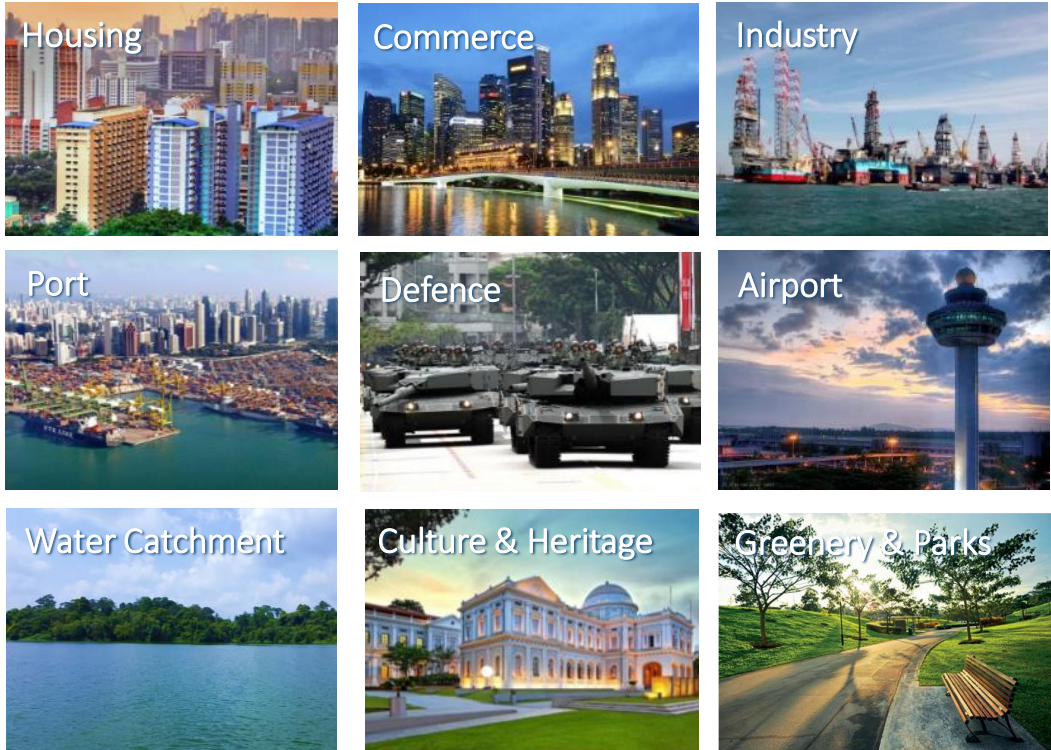
LAND & SEA

Optimise our limited land and sea space

**+ FLEXIBILITY
&
RESILIENCE**

Need to plan for greater flexibility and resilience given our aging population, the rise of disruptive technology, unanticipated uncertainties, and the effects of climate change

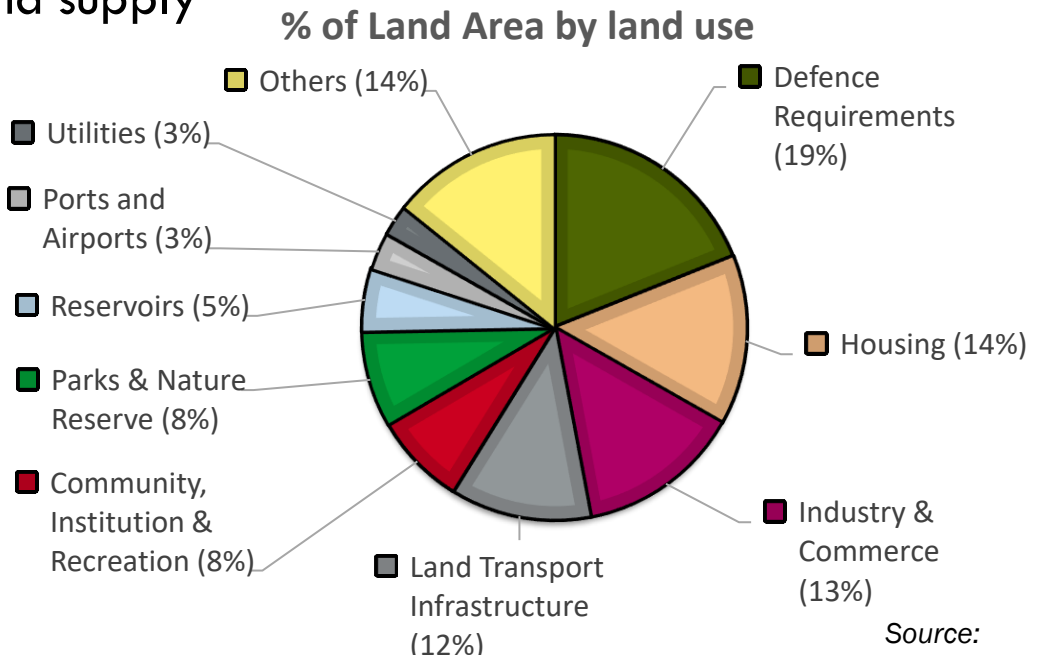
LAND NEEDS



SEA NEEDS



- **Long-term, careful planning approach** to meet current & future generations' needs
- Given our limited land and sea area, there is a need to **balance the demands and trade-offs** across various land uses, while also **ensuring a good quality living environment**
- **Judicious management & stewardship** of limited land supply
- **Review plans** to re-assess future needs and available land supply

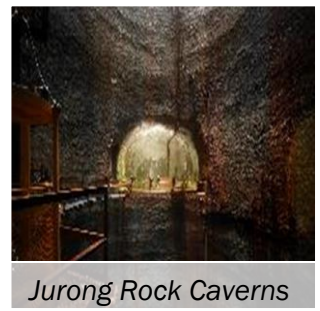


Source: MND Landuse Plan 2013

Recycle and Reuse our Land



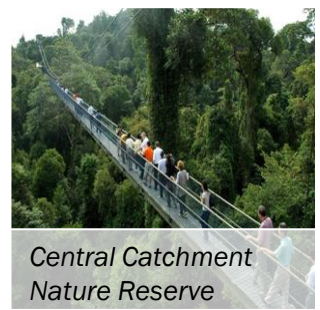
Co-locate Compatible Uses



Optimise the use of our land



Plan for Resilience and Flexibility



Safeguard our Natural Capital and Heritage

Recycle and Reuse our Land



Recycle and Reuse our Land

Tanjong Rhu



Before



After

Recycle and Reuse our Land

These sites have all gone through a journey of redevelopment



Punggol: Before and After (Source: NHB, HDB)

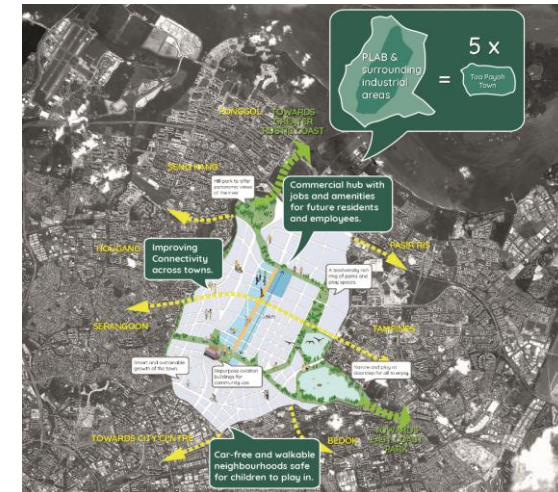


Tanjong Rhu: Before and After (Source: URA)

We recycle land and redevelop brownfield sites, which allow us to keep undeveloped areas untouched for longer, but this strategy also has its trade-offs

- Many major redevelopments require complex planning and careful coordination, and take time to materialise
- Redevelopment also involves further considerations, such as:
 - a) Social impact on close-knit communities (e.g. Cassia resettlement)
 - b) Displacement of well-loved interim uses (e.g. Pasir Ris pet farm)
 - c) Heritage considerations can limit optimisation of development yield

For e.g. Paya Lebar Airbase (PLAB)



(Left) Overview of plans to redevelop PLAB

Co-locate Compatible Uses

Transport



Bedok Integrated Transport Hub 2

Community



Kampung Admiralty

Utility



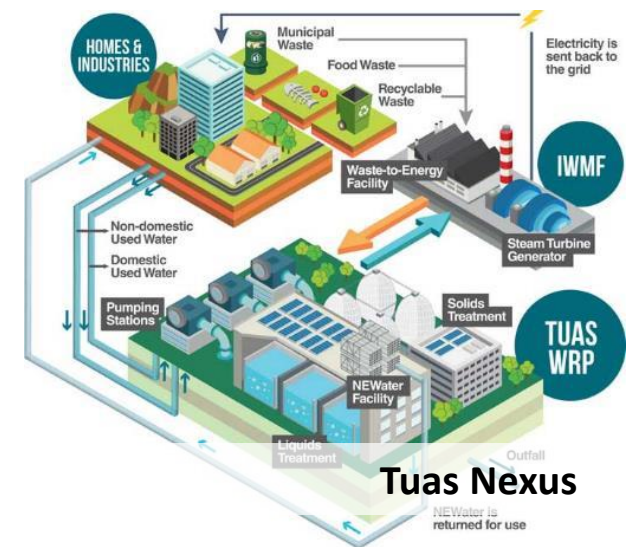
Marina Barrage



East Coast 4-in-1 rail and bus depot



Farrer Park Primary School and Pek Kio Community Centre



Tuas Nexus

Optimise use of our Land

High-rise industrial



High-rise farming



High-rise community and social uses



...while maintaining a good quality living environment



Optimise use of our Land:

Make use of Underground Spaces

- Focus on putting utility, transport, storage and industrial facilities underground
- Frees up above-ground for people to enjoy
- Improves connectivity
- Increases resilience of our infrastructure



Ammunition Facility

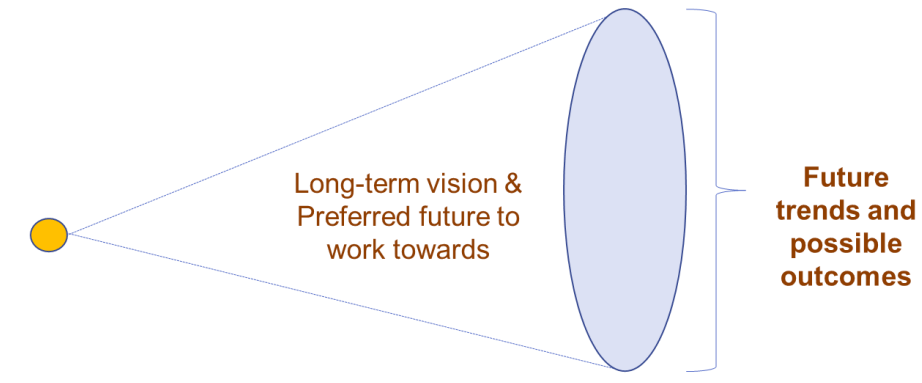


Jurong Rock Caverns



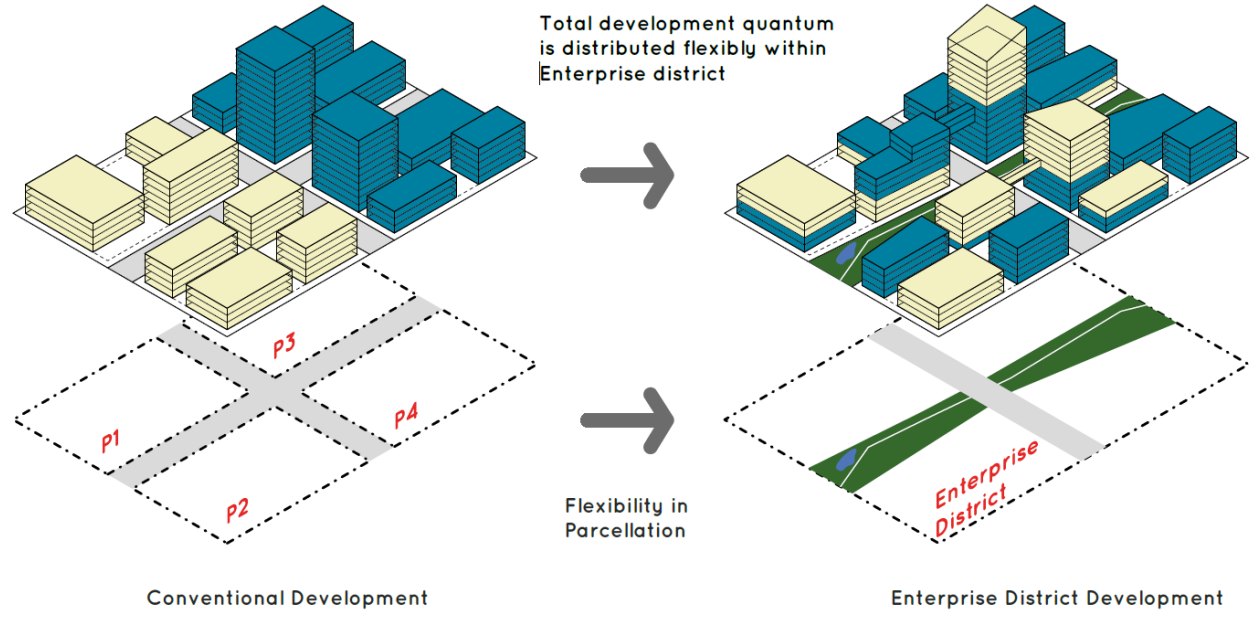
Plan for Resilience and Flexibility

- Increased importance of planning for resilience
- Cater for flexible buffer spaces to allow quick response to unexpected needs



- Plan for An Uncertain Future
- Explore innovative responses
- Develop robust plans that factor in trends and uncertainties, to give us options for the future

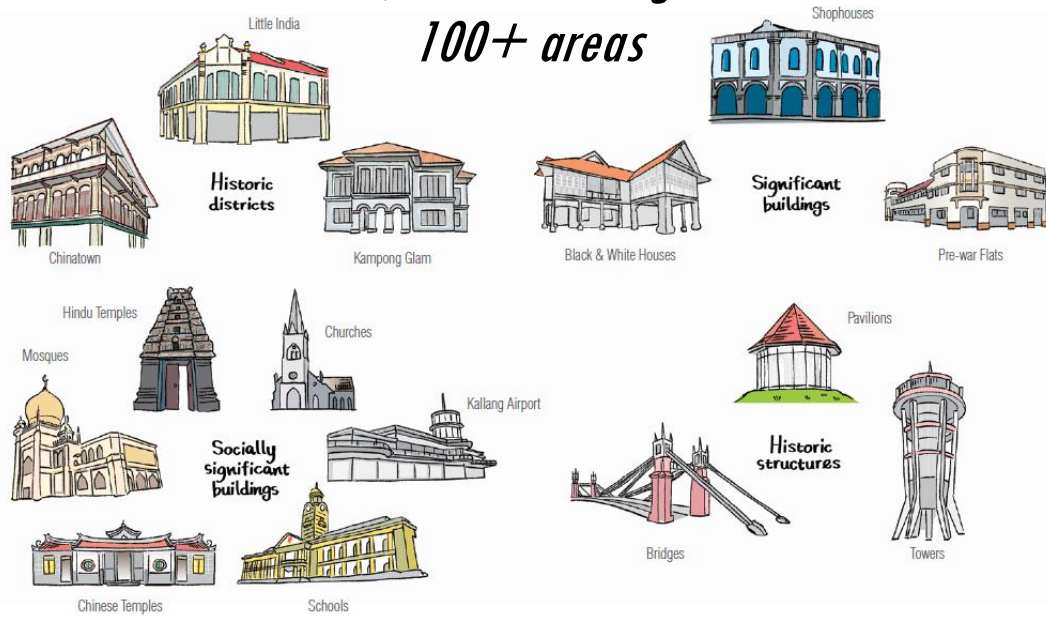
2021 →



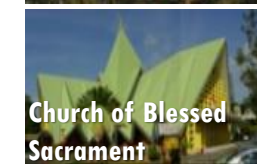
Conserving our Heritage

Meaningful to Singaporeans

7,000+ buildings
100+ areas



Represent different eras of Singapore history



1819-1919
Immigrant Settlement

1920-1940
Cosmopolitan City

1941-1965
Post War & Nation Building

1965 onwards
Post Independence

Safeguarding our Natural Capital

We take a judicious approach to **balance across different needs**. Our natural heritage is important and together with NParks, we:

- (1) Conserve key nature reserves and areas to maintain and protect biodiversity
- (2) Plan for various strategies to extend our natural capital network and weave greenery more intensively into urban areas

We are studying ways to further strengthen our natural capital and connect green & blue spaces





Enhancing Liveability: Planning for Green and Blue Spaces



To make Singapore a great city to live, work and play in

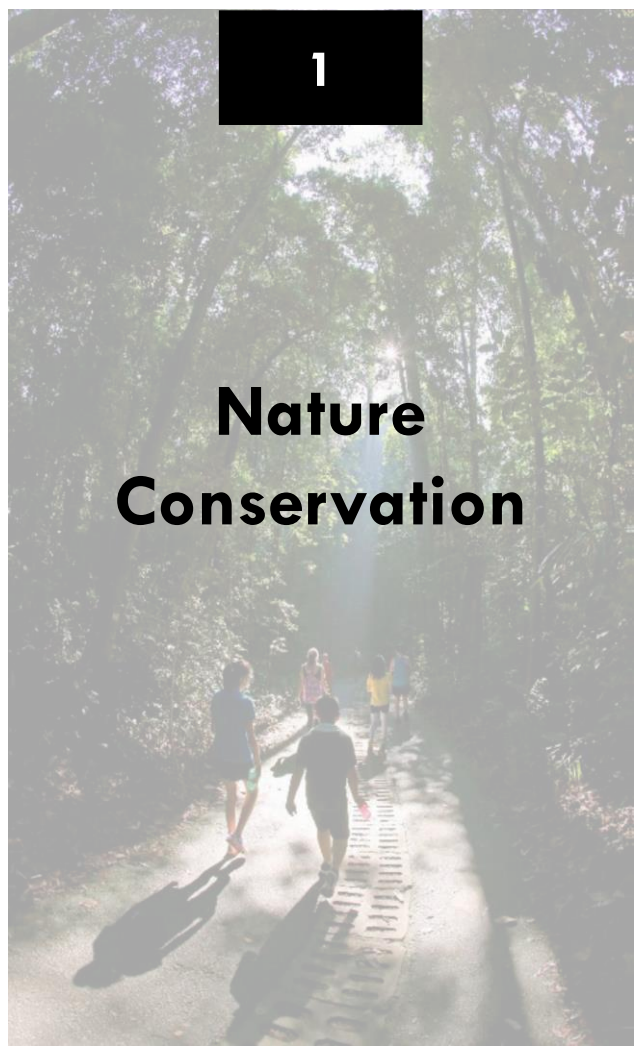
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In planning for our green and blue spaces in Singapore, we work closely with NParks and other agencies upstream in our planning process to achieve the **City in Nature** vision



- To restore **nature** back into the city for *Liveability, Sustainability* and *Well-being*
- **Objectives:**





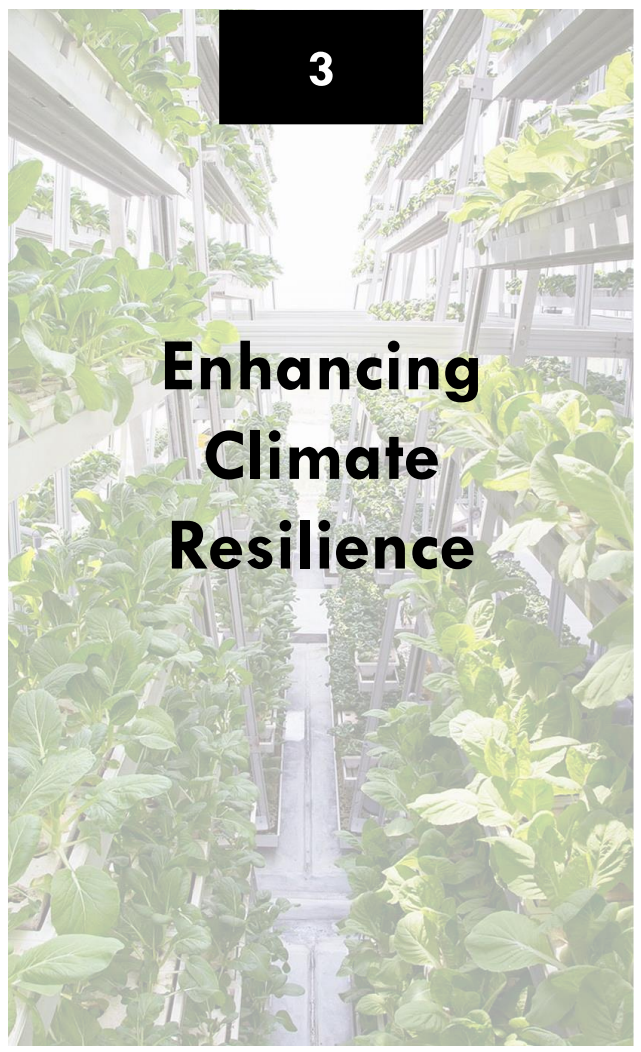
1

Nature Conservation



2

Restoring Nature into the Urban Landscape



3

Enhancing Climate Resilience

We work closely with NParks to take a science-based approach in identifying and prioritising green areas to retain

NParks' **Nature Conservation Master Plan** guides our conservation efforts, and enables us to coordinate, strengthen and intensify Singapore's efforts in biodiversity conservation through 4 thrusts:

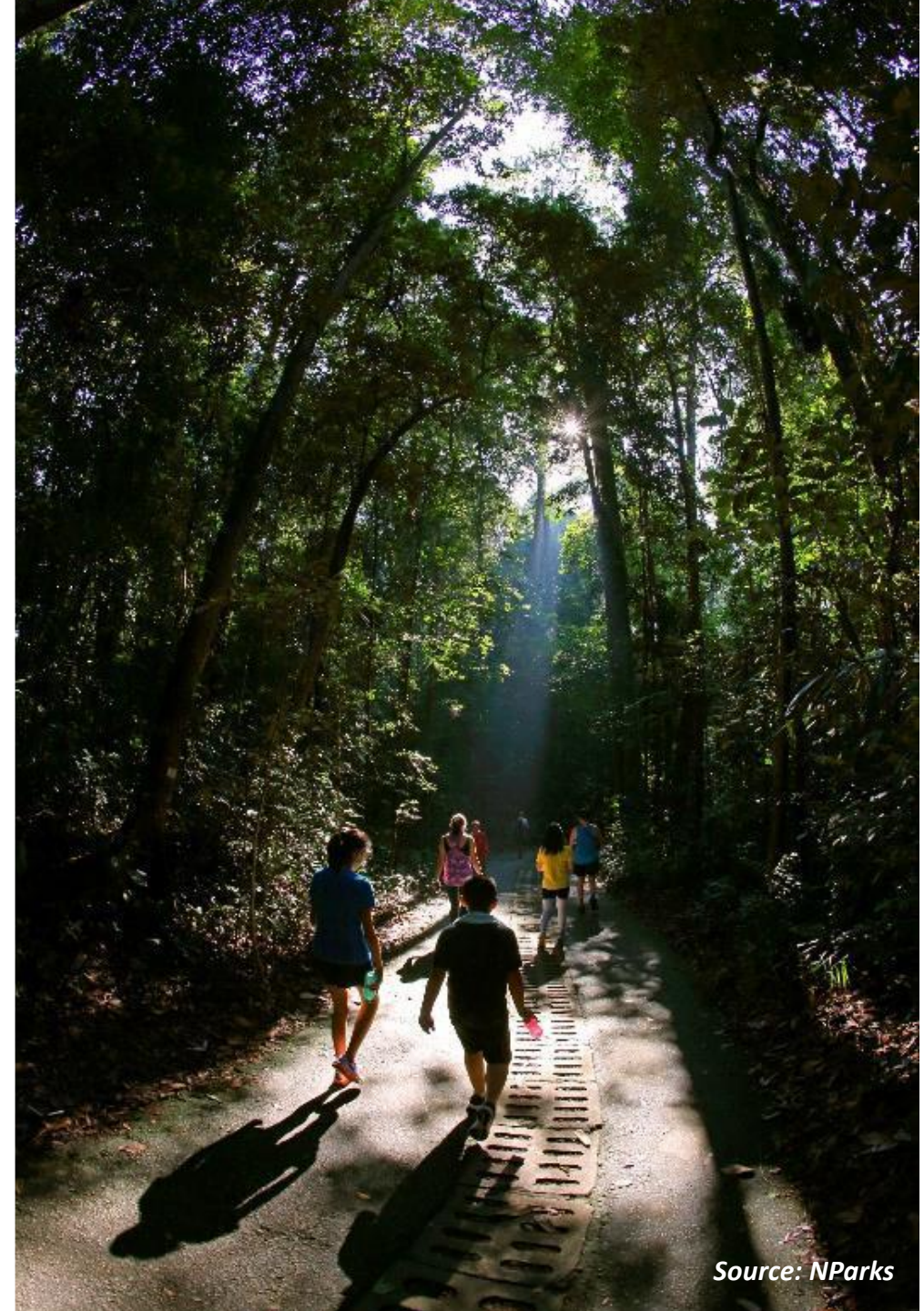
1. Conservation of habitats
2. Habitat enhancement, restoration and species recovery
3. Science based approach to conservation through research
4. Involving the community



Nature Conservation

To retain our natural areas, we have worked together with NParks to:

- (1) **Gazette 4 Nature Reserves** which are representative of our key local ecosystems
- (2) Identify **Nature Areas** with significant biodiversity and establish ~350 ha (with additional ~200ha by 2030) of biodiversity sites and other forested areas as **Nature Parks**
- (3) Facilitate the extension of our natural capital through **Nature Park Networks**



The Environmental Impact Assessment (EIA) Framework

The EIA framework seeks to ensure that potential biodiversity impact of proposed developments in or near environmentally sensitive areas are carefully studied and necessary mitigation measures are in place.

(1) Environmental considerations are an important part of the planning evaluation process

- Planning approvals only granted to proposals who meet requirements imposed by regulatory agencies

(2) Proposed development projects near sensitive areas, areas of significant biodiversity or with potential trans-boundary impact are subject to greater scrutiny

- These areas include Nature reserves, Nature areas, marine and coastal areas
- In such cases, technical agencies are consulted more extensively to determine if a more thorough environmental study is required

(3) Environmental study findings are considered by technical agencies in consultation with community stakeholders, which are later reported and publicly available online

- Views and feedback from nature and community stakeholders will be sought
- MND/URA will assess the development project against its potential impact, before awarding planning approval for the project
- Mitigating measures and monitoring plans need to be put in place before any work commences

Restoring Nature into our Urban Landscape

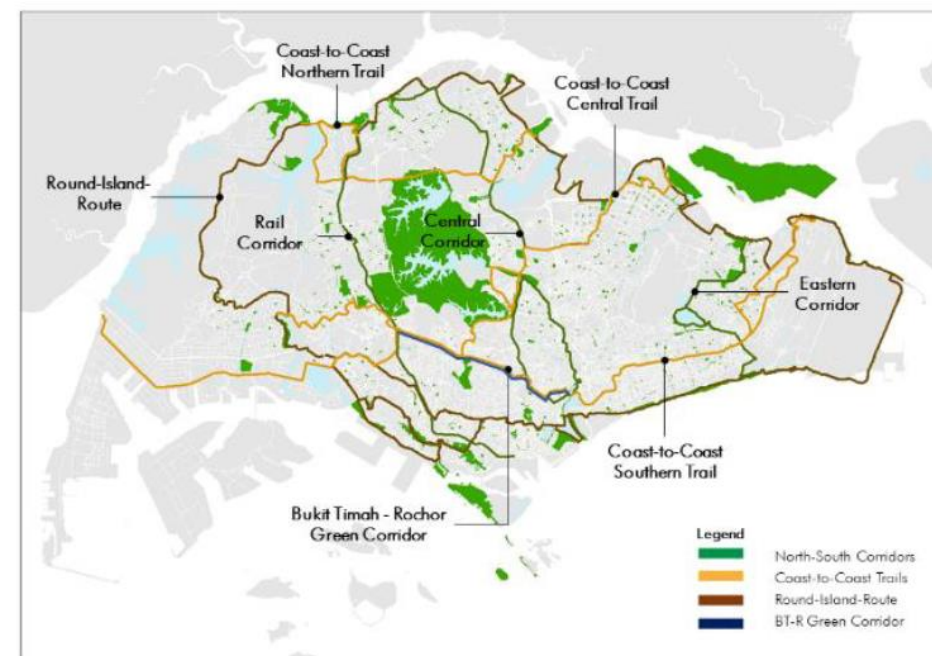
- Plan for accessible **parks and green spaces** in our towns and housing estates for residents to enjoy, e.g.:
 - Town park
 - Neighbourhood park
 - Precinct greens
 - Rooftop gardens
- By **2030**, 100% of homes will be planned to be within a **10-min walk** to a park. In **10-15 years**, **1000 ha** more land will be set aside for green spaces like parks and park connectors island-wide



Bishan-AMK Park
Source: Johnson Goh, Pixabay

Restoring Nature into our Urban Landscape

- More efforts to introduce nature through urban greenery
 - Naturalised planting in parks
 - **Nature Ways**, which involves **forest-like multi-tiered planting** along our roads
- More island-wide recreational routes to provide more opportunities to explore our green spaces, while also introducing more greenery into our built environment
- By **2030, 500 km** of park connectors are planned to be established



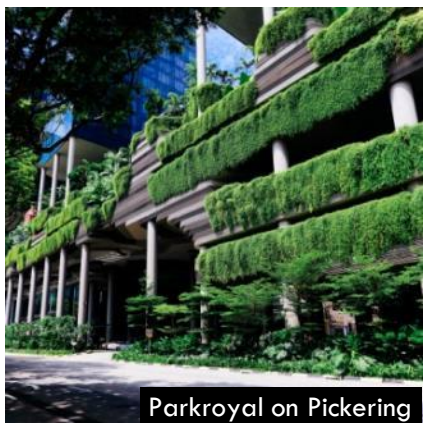
Park connector network plan showing existing and upcoming island-wide routes

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Restoring Nature into our Urban Landscape

LUSH: Landscaping for Urban Spaces and High-rises

- Integrating greenery into our urban landscape, such as through our **LUSH initiative**, an urban and skysrise greening scheme with requirements and incentives
- **Collaborative effort** with private sector (architects, developers) and agencies
- LUSH has contributed over **250 hectares** of greenery within developments (or **465 football fields**) islandwide from 2009-2020



Parkroyal on Pickering



Lee Kong Chian Natural History Museum



Tree House



The Sandcrawler



Oasia Hotel Downtown



Khoo Teck Puat Hospital



Sky Terrace @Dawson



Westgate



Solaris

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Enhancing Climate Resilience:

Urban Heat Island and Climate Change Mitigation

URA works closely with agencies in climate change adaptation & mitigation efforts as part of our low-carbon and sustainable future

- Addition of urban greenery to contribute toward **Urban Heat Island (UHI)** and **Climate Change Mitigation efforts**
 - ➔ Cools ambient temperature
 - ➔ Improves outdoor thermal comfort
 - ➔ Contributes to energy savings and reduced carbon emissions



(Above) Co-locating PVs and Urban Farms at Funan Mall

Current Ongoing Studies:

- Assessing the potential benefits of co-locating Photovoltaic Panels (PVs) together with urban greenery

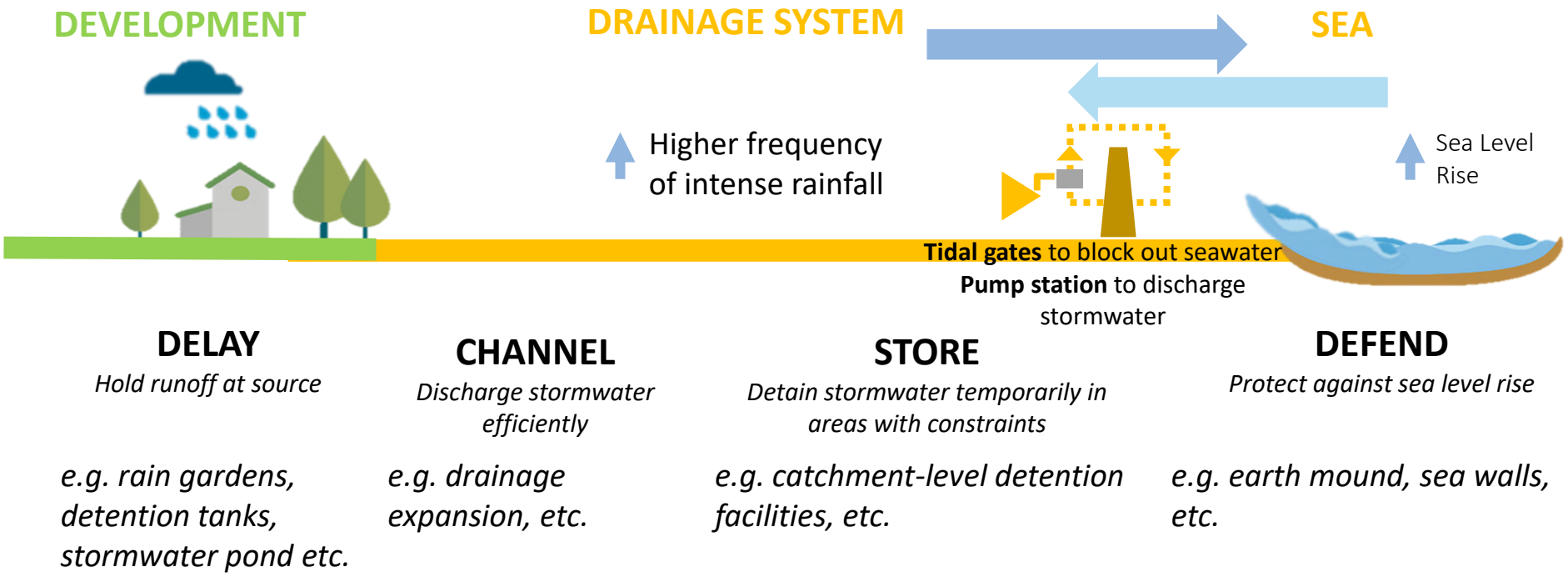
Enhancing Climate Resilience: Flood Resilience

URA works closely with PUB and NParks to incorporate Nature-Based Solutions (NbS) for both coastal and inland flood protection

- Nature-based solutions, where applicable, are adopted to integrate flood resilience measures into our urban fabric
- By integrating greenery, we seek to support multi-functional uses and achieve multiple objectives:
 - Providing **recreational opportunities**
 - **Restoring nature**



(Above) Naturalised canal in Bishan-AMK Park





Moving Forward



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It will be increasingly challenging to cater to our wider variety of needs and meet rising aspirations within our limited land and space...



Singapore

The Dover Forest debate: Can nature and development co-exist in urbanised Singapore?



Dover Forest as seen from Technology Drive (Screenshot: Google Maps)

today

Singapore World Big Read Gen Y Speaks Commentary Voices Videos Brand Spotlight 8 DAYS

As Clementi Forest grows in popularity, conservationists caution of impact on environment

...especially in tight fiscal conditions

We need to continue to meet our evolving needs and adapt to external challenges



Address rising aspirations amidst ageing, smaller households



Compete economically in a fast-changing world



Reduce, Reuse, Recycle (e.g. water, energy, waste)



Adapt to climate change



Be resilient; prepare for crises



Respond to technological advancements

