

# A 5-Minute Interlaced Township

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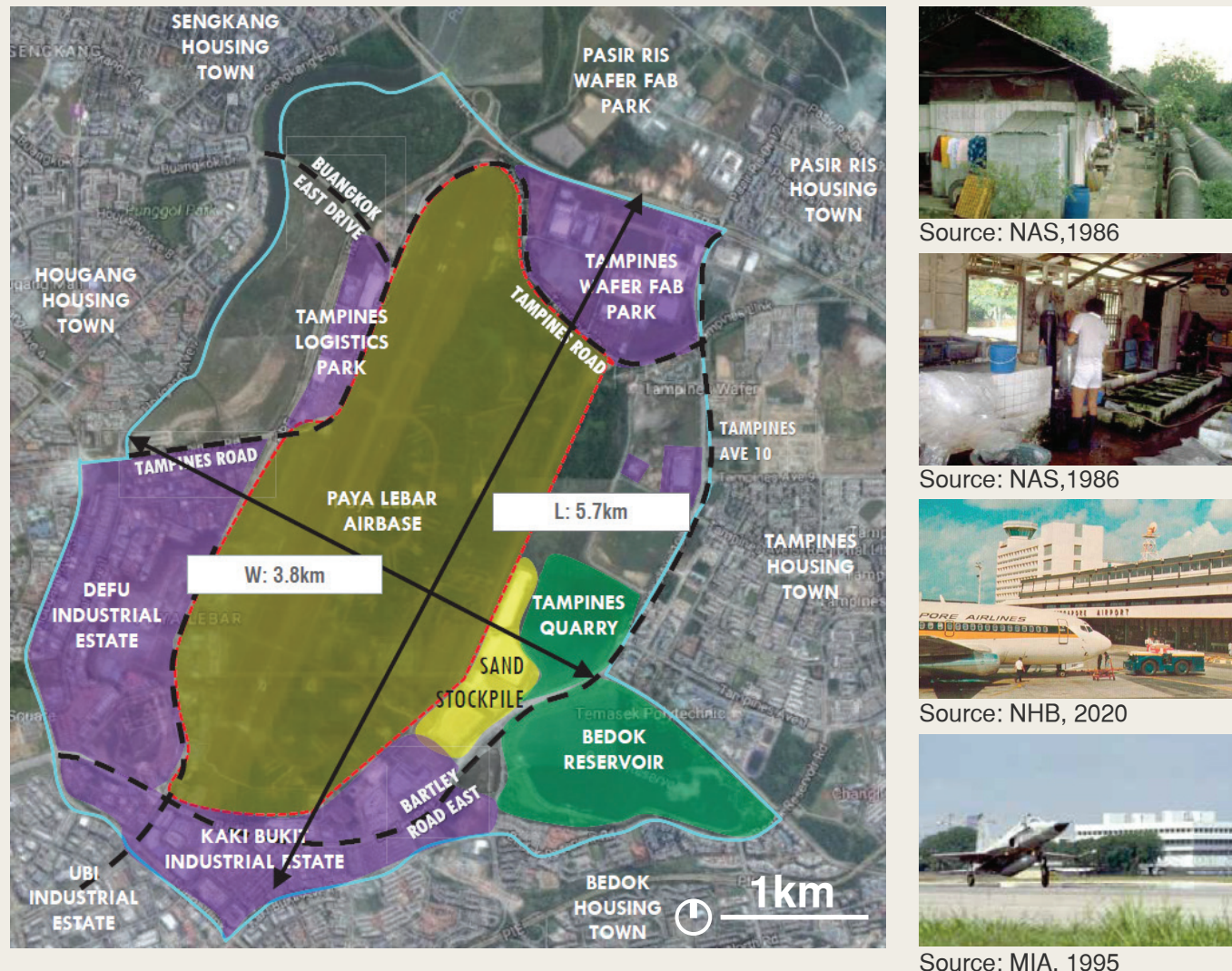
## COMPLETE NEIGHBOURHOODS, NEW TOWN MODEL, SPATIAL PLANNING, SUSTAINABLE URBAN SOLUTIONS, URBAN RESILIENCE

### BACKGROUND

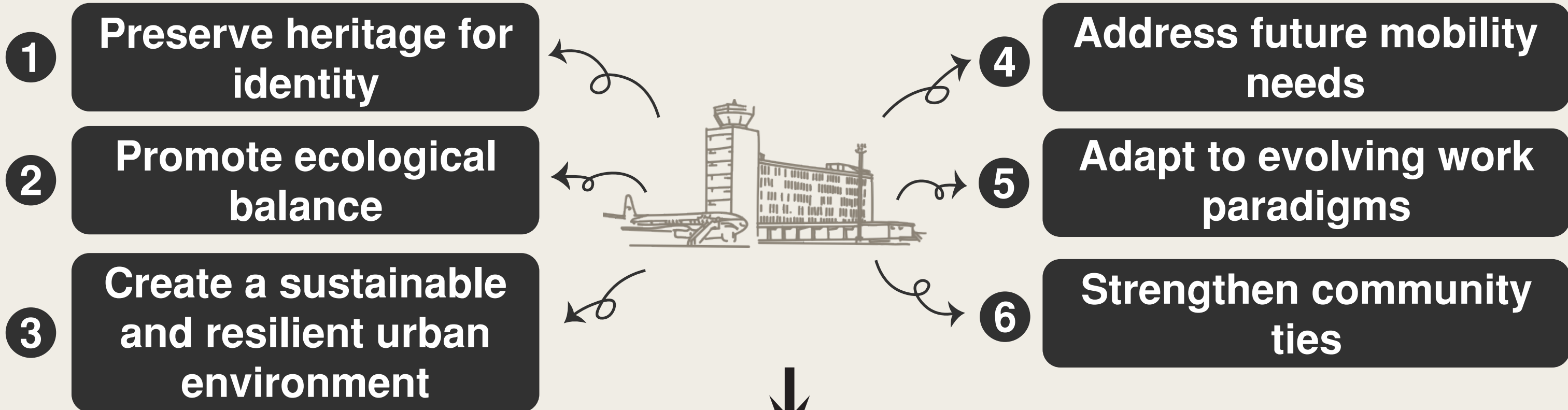
THE SCENARIO	THE SITUATION	THE IMPLICATION
Climate Change	Erratic weather conditions, increasing global temperatures	Preservation and enhancement of ecological systems for urban resilience
Resource Insecurity	Diseases, geopolitical tension & climate disrupting resource supplies	A need for self-sufficiency in food, water, energy and other resources
Ageing Population & Changing Demographics	Shrinking workforce, greater healthcare needs & changing lifestyles from Generation Alpha	Prioritise accessibility, healthy environments, and open innovation in healthcare
Social Frictions	Diversity clash intensifies in a globalised world	Diverse, adaptable living spaces foster community ownership
Technological Disruptions	Challenge to keep up with technological advancement for economic competitiveness	Future-proof built environment for flexible adaptation according to business needs
Economic Uncertainty	Constant innovation and value creation needs to drive competitive edge	A need for an urban function mix that attracts talent, sparks innovation, and creates synergies

### RETHINKING PAYA LEBAR AIRBASE

- Redevelopment time frame: 2035-2050
- New town capacity: 450,000 residents
- Total land area: 1870 ha including surrounding areas
- Began as a large swamp and home to Chinese and Malay kampungs, with agriculture and animal husbandry activities.
- Hosted Singapore's second international airport in 1955 and now a military airbase with several industrial estates in the surroundings.



### OBJECTIVES



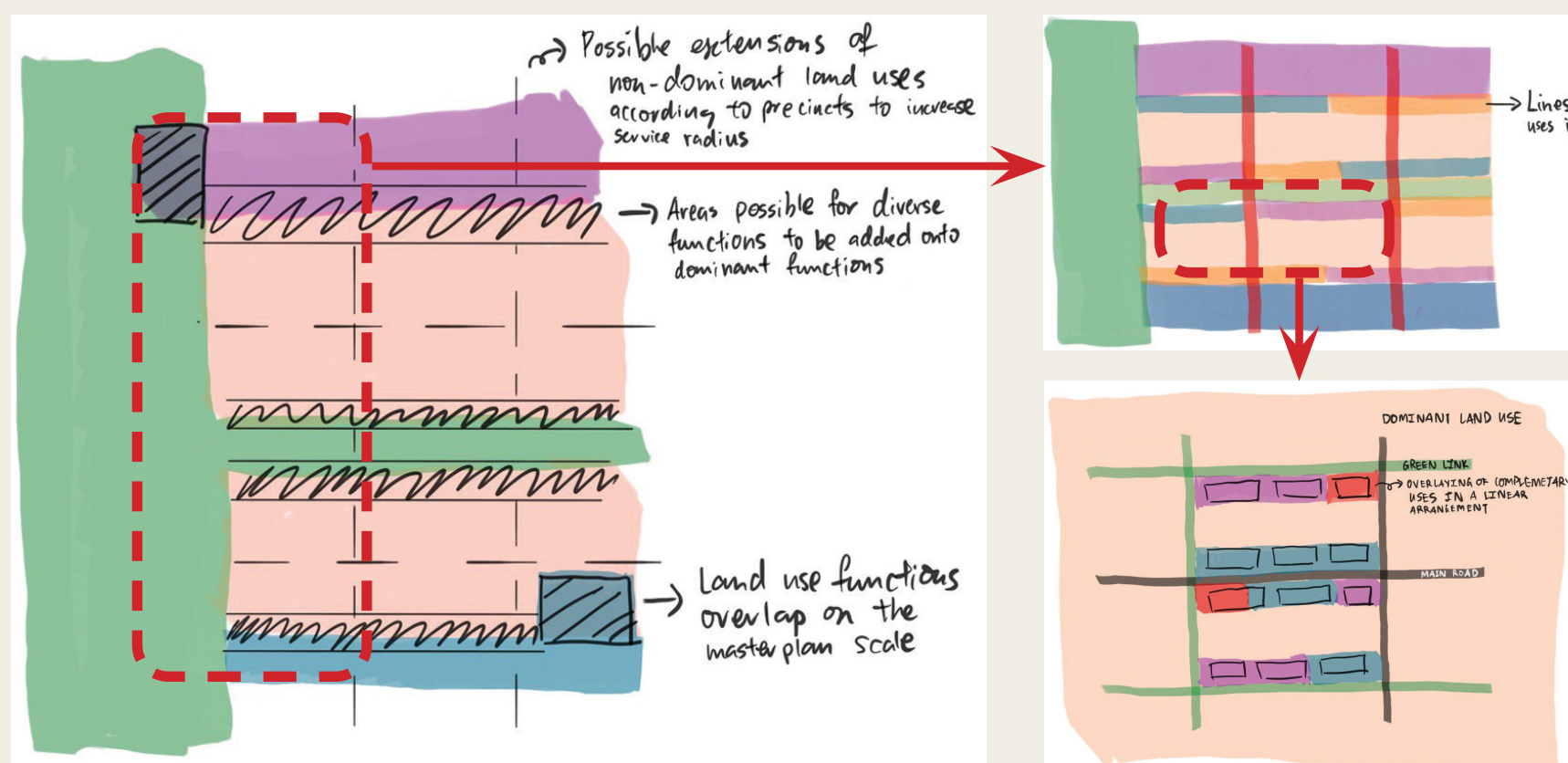
#### THE VISION

Planning A Healthy, Regenerative, and Inclusive Town with Complete Neighbourhoods for Innovation and Resilience

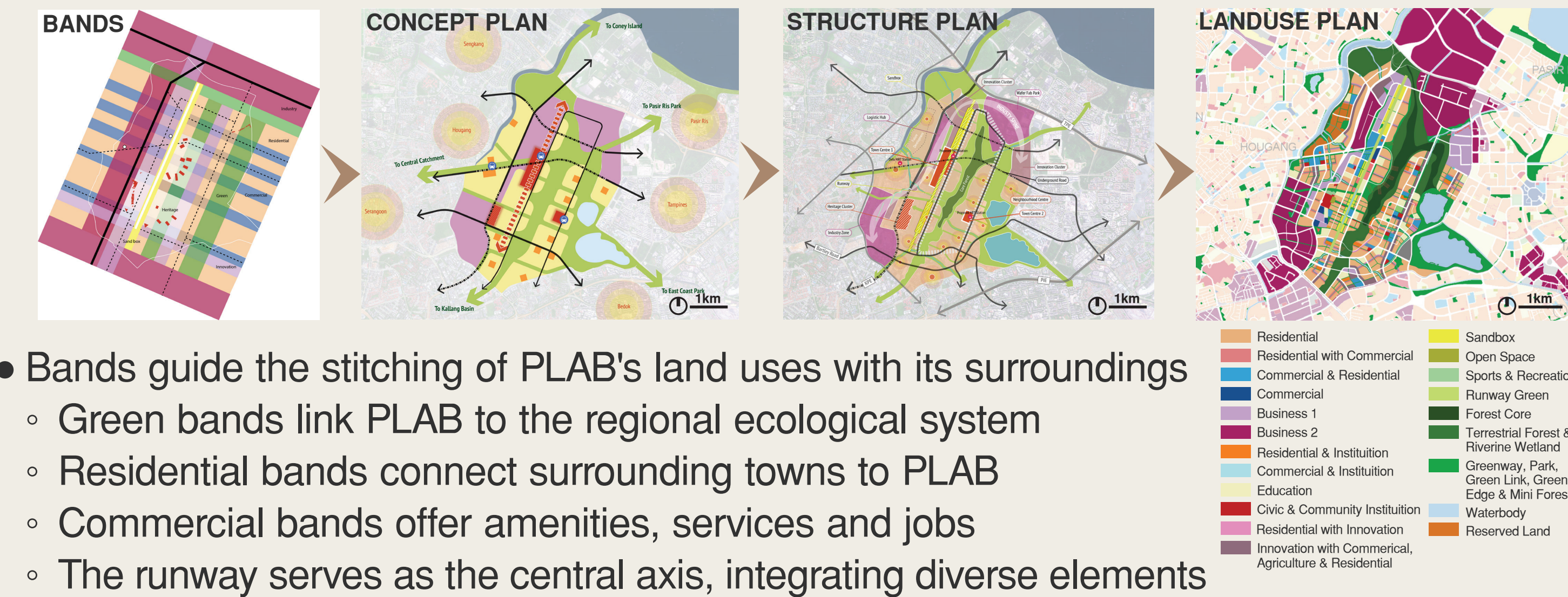
## DESIGN APPROACH & ANALYSIS

### The Band Concept

- Land use distribution in Singapore is typically monofunctional
- Our novel Band Concept interlaces multi-functional land uses in an integrated tartan pattern
- Enhances accessibility to amenities, services and workspaces and improves self-sufficiency of towns
- 2 major groups of land uses in bands:
  - Dominant uses: residential, industrial, commercial, urban greenery and open spaces
  - Complementary uses (interlacing dominant uses): amenities, facilities, urban farming and work-related functions

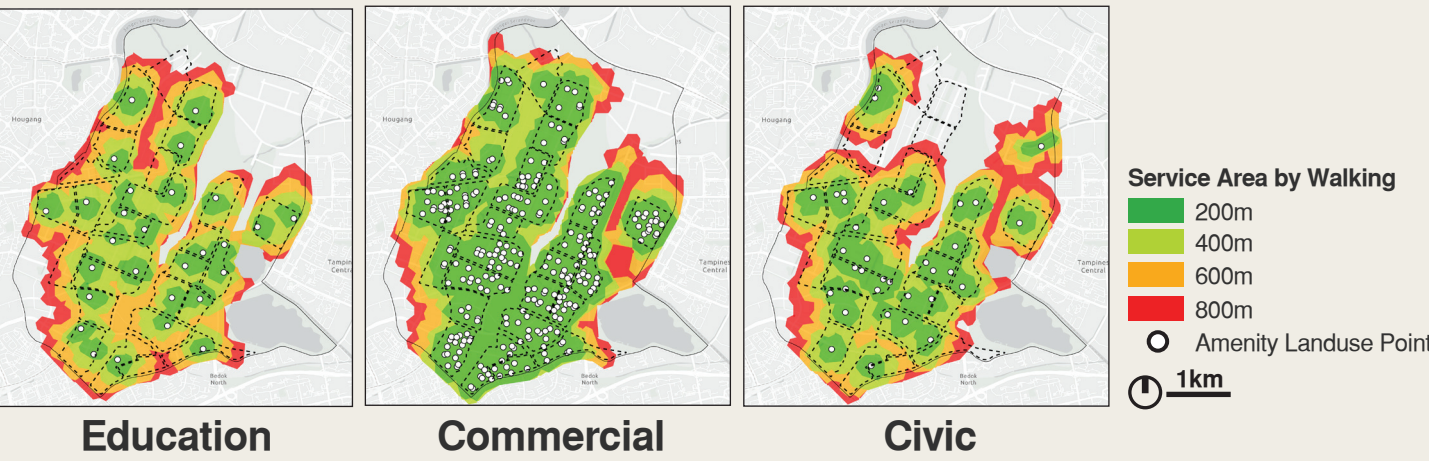


### At the Master Plan Scale



- Bands guide the stitching of PLAB's land uses with its surroundings
  - Green bands link PLAB to the regional ecological system
  - Residential bands connect surrounding towns to PLAB
  - Commercial bands offer amenities, services and jobs
  - The runway serves as the central axis, integrating diverse elements

#### AMENITIES/SERVICES PROVISION



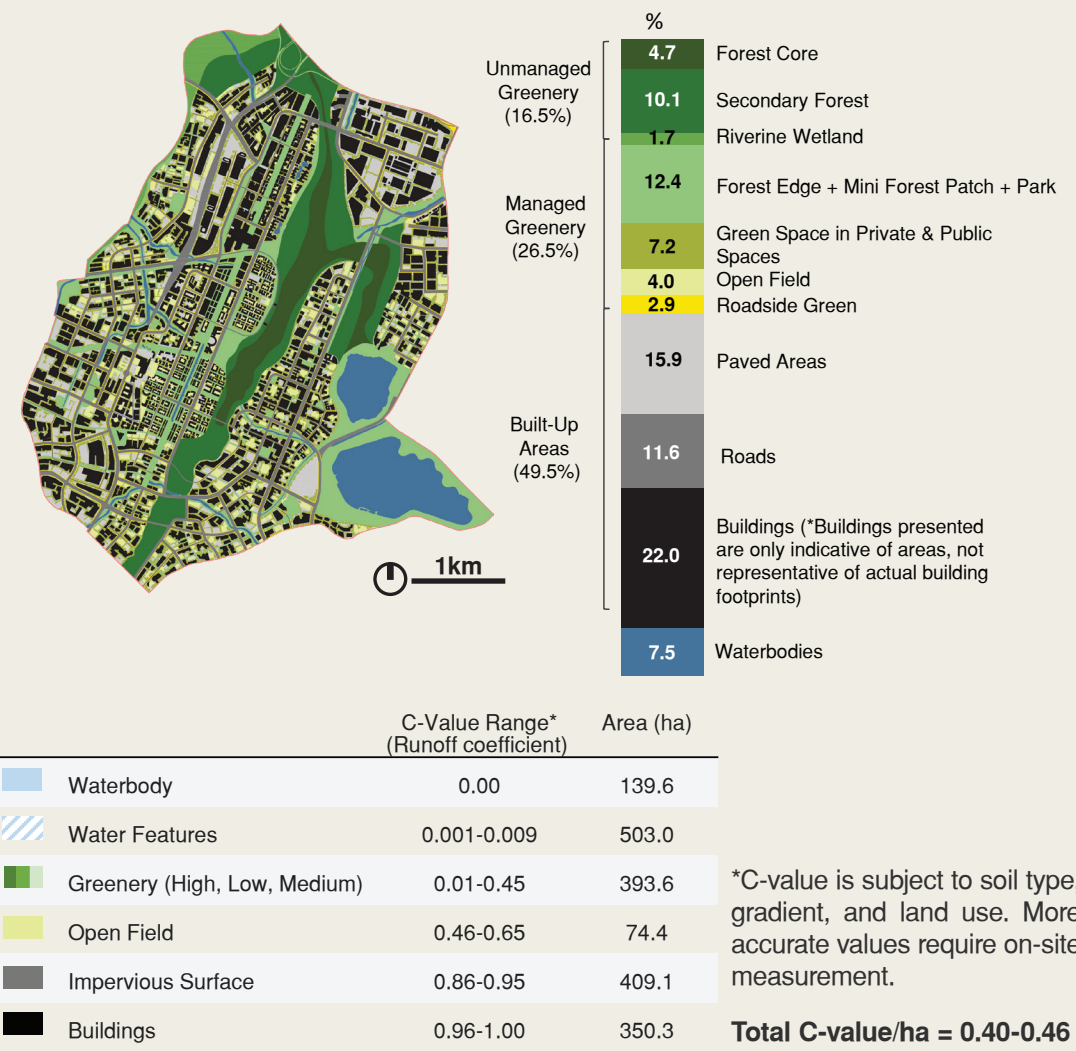
Network analysis conducted on ArcGIS reveals that the proposed plan provides a good distribution of amenities and services, enabling the development of an inclusive town with complete neighbourhoods.

#### ECOSYSTEM SERVICES

	Before Development	After Development	Change (%)
Air Temperature Model	1.67	1.62	-3.08%
PM10 Model	5.19	5.2	0.20%
Soil Erosion Model	73.7	61.7	-16.33%
Runoff Model	45.7	37.2	-18.52%

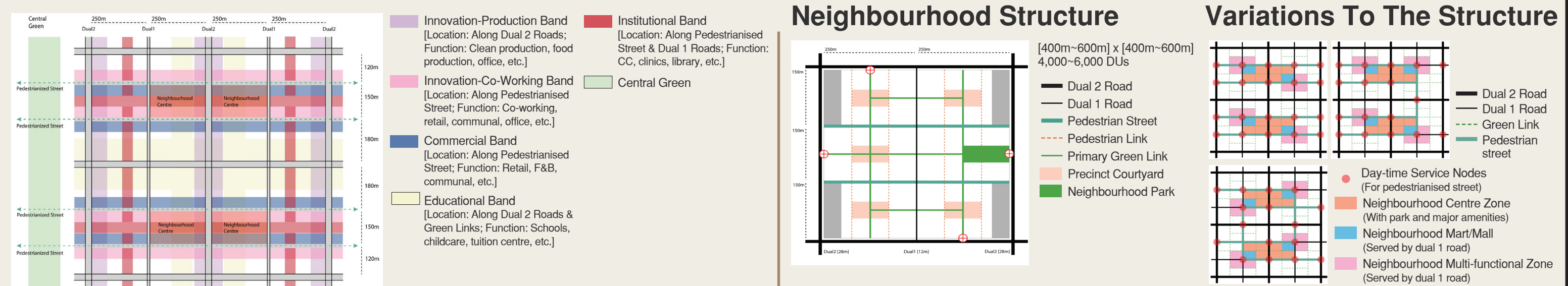
Applying methods used in Tan et al. (2021)<sup>1</sup>, PLAB's nature-based strategies reduce the negative impacts of increased urban development. Compared to Tengah New Town, PLAB demonstrates a lower loss of ecosystem services.

#### HABITAT DISTRIBUTION & PERMEABILITY



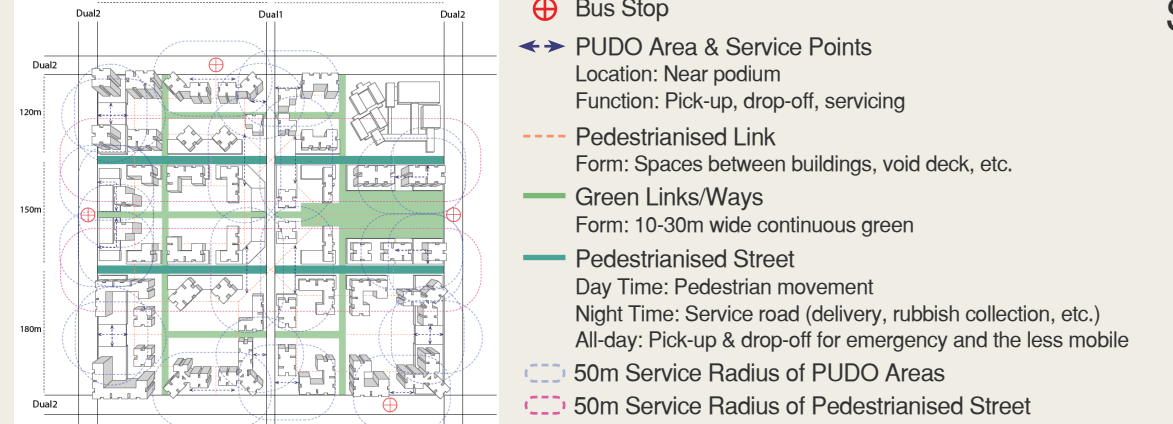
Provides a green and safe living environment with greenery occupying ~43% of the site and sustainable water sensitive urban designs that control runoff and treat stormwater (meets PUB's maximum C-value of 0.55).

### At the Neighbourhood/Precinct Scale

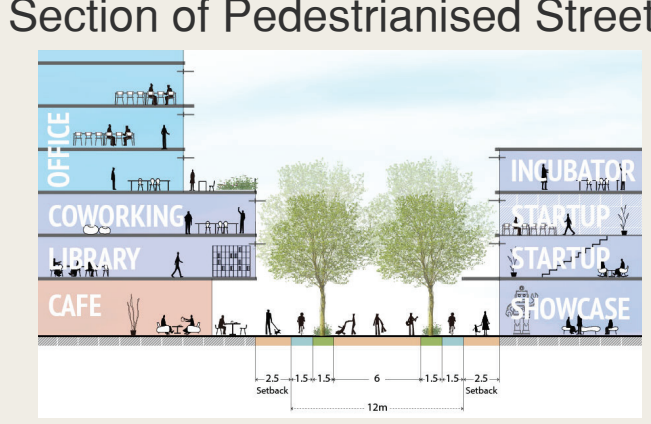


Includes finer-grain infrastructure (roads, streets and green links) to interlace different land uses that encourage active mobility and engaging walking experiences. A typical neighbourhood is served by a pedestrian system consisting of green links, pedestrian streets and through-block links.

#### Mobility Within Precincts



#### Section of Pedestrianised Street



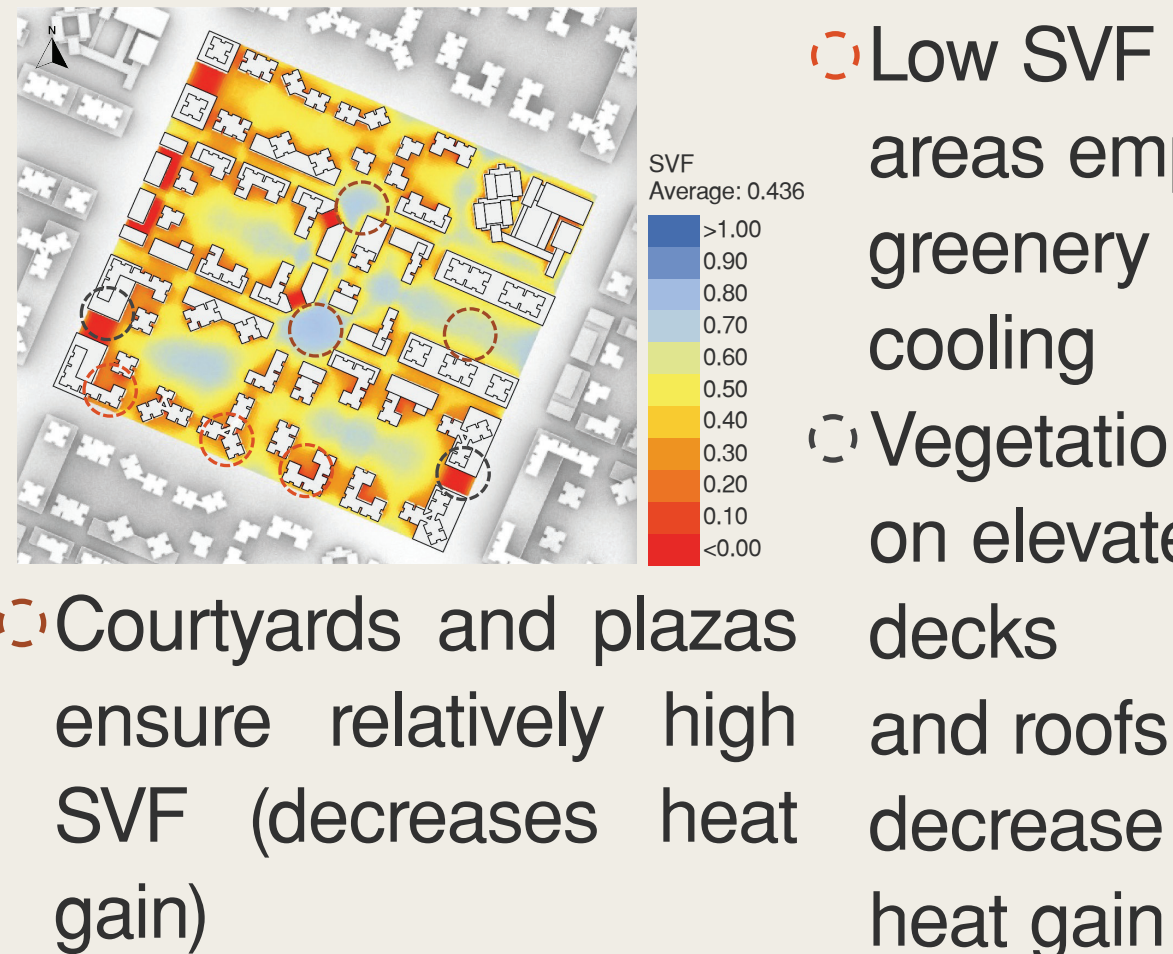
Precincts are pedestrian- and cyclist-friendly. Each precinct has at least 3 pick-up/drop-off points within a 50m service radius for the less mobile and emergency access.

#### Public Space System

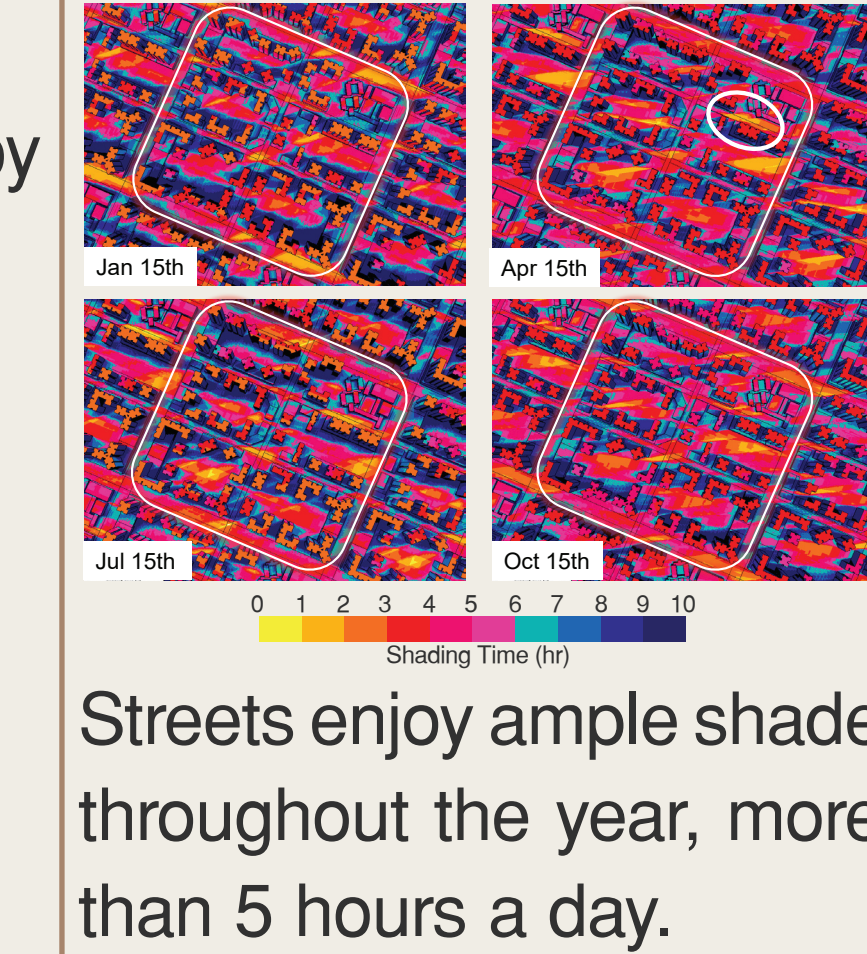


Precinct public spaces feature courtyards with parks, community farms and flexible zones that empower communities and imbue a sense of ownership.

#### URBAN HEAT ISLAND (UHI) EFFECT



#### SHADE ANALYSIS



#### NATURAL VENTILATION

