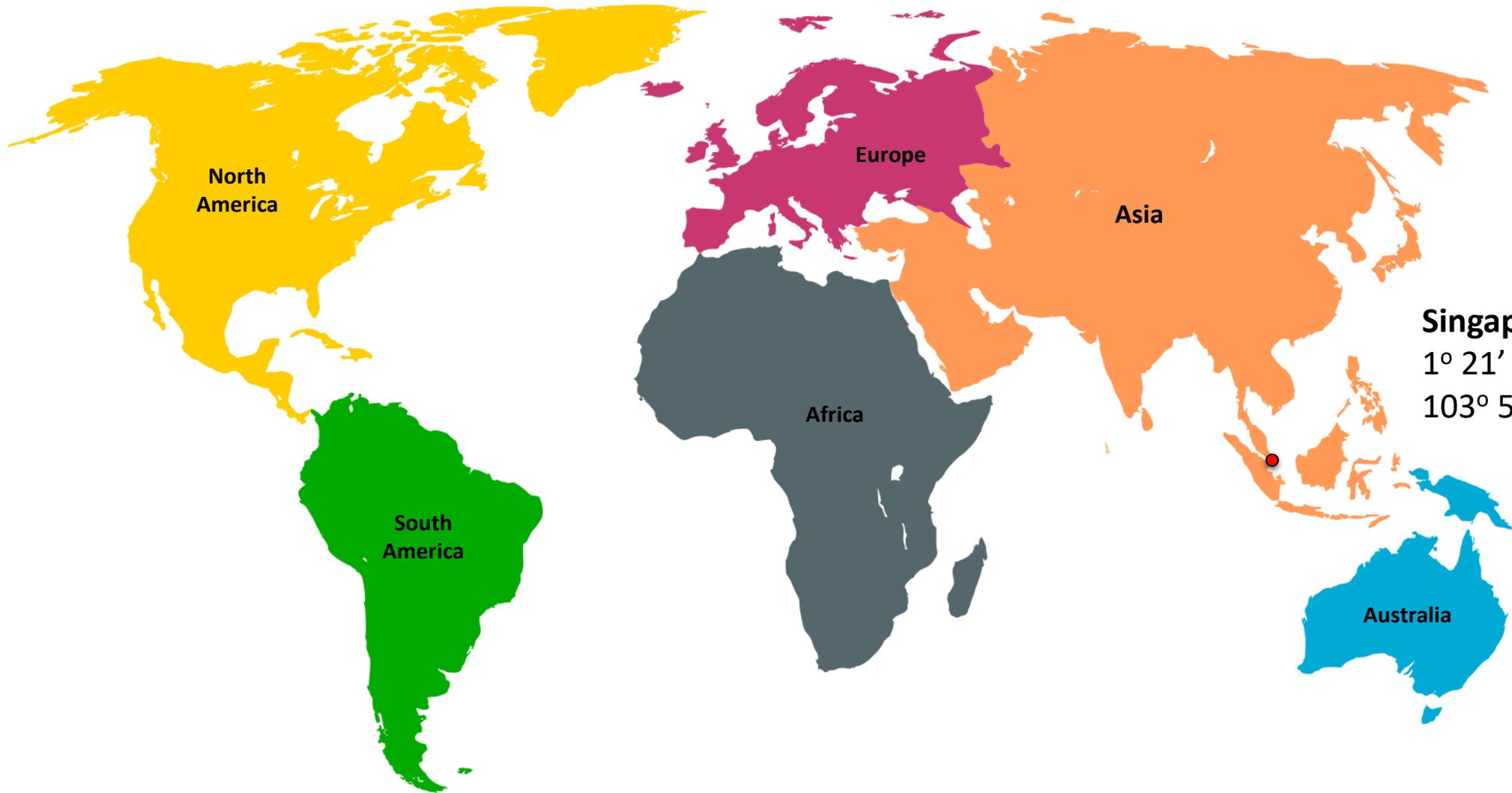




## Regional Development of Land Administration and Cadastre System - Singapore

LIMITED LAND • UNLIMITED SPACE

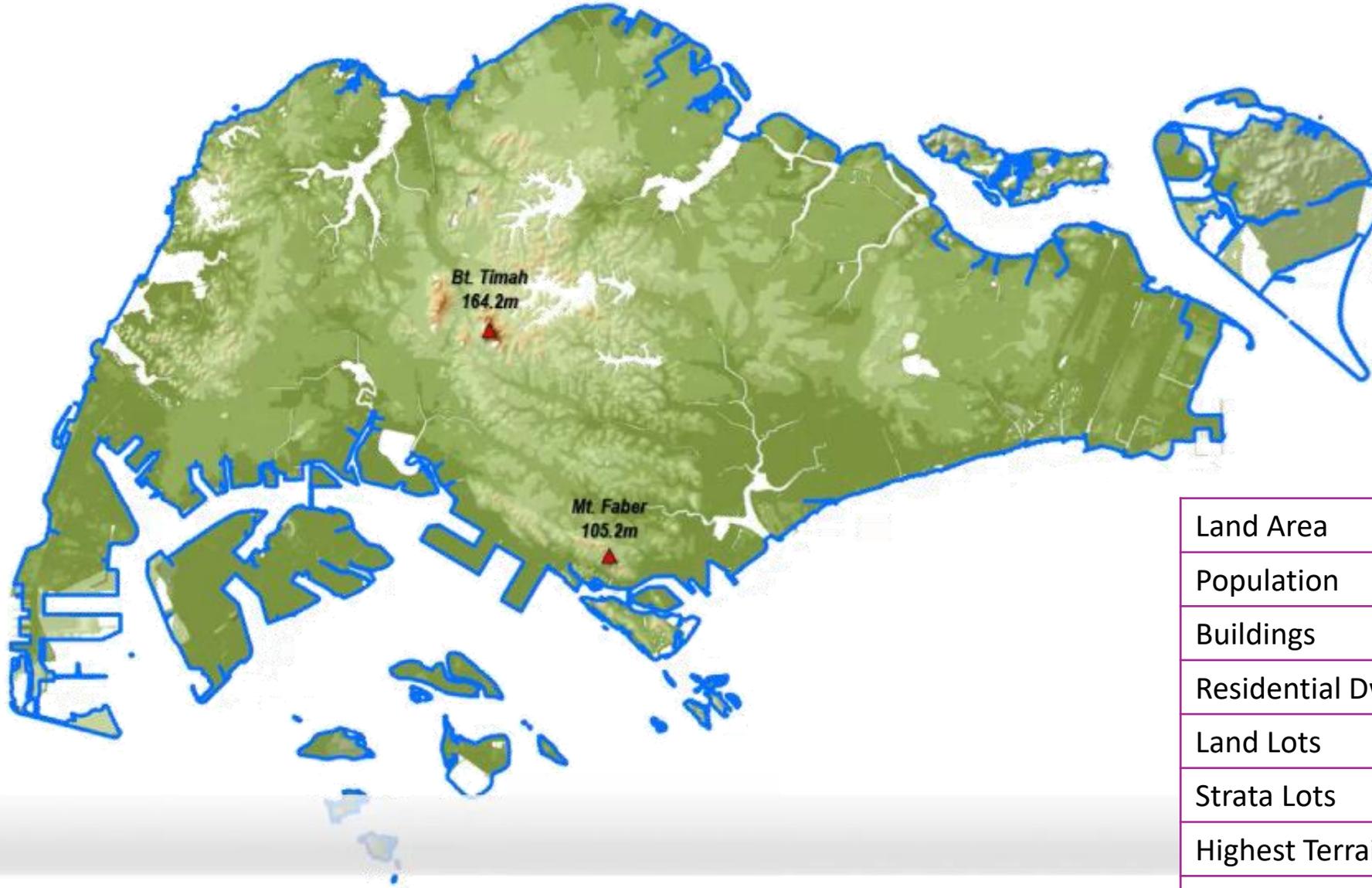
# Singapore



**Singapore**  
1° 21' N  
103° 51' E



# Some Information about Singapore



Land Area	735.4 sqkm
Population	6.04 million
Buildings	170,000
Residential Dwellings	1,563,000
Land Lots	146,542
Strata Lots	1,726,338
Highest Terrain	164.2m
Trees	7 million

# Digitalisation of Cadastre in Singapore

Before 2004



2004

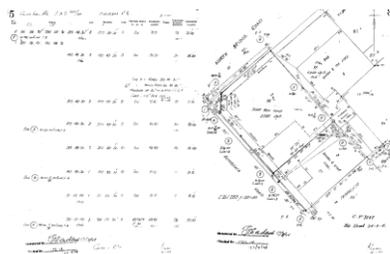


2018



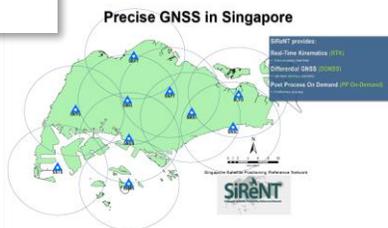
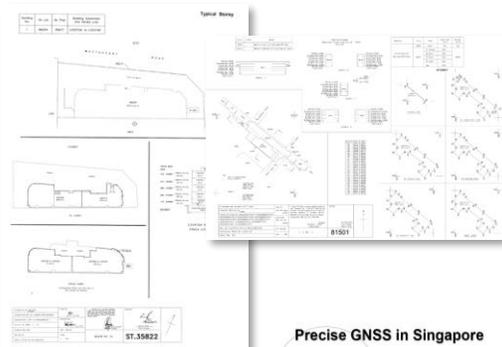
AI-enabled Cadastre

Paper Plan



Paper

- Coordinated Cadastre with SVY21 (2004)
- Image Plan (2005)



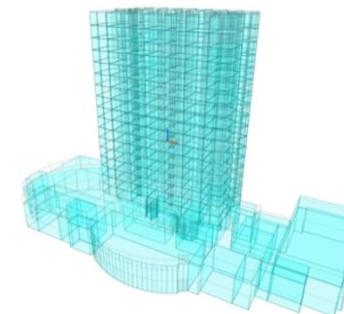
Coordinated & Electronic

Digital Cadastre with SG LandXML



Partially-Digital

3D Cadastre in BIM (IFC-SG)



Full Digital



# National 3D Mapping Programme

Maps



Topographical Map



Digital Terrain Map

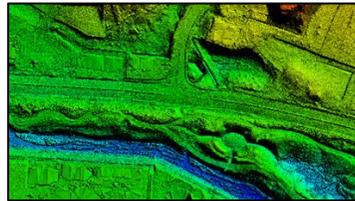


3D Map

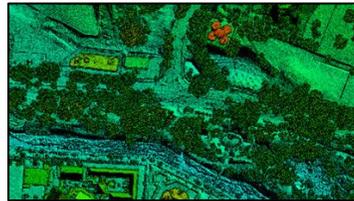


High-resolution Map

Model



Digital Terrain Model (DTM)



Digital Surface Model (DSM)



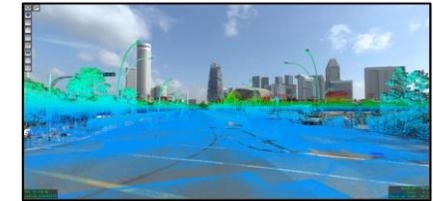
True Orthophoto



Building Model



Mesh Model



3D Mapping Cloud

Technology



Aerial Mapping



Mobile Mapping

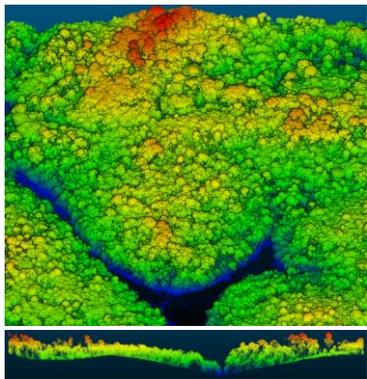


# National 3D Mapping Programme

## Sustainability



Solar Potential Map

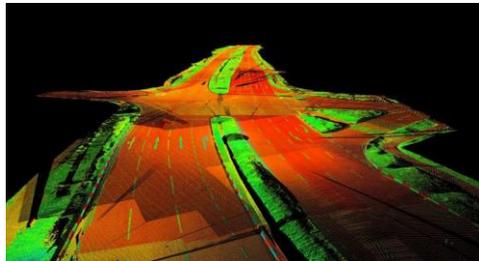


Carbon Estimation

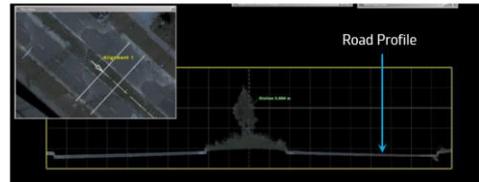
## Planning & Infra Development



Shadow Analysis

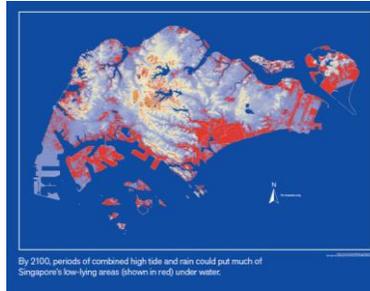


Road Planning & Design



Road Profile

## National Security & Safety



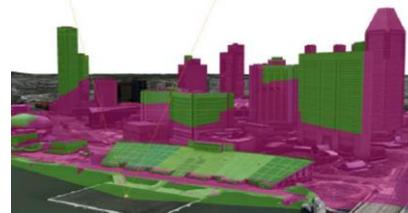
By 2100, periods of combined high tide and rain could put much of Singapore's low-lying areas (shown in red) under water.

Flood Risk Map

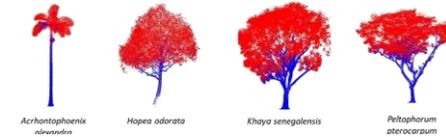
Electronic Aerodrome Terrain & Obstacle Chart for Airports



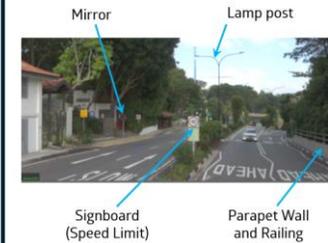
Emergency Response Preparations



## Operation & Digital Transformation

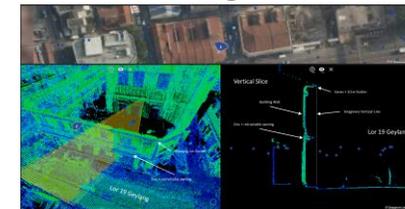


Tree Management

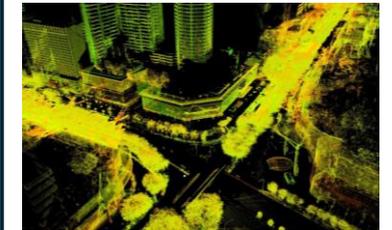


Asset Mapping

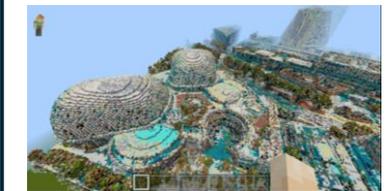
## Investigation



## Smart Nation & Innovation



Autonomous Mobility



Engagement

# Underground Mapping

## Why?

- Land is scarce in Singapore
- Developments increasingly going underground
- Competing requirements, need regulation

## Current State



Underground utilities data often inaccurate, incomplete, not up to date



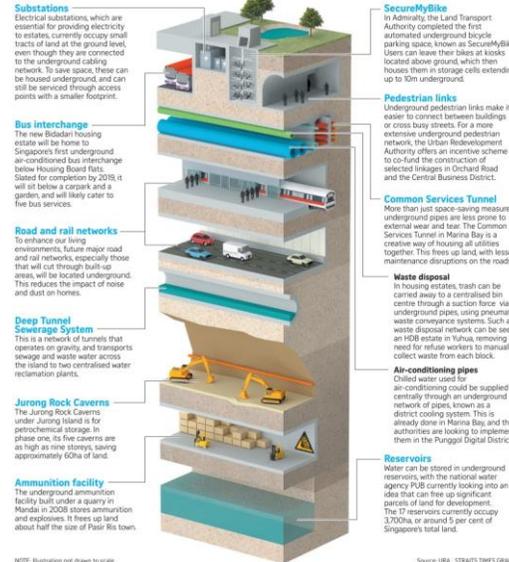
Long and costly planning, design, and development of infrastructure



Potential disruption of services

### Finding space for the future

To use our space more efficiently, the Government is looking to launch its Underground Master Plan in 2019. Here are some subterranean ideas that are being explored.



t n p NEWS SPORTS ENTERTAINMENT LIFESTYLE RACING READ E-PAPER

SINGAPORE

## Contractor accidentally cuts cables causing fibre broadband outage for 10,000

This article is more than 12 months old

David Sun  
Nov 15, 2018 06:00 am

A contractor accidentally cut several fibre cables in Tampines yesterday, causing a fibre broadband outage in the east of Singapore.

The unidentified contractor, who was performing construction works along Tampines Avenue 9, cut through the cables at about 2.50pm.

This affected an estimated 10,000 end-users in Pasir Ris, Tampines, Changi and Loyang.



## Civil engineering contractor fined for damaging water main; causing loss of 1.8 million litres of water



Johannes Tjendro

01 Jun 2021 11:40AM  
(Updated: 01 Jun 2021 11:40AM)



# Underground Mapping

What it actually is 🤯 🙄



What we hope it is 😊 👍



Reliable information on underground utilities will lead to better decision making and save resources

# Summary



## Land Administration

- Optimises land use and improves planning outcomes
- Promotes sustainable land management, benefiting environment and community
- Minimises risks, enhancing economic development and efficient land markets



Undi Pilihan Raya Umum Ke-14, 13 Mei 2013



THANK YOU

SLA LIMITED LAND • UNLIMITED SPACE