AN INTEGRATED APPROACH TO AFFORDABLE HOUSING

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City/region	House price-to-income ratio
Kuala Lumpur	**6.88**
Penang	**6.32**
Malaysia	**6.17**
Selangor	**5.10**
Johor	**4.51**

House prices are severely unaffordable. It is more than six times the median household incomes nationally.

WHAT THE B40 & M40 CAN AFFORD VS ACTUAL MEDIAN PRICE IN THE MARKET

Median Multiple method is applied where a ratio of less than 3 is considered affordable. This is due to the assumption that the House Cost Burden should only be at 30% of household income as to preserve an acceptable quality of life

Source: The Edge Markets, Bank Negara Malaysia, JPPH, NAPIC (2017)

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Mismatch between supply and demand

- Supply has fallen short of growing demand from households since 2012

WHY?

Launches are predominantly unaffordable

- Almost 70% of launches in 2016/17 are above RM250,000

House price growing faster than household income

- Household income's growth is slow and made worse by high indebtedness

Source: Bank Negara Malaysia Quarterly Bulletin (2017)

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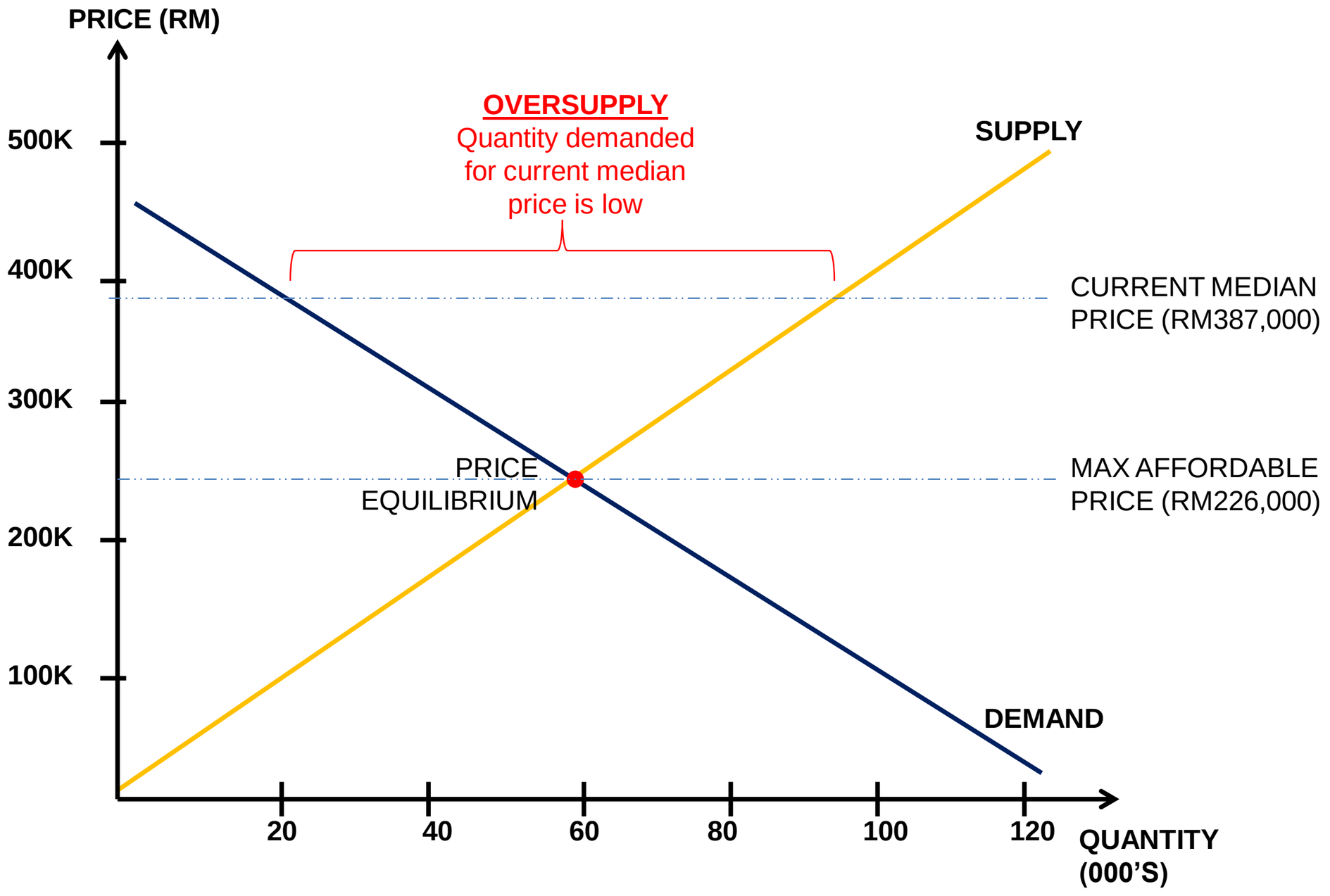
A THEORETICAL MODEL OF AFFORDABLE HOUSE PRICE:

Status quo



References: Bank Negara Malaysia Quarterly Bulletin (2017), KRI Making Housing Affordable (2015), Urban Economics (2009), Equilibrium Price Modelling of an Affordable Housing in Malaysia UTHM (2017)

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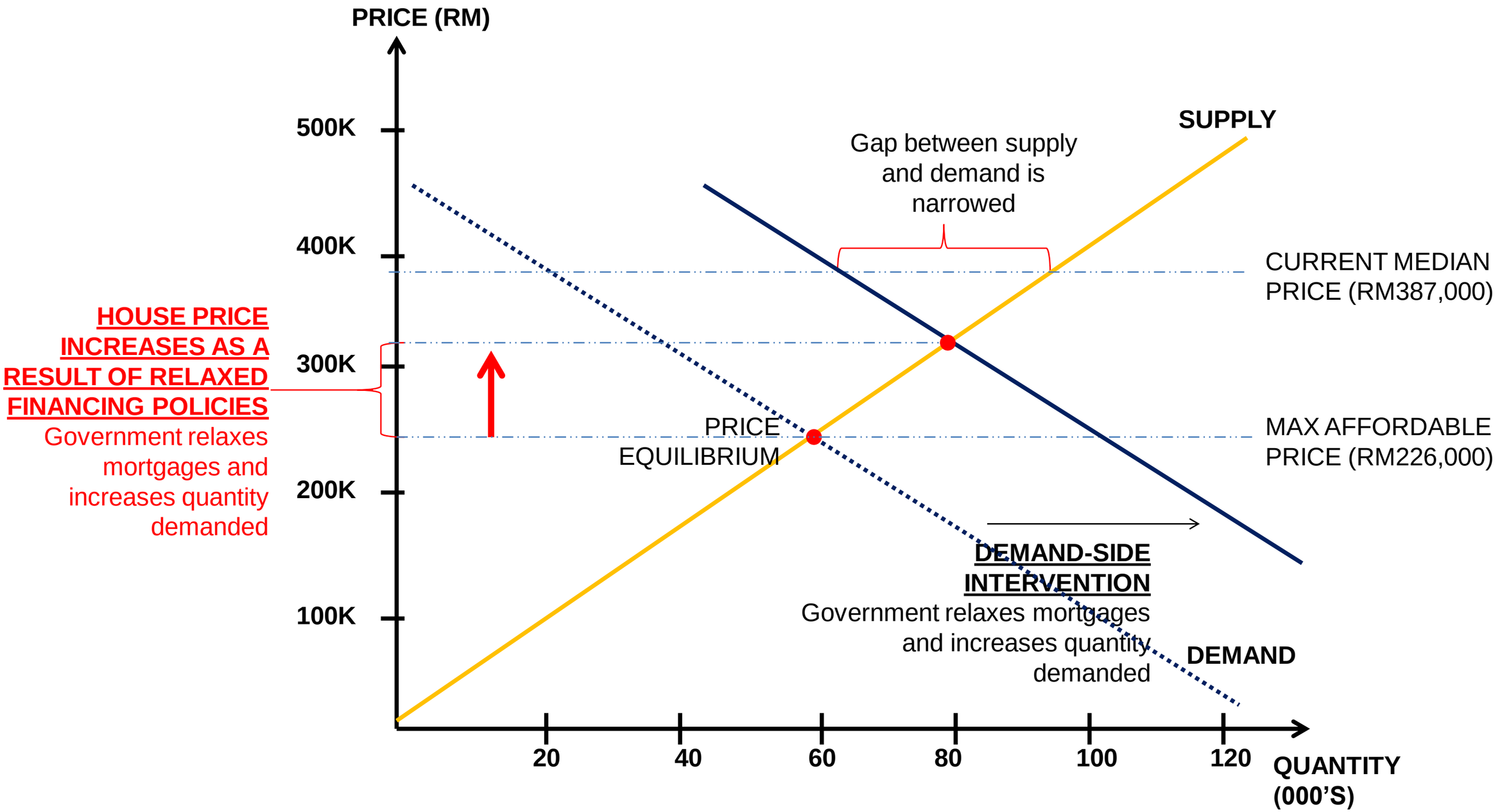
EFFECT OF DEMAND SIDE INTERVENTION ON AFFORDABLE HOUSE PRICE



References: Bank Negara Malaysia Quarterly Bulletin (2017), KRI Making Housing Affordable (2015), Urban Economics (2009), Equilibrium Price Modelling of an Affordable Housing in Malaysia UTHM (2017)

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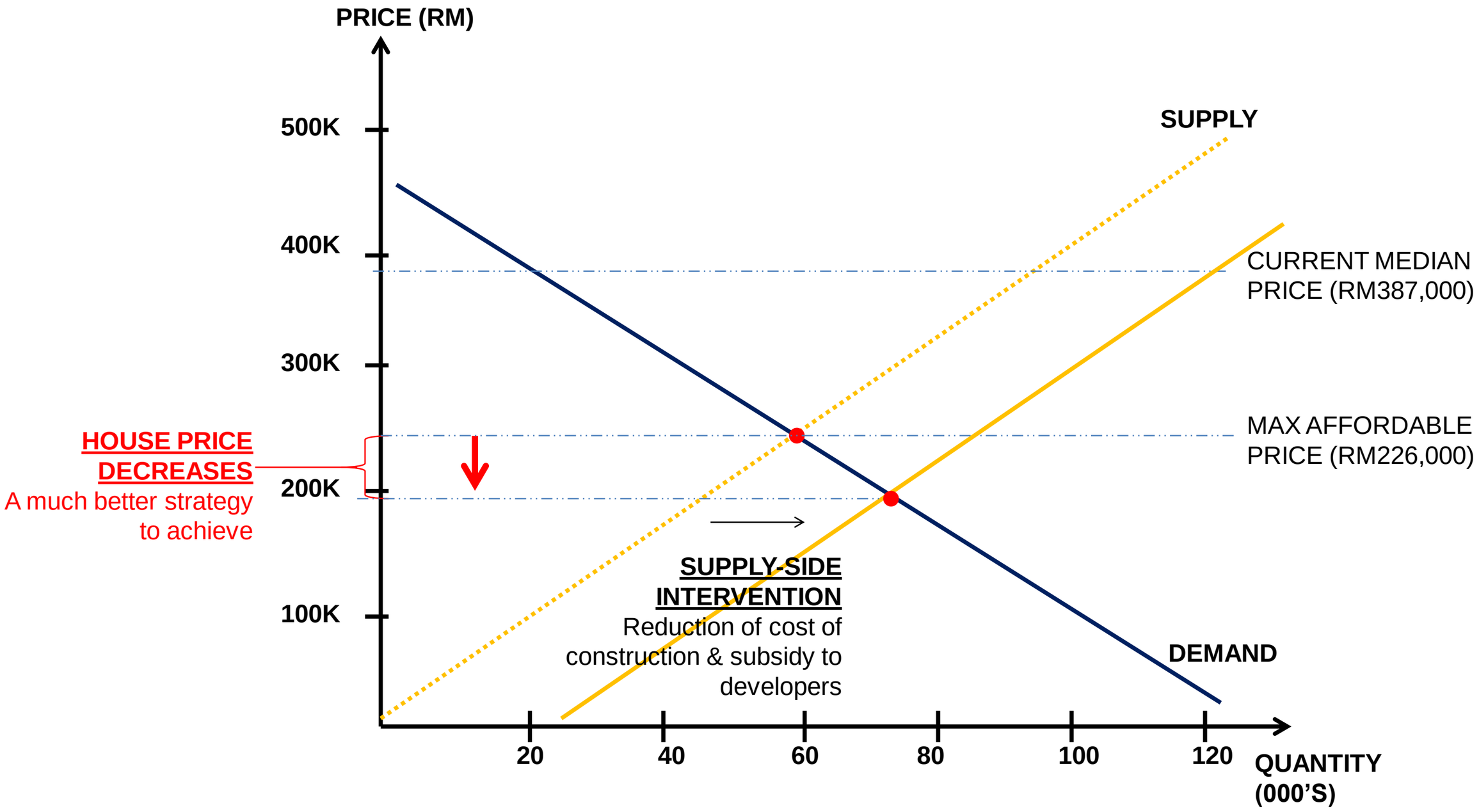
THE NEED FOR SUPPLY SIDE INTERVENTION



References: Bank Negara Malaysia Quarterly Bulletin (2017), KRI Making Housing Affordable (2015), Urban Economics (2009), Equilibrium Price Modelling of an Affordable Housing in Malaysia UTHM (2017)

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The National Housing Policy (2018-2025)

- Focus 1: Ensuring Quality housing for all

- Focus 2: Improving accessibility and affordability to home ownership

- Focus 3: Ensuring a cohesive neighbourhood of quality

- Focus 4: Improving coordination between housing development and transportation for a quality life

- Focus 5: Strengthening institutional capacity to deliver NHP (2018-2025)

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The National Housing Policy is still private sector-led and remains focused on demand side

• Funding programmes are directed to “eligible” buyers

• Private sector is expected to lead the housing construction with public sector facilitation/direction

• Expanding rental economy as a permanent part of the solution set

• Looks at the spatial structure of the metropolis but at a very general way

•One of the Five Focus is to “improve coordination between development and transportation”

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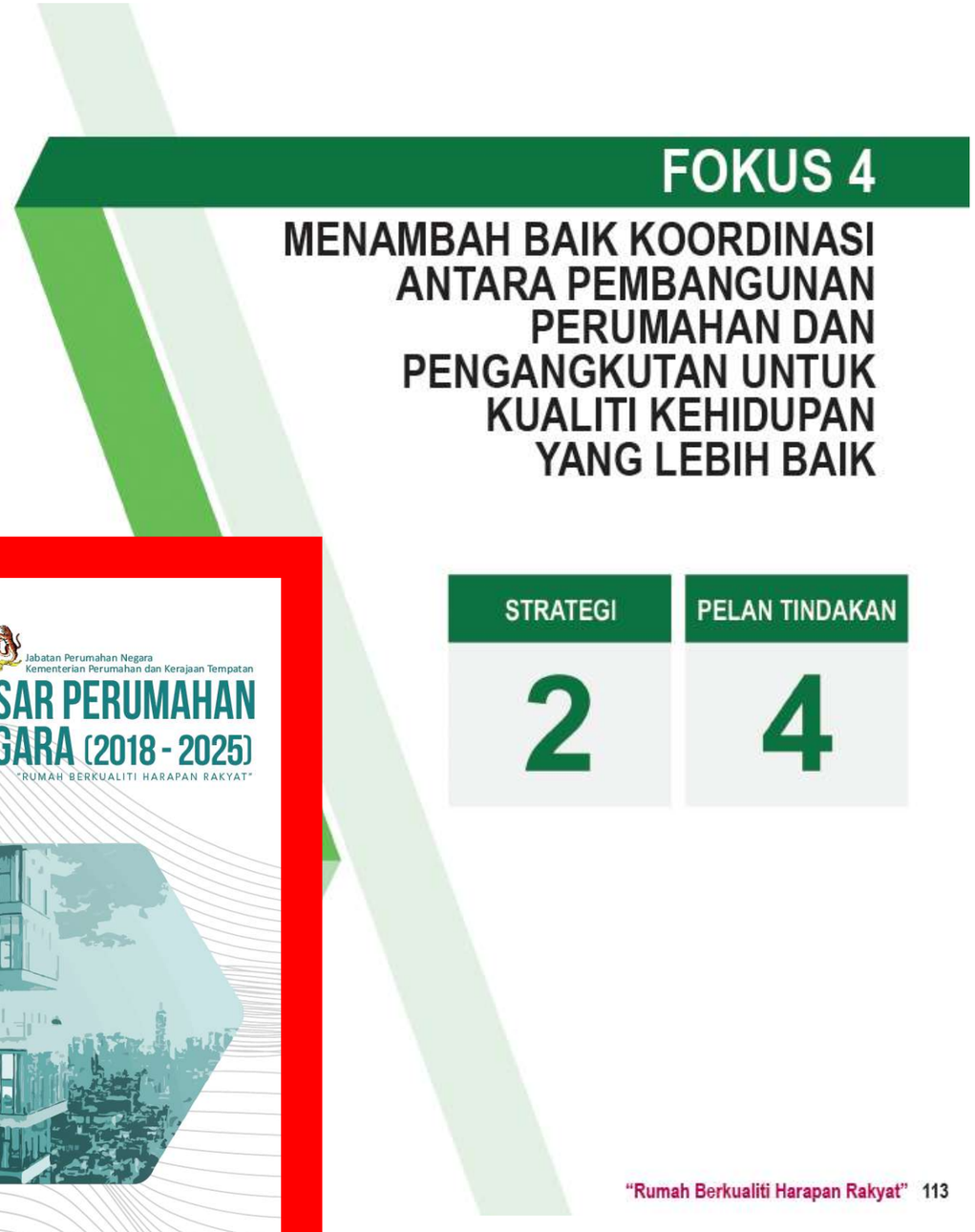
Focus 4: Improving the coordination between housing and transportation

- STRATEGY 4.1:
  - To streamline planning process, local and regional planning to express the clarity of the vision as well as increasing community participation

- STRATEGY 4.2:
  - To strengthen the capacity of the local authorities to supervise and integrate housing into transportation – at analysis, planning and implementation stage



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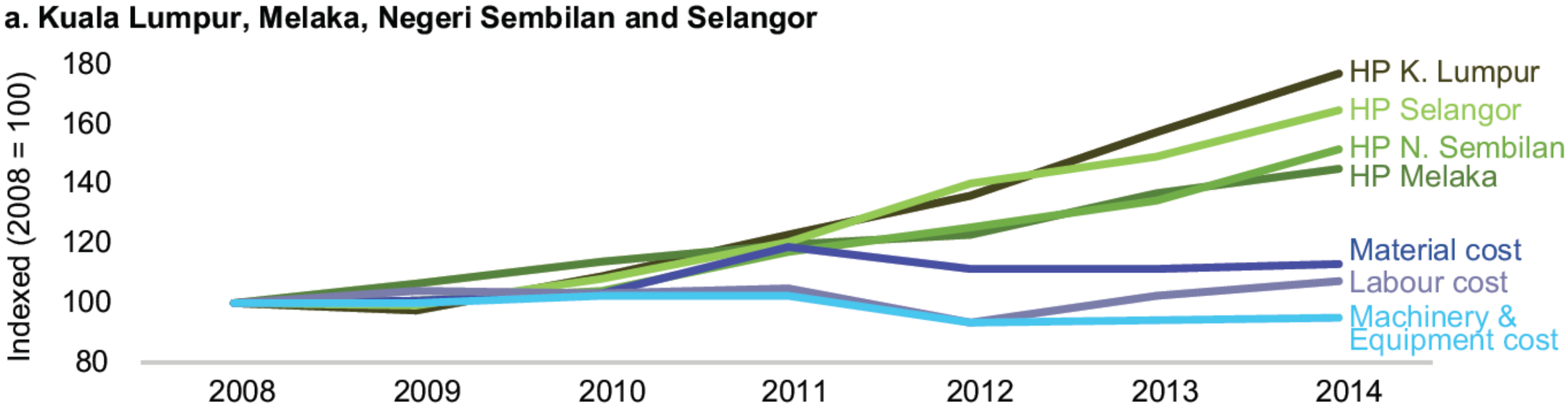
MICRO-LEVEL: HOME

LAND & CONSTRUCTION COSTS

Cost of material and labour has remained stable for almost one decade. What gives?

- Materials
- Labour
- Development fees (taxes etc.)
- Machinery and equipment
- Procurement method
- Cost to acquire land

Figure 22: House prices and construction costs according to states, 2008-2014



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Supply-side intervention should not be forgotten in the efforts to improve home ownership

DEMAND SIDE
(House buyers)

- demographic factors (population growth, age groups)
- the levels and distribution of income
- the availability and cost of financing
- government policy, which includes taxation and property rights
- personal preferences (car culture, aesthetics, location)

SUPPLY SIDE
(HOUSE BUILDERS)

- **Land costs**
- **Procurement system**
- **government policy, which includes land use and planning policy**
- **the availability and cost of financing**
- **construction costs (materials, machinery and equipment, and labour)**
- **compliance costs (development fees, utilities surcharge)**

References: Bank Negara Malaysia Quarterly Bulletin (2017), KRI Making Housing Affordable (2015), Urban Economics (2009)

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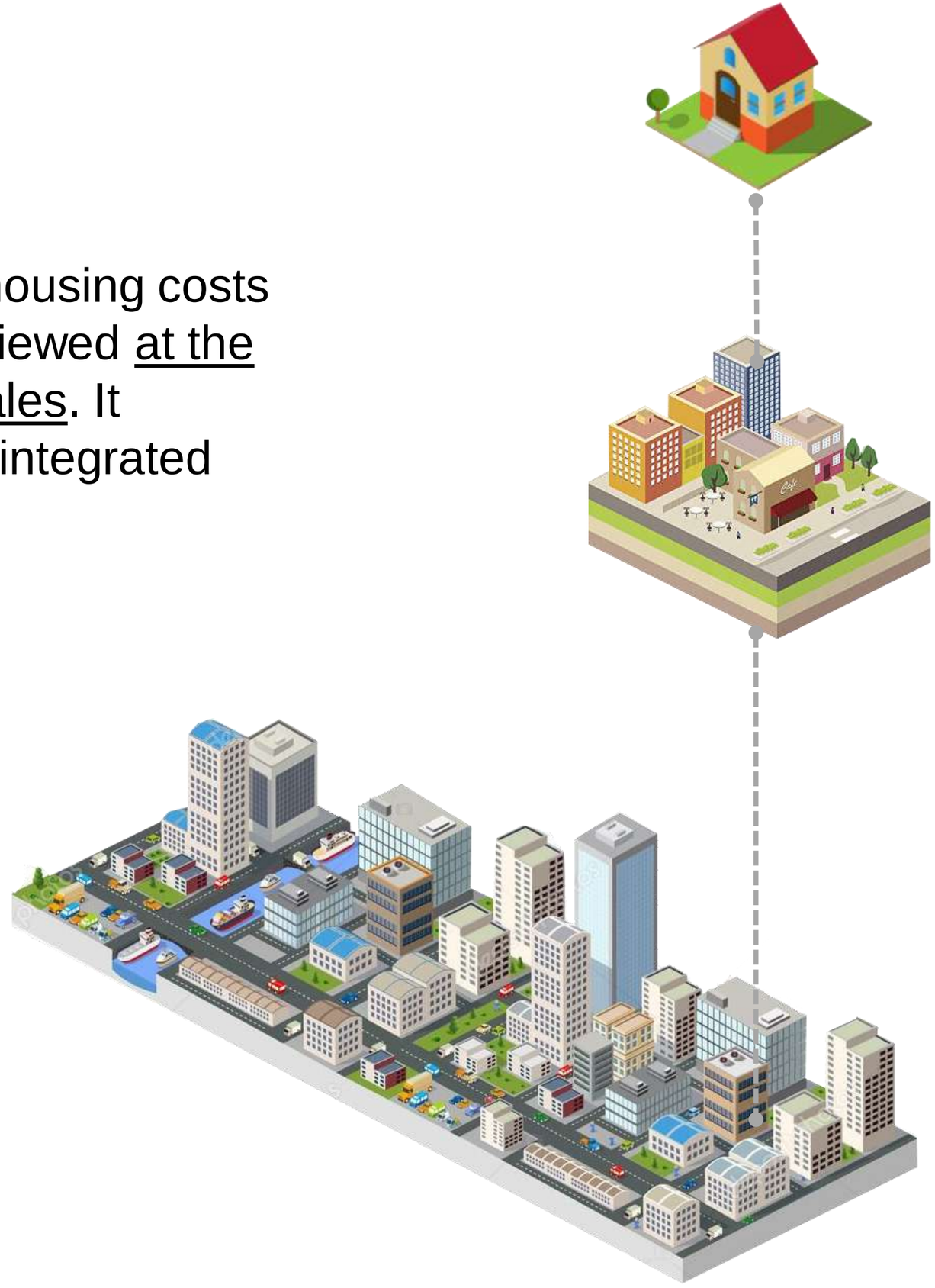
Affordable housing costs must be reviewed <u>at the different scales</u>. It requires an integrated solution.



MICRO

HOUSE

- Size
- Materials
- Construction method
- Procurement method

MESO

NEIGHBOURHOOD

- Common facilities
- Building services

MACRO

URBAN

- Car park provisions
- Transit system
- Job locations
- Compliance fees

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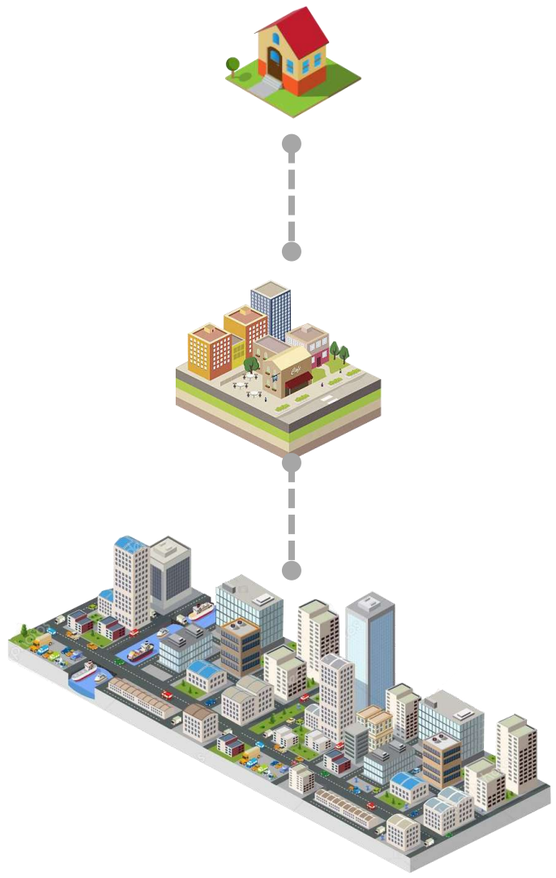
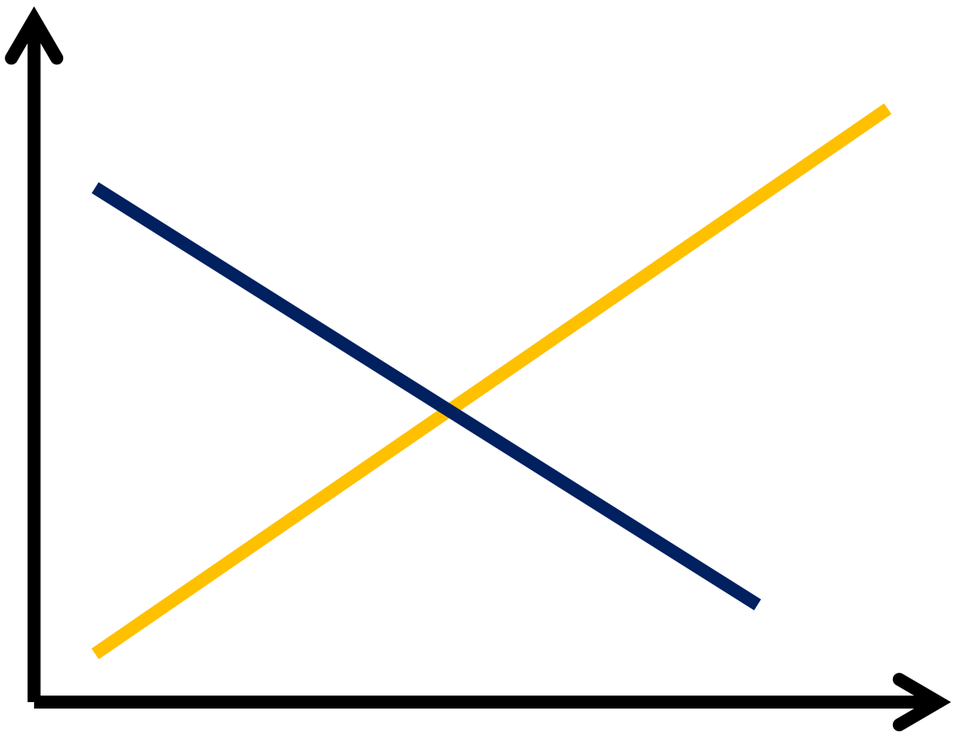


Architectural
thought

+



Economic
thought

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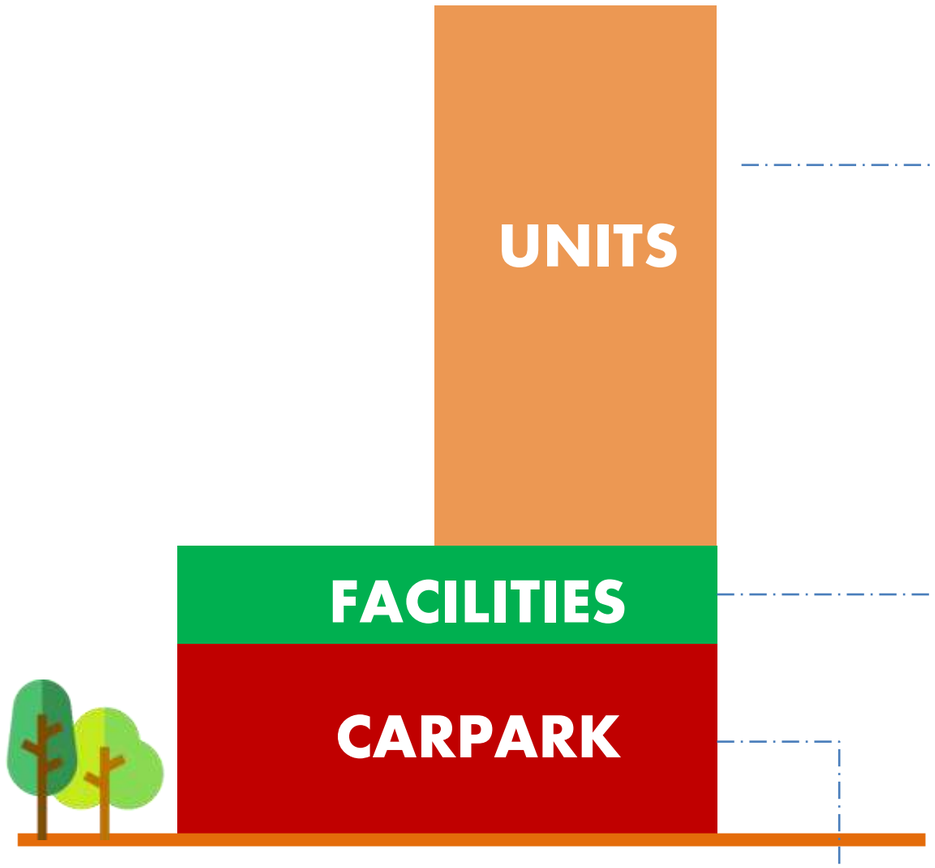

MICRO
HOUSE
- 55%
- RM92 mil

MESO
NEIGHBOURHOOD
- 6%
- RM10 mil

MACRO
URBAN
- 39%
- RM65 mil

Note: Costing based on JUBM Arcadis Construction Cost Handbook (2017) for a development of 936 units of 900 sqft, at 85% efficiency and based on current requirements by the authorities. It excludes land price as to avoid it being skewed by location factors.

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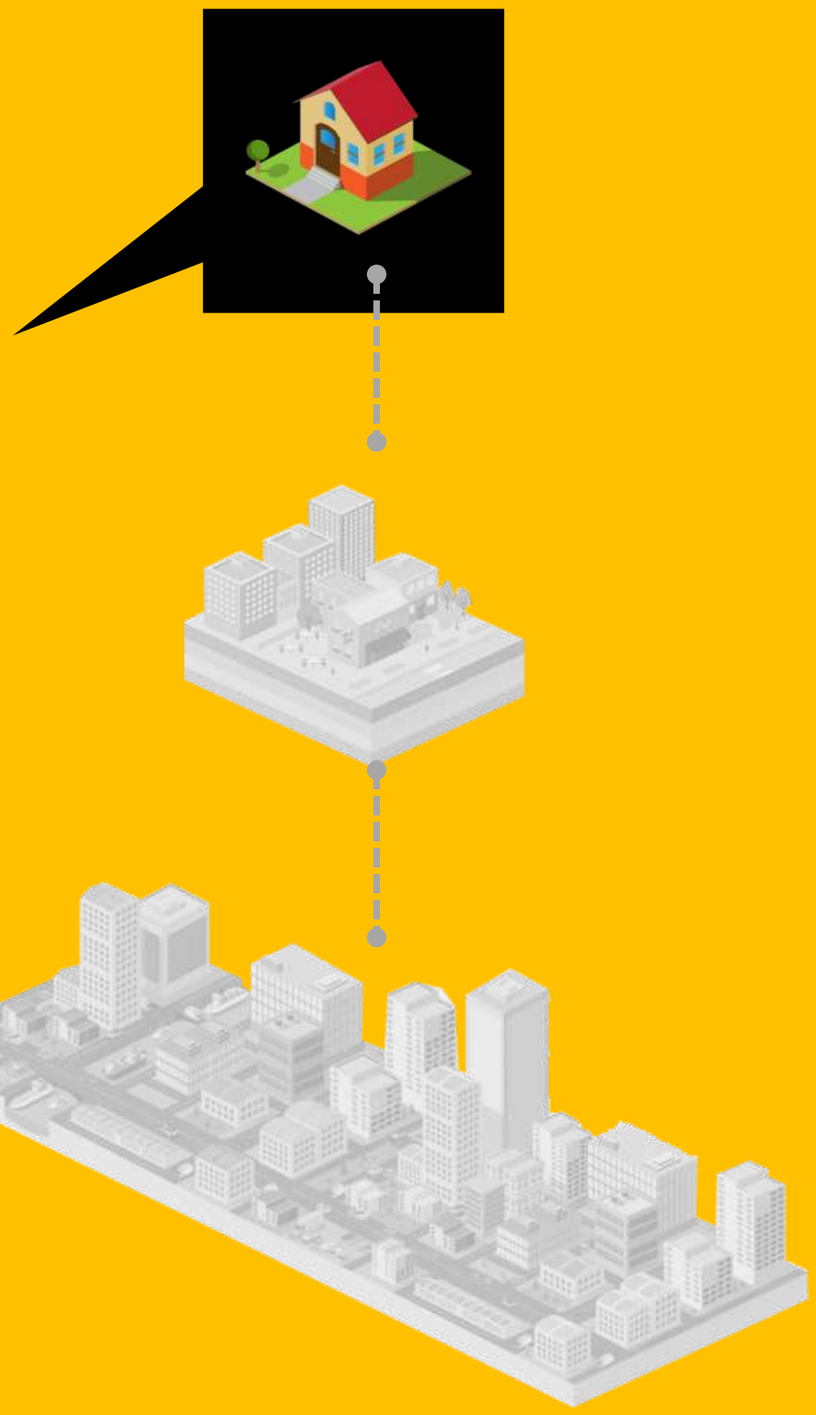
MICRO-LEVEL: HOME

- Materials
- Labour
- Machinery and equipment
- Land cost



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SIMPLE GROUND RULES

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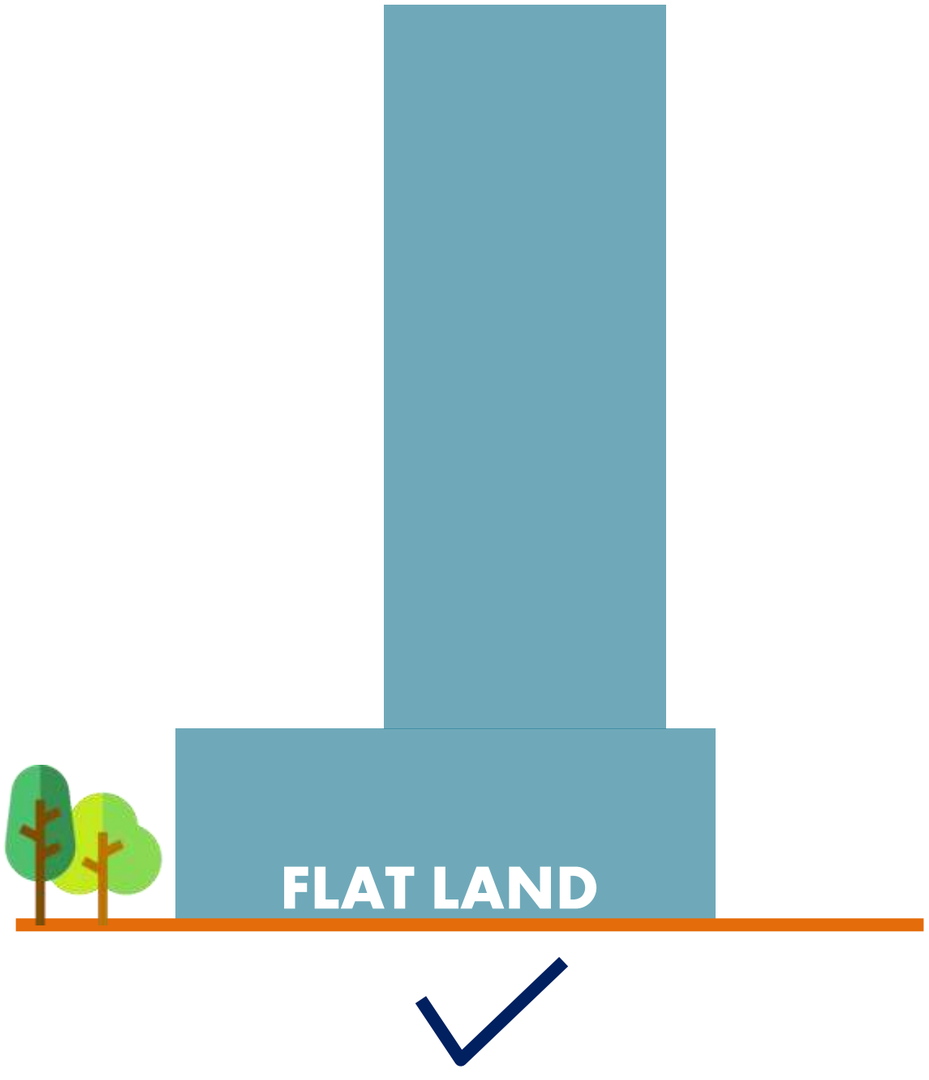
MICRO-LEVEL: HOME

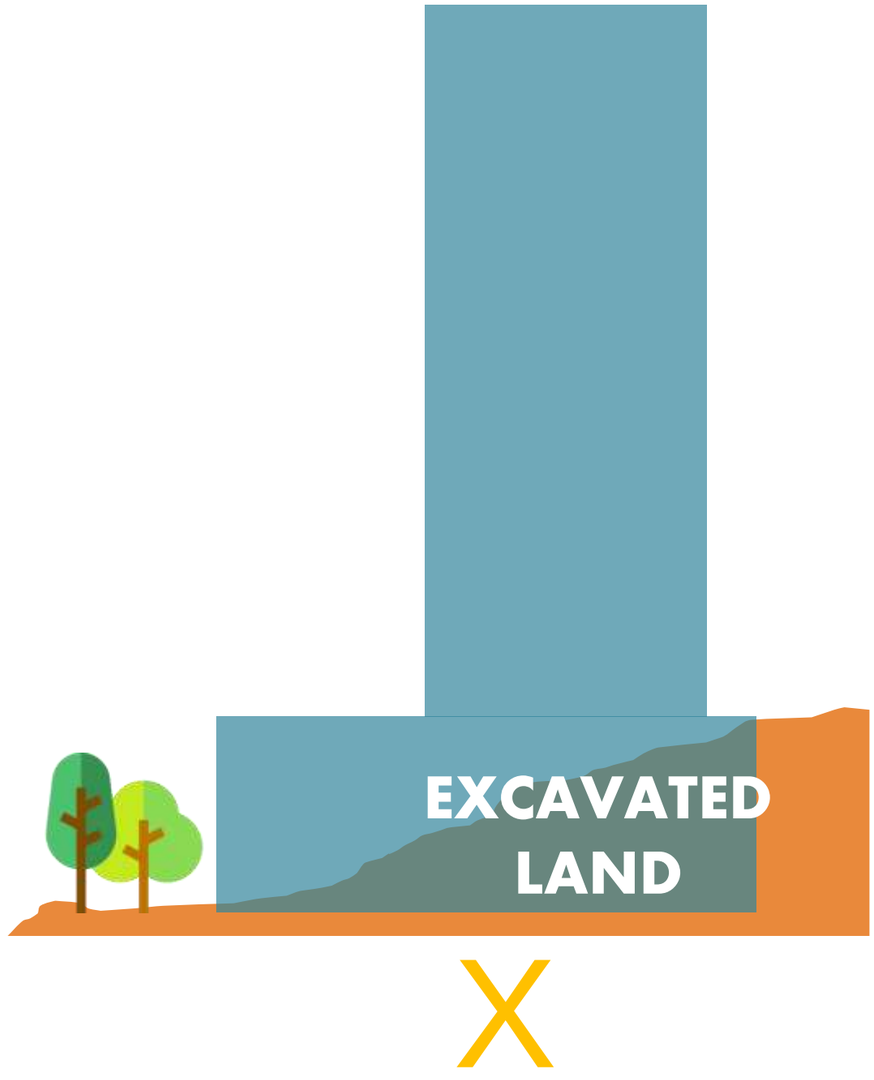
CONSTRUCTION COSTS

1.

No site abnormal costs

- Flat land
- Good soil condition
- No issues with land ownership





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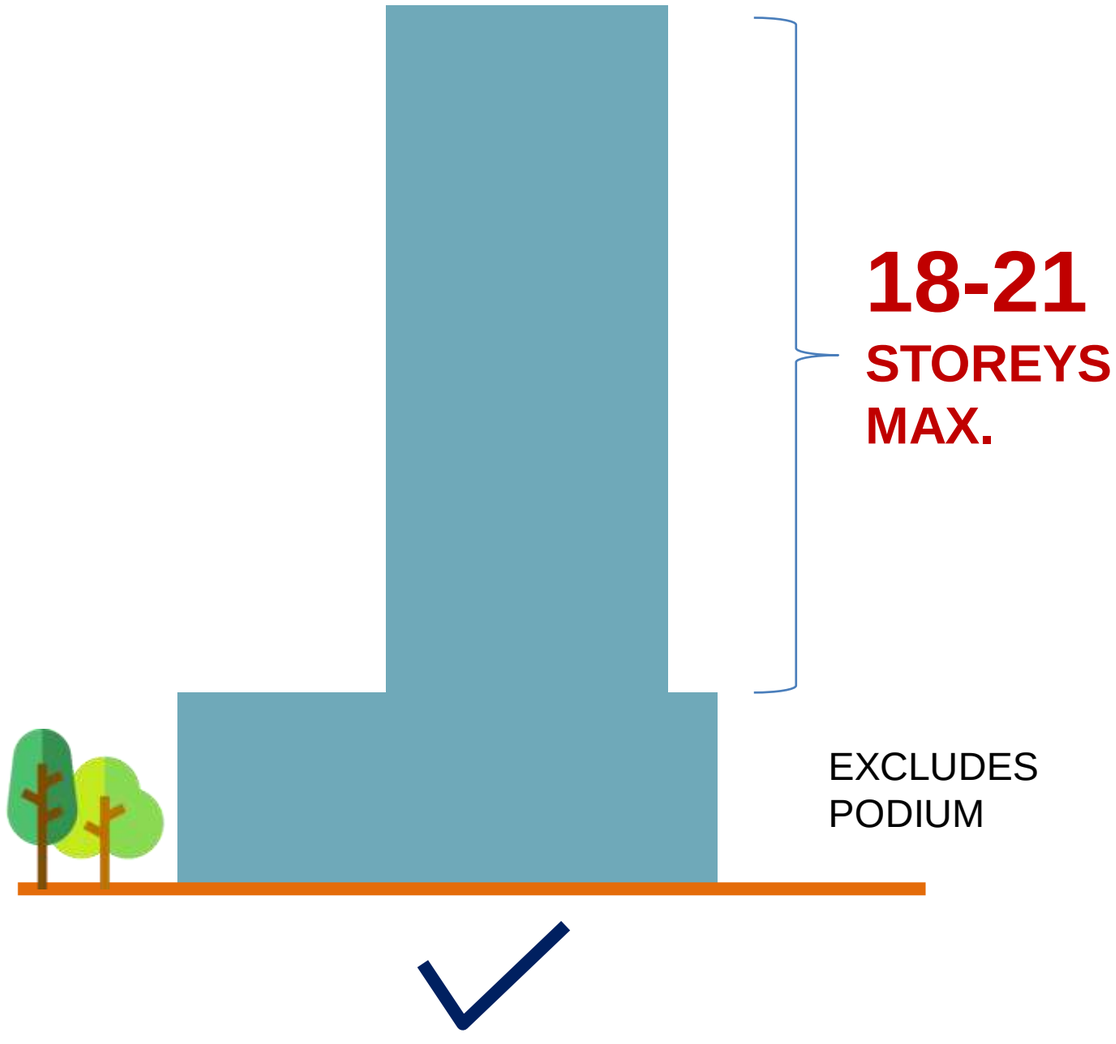
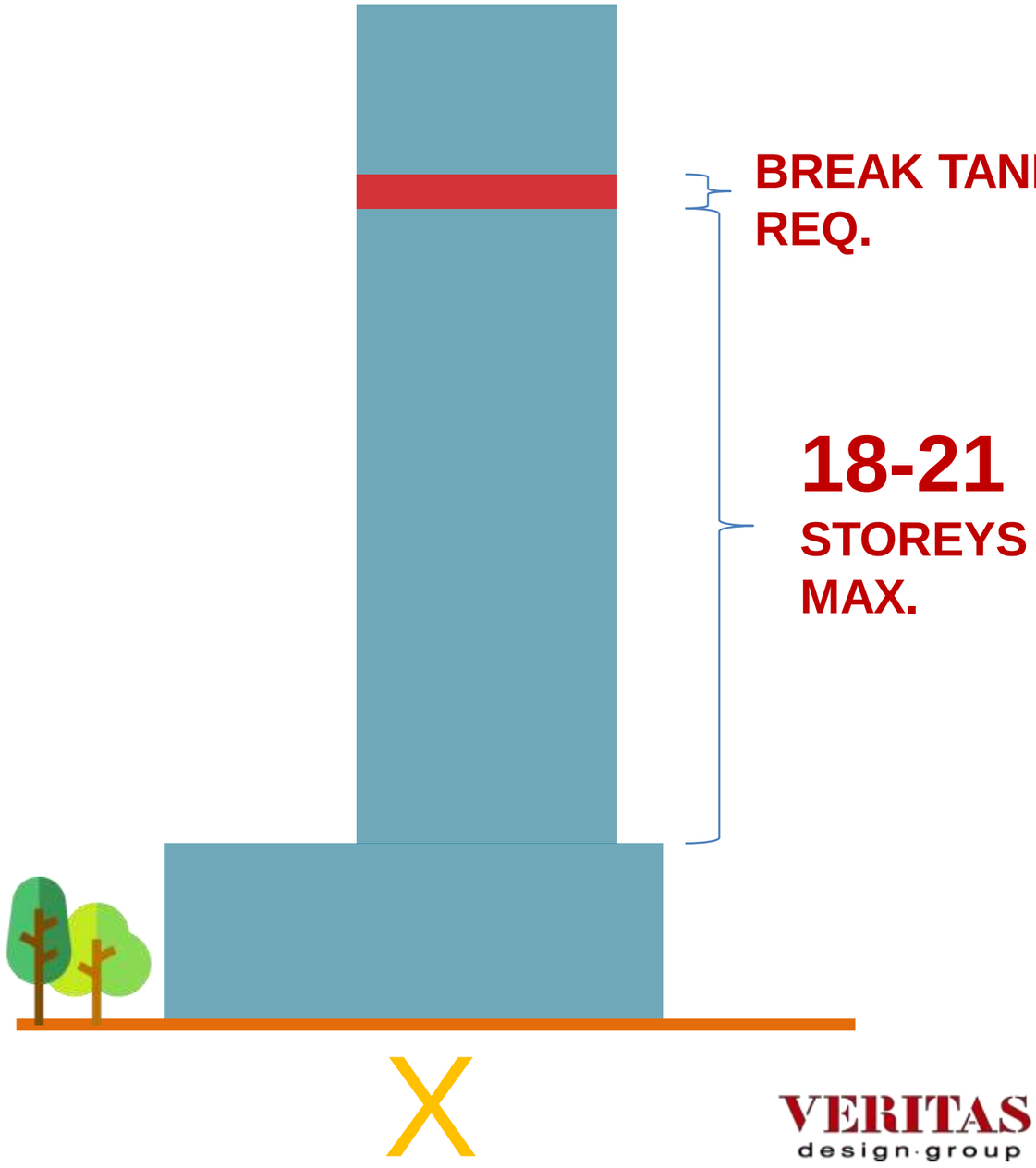
MICRO-LEVEL: HOME
CONSTRUCTION COSTS

2.

Limit height to 18 storeys

- Avoids the break tank and associated building services costs





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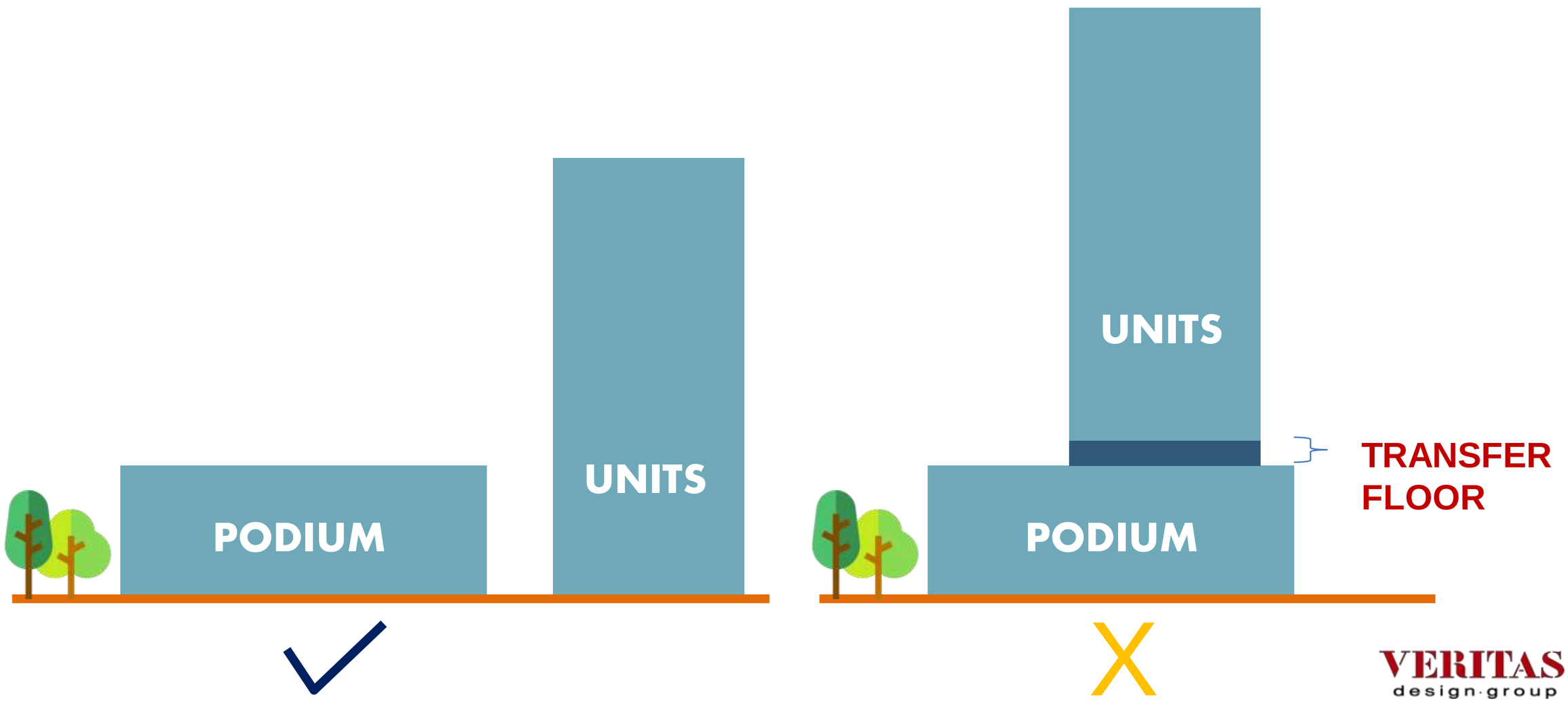
MICRO-LEVEL: HOME
CONSTRUCTION COSTS

3.

Separate tower and car park podium

- Avoids the costly transfer floor
- Creates an engaging ground level



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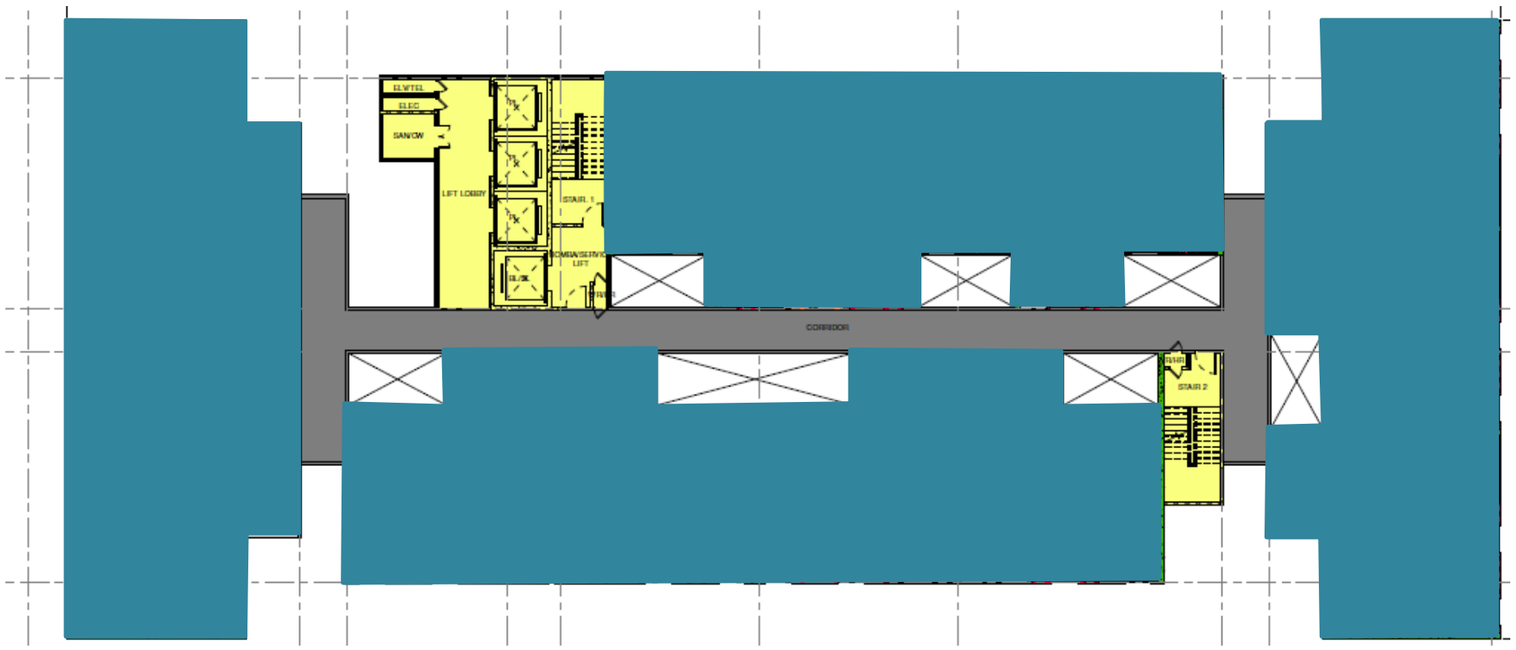
MICRO-LEVEL: HOME

CONSTRUCTION COSTS



4.
Floor efficiency must be more than 82%

- Reduction of corridors to an acceptable minimum
- Units are in a compact arrangement with access corridors
- Lift and staircase cores to minimum fire standards

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MICRO-LEVEL: HOME
CONSTRUCTION COSTS

RUMAWIP 1

RUMAWIP 2

5.
Repeatable standard layout

- Maximise economy of scale
- Standard structural grid can be pre-fabricated too

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MICRO-LEVEL: HOME
CONSTRUCTION COSTS

6.
Naturally ventilated units and corridor

- Ensure an acceptable level of air and spatial quality
- A crucial factor in determining property value

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MICRO-LEVEL: HOME

CONSTRUCTION COSTS

7.
Full shear wall system

- allows developer to claim structure and walls together during the construction process, i.e. better *cash flow*

- more efficient layouts

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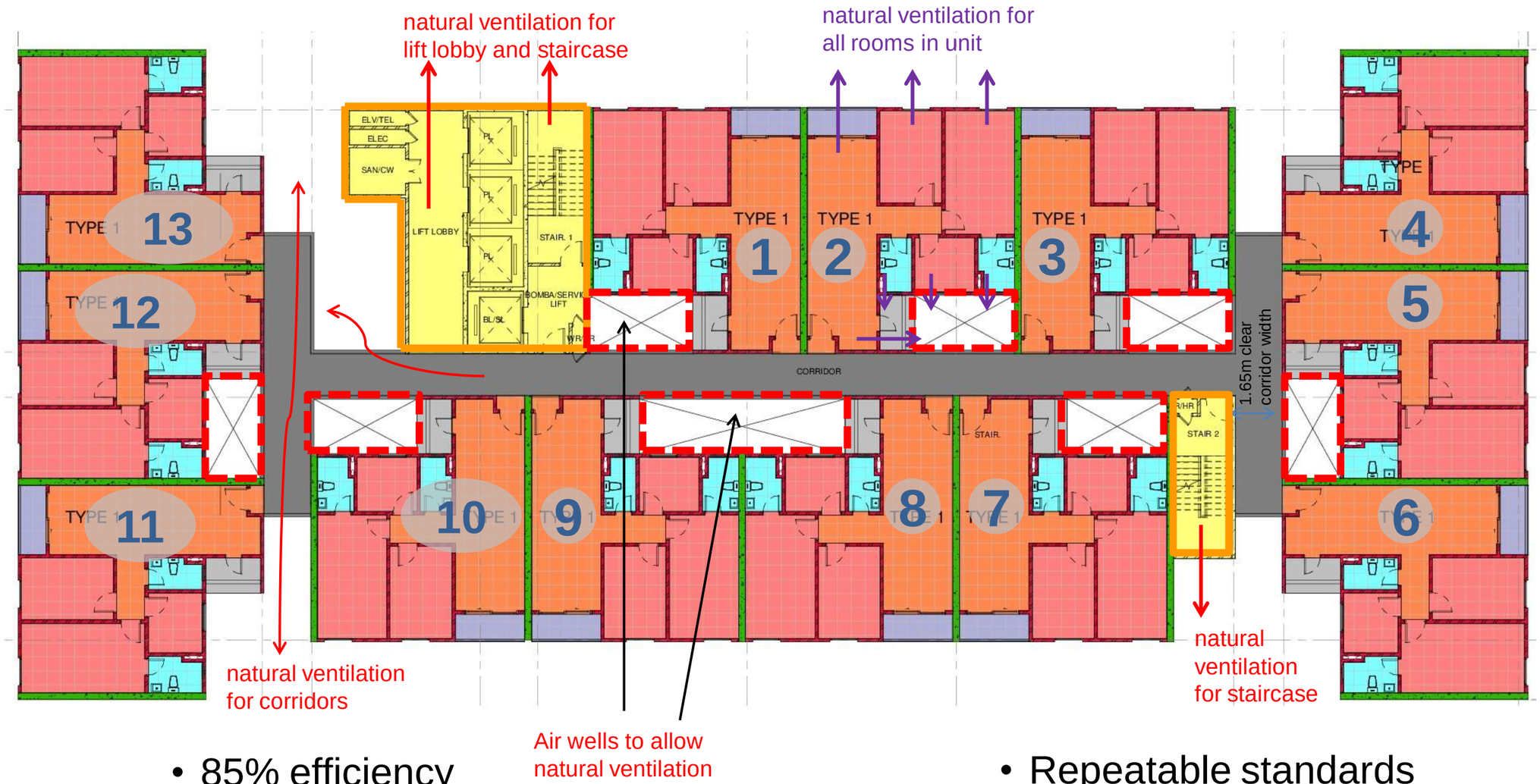
PROTOTYPE



- 85% efficiency
- 13 units per floor
- Natural ventilation for lift lobby, staircases and corridors
- Natural ventilation for all rooms in unit
- Air wells to allow natural and cross ventilation

- Repeatable standards layouts to minimize cost
- 1.65m clear corridor width
- All units within 30m from fire staircase
- unit main doors not facing each other to create privacy

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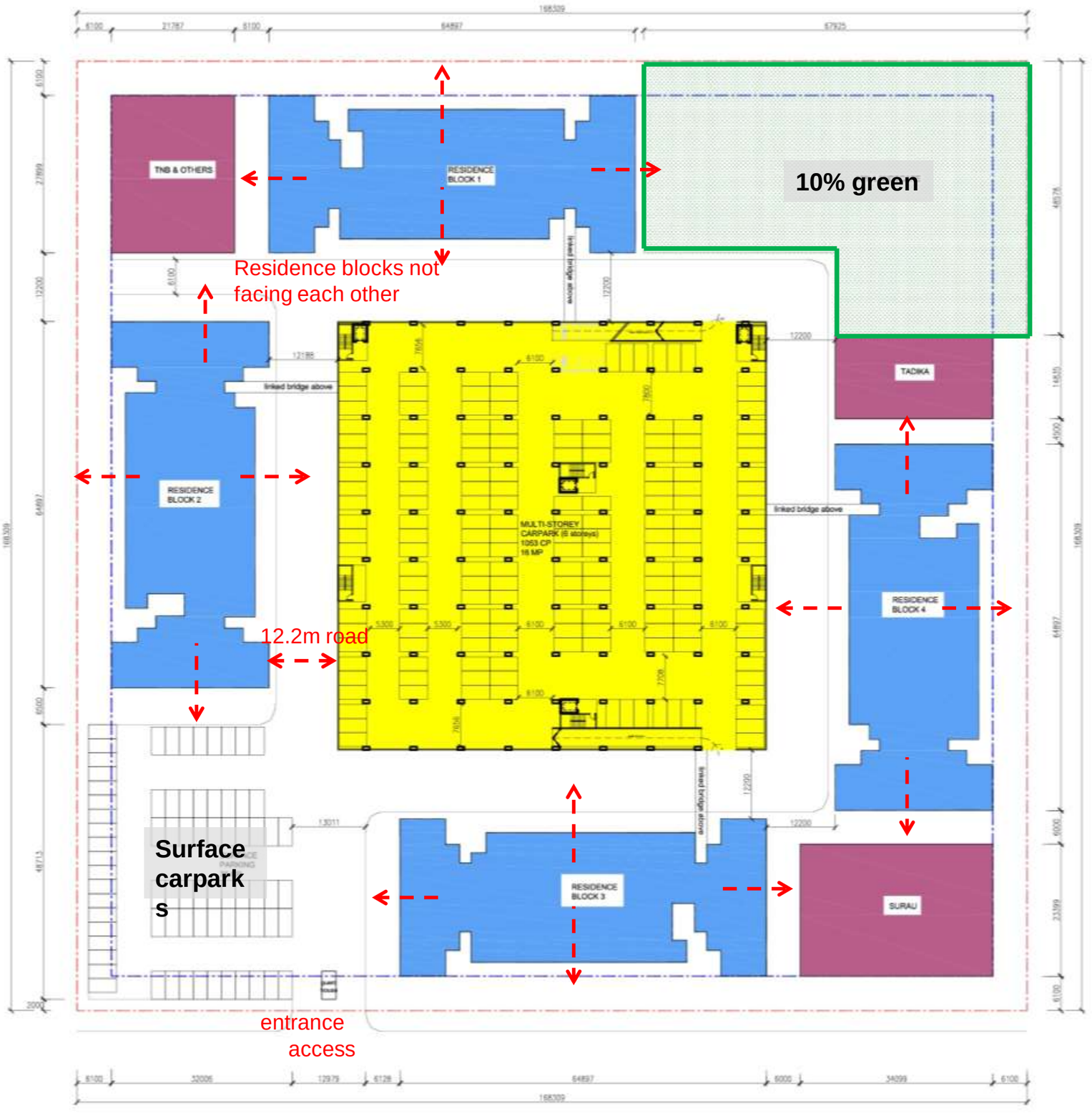
PROTOTYPE

4 Blocks (18 Storey) + 1 Block Carpark (6 Storeys) + surface carparks



- Separate podium carpark to omit transfer floor (high cost)
- 6 storeys podium carpark
- Surface carparks provided
- 18 storeys residence block
- Centralised green area
- Centralised podium parking for easy access
- Residence blocks not facing each other
- Wide road 12.2 m
- Facilities provided – surau,nursery, gym, hall,office, functional landscape area

Total units	:	936 units
Car park	:	1292 bays
Area	:	7 acres
Density units/acres	:	133

residence block

parking block

facilities

green

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PROTOTYPE

Rooftop Facilities at Carpark Podium

- Rooftop facilities and not fully obstructing residence view as built-up only partial
- Rooftop landscape space
- Linked bridge to connect residence and podium

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OPTION
2 acre land
1 Block (8 Storey) + Surface Carparks

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MICRO-LEVEL: HOME
CONSTRUCTION COSTS

High level of IBS in Singapore

- 25-40% cost saving on labour
- 15-20% saving in construction time

Nanyang Technological University's North Hill Campus, Singapore

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MICRO-LEVEL: HOME
CONSTRUCTION COSTS

Industrialised building system
i) System formwork

- Significant time and labour savings

- 45% savings on Labour costs when Singapore implemented IBS*

References: Bank Negara Malaysia Quarterly Bulletin (2017), KRI Making Housing Affordable (2015), Urban Economics (2009)

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MICRO-LEVEL: HOME
CONSTRUCTION COSTS

Industrialised building system
ii) Prefabricated modules/elements

- Significant time and labour savings

- Consideration for logistics cost and site planning (eg. Just-in-time assembly)

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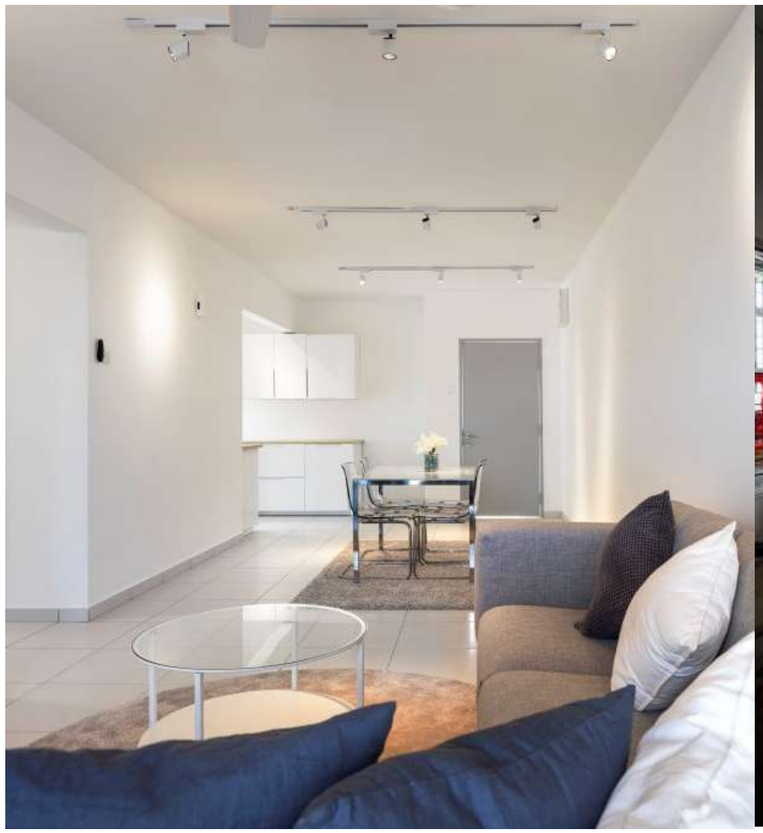
MICRO-LEVEL: HOME
CONSTRUCTION COSTS

Industrialised building system
iii) Prefabricated modules/elements ("hybrid precast")



- More likely to find acceptance due to similarity to conventional methods
- However, can still achieve time savings 6-9 months on typical projects
- Large reduction of unskilled foreign labour

References: Gamuda IBS

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MICRO-LEVEL: HOME
CONSTRUCTION COSTS

Industrialised building system
iv) Lightweight panels

- Reduces on-site trades and construction schedules

- Reduces the required capacity of foundation and superstructure costs

- Reduces freight and crane costs

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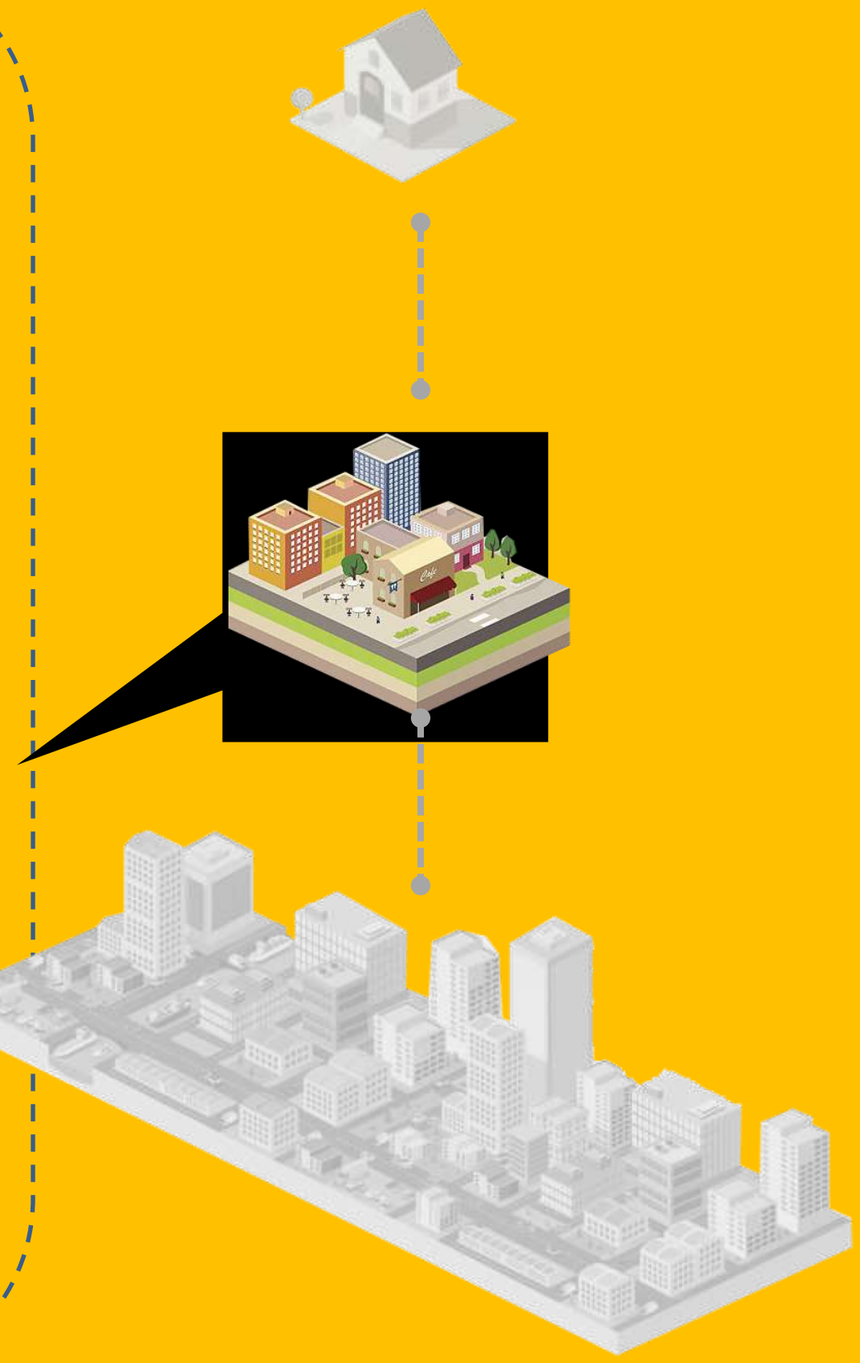
MESO-LEVEL:
NEIGHBOURHOOD

- Shared facilities
- Building services
- Common infrastructure



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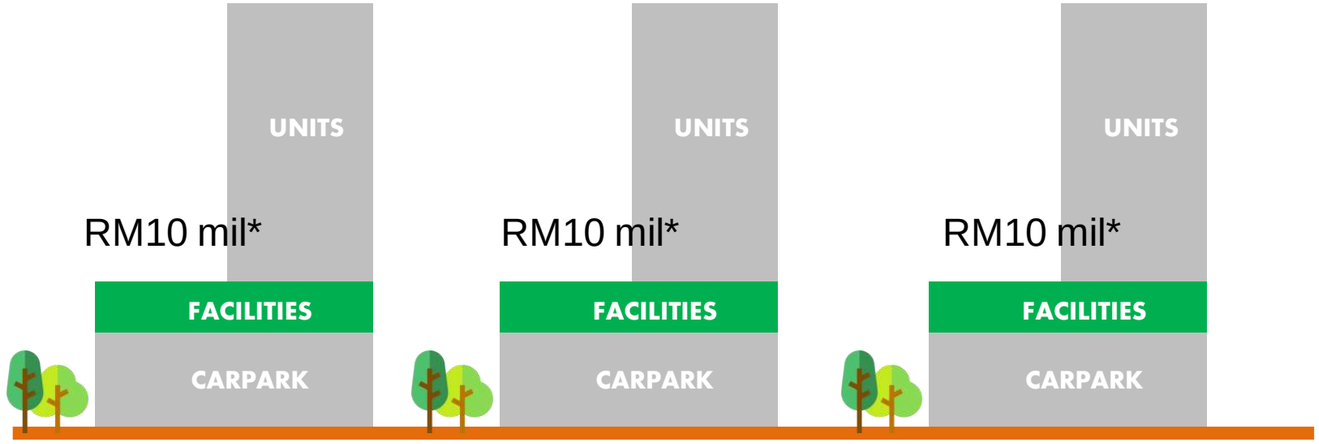
MESO-LEVEL: NEIGHBOURHOOD

INFRASTRUCTURE COSTS

Cost of facilities are quite high as the development built in isolation. As a result in one precinct there is redundancy in provision, therefore cost.

- Multipurpose hall
- Surau/mosque
- Nursery
- Recreational



Note: Costing is based on JUBM Arcadis Construction Cost Handbook (2017) for a development of 936 units of 900 sqft, at 85% efficiency and based on current requirements by the authorities. It excludes land price as to avoid it being skewed by location factors.

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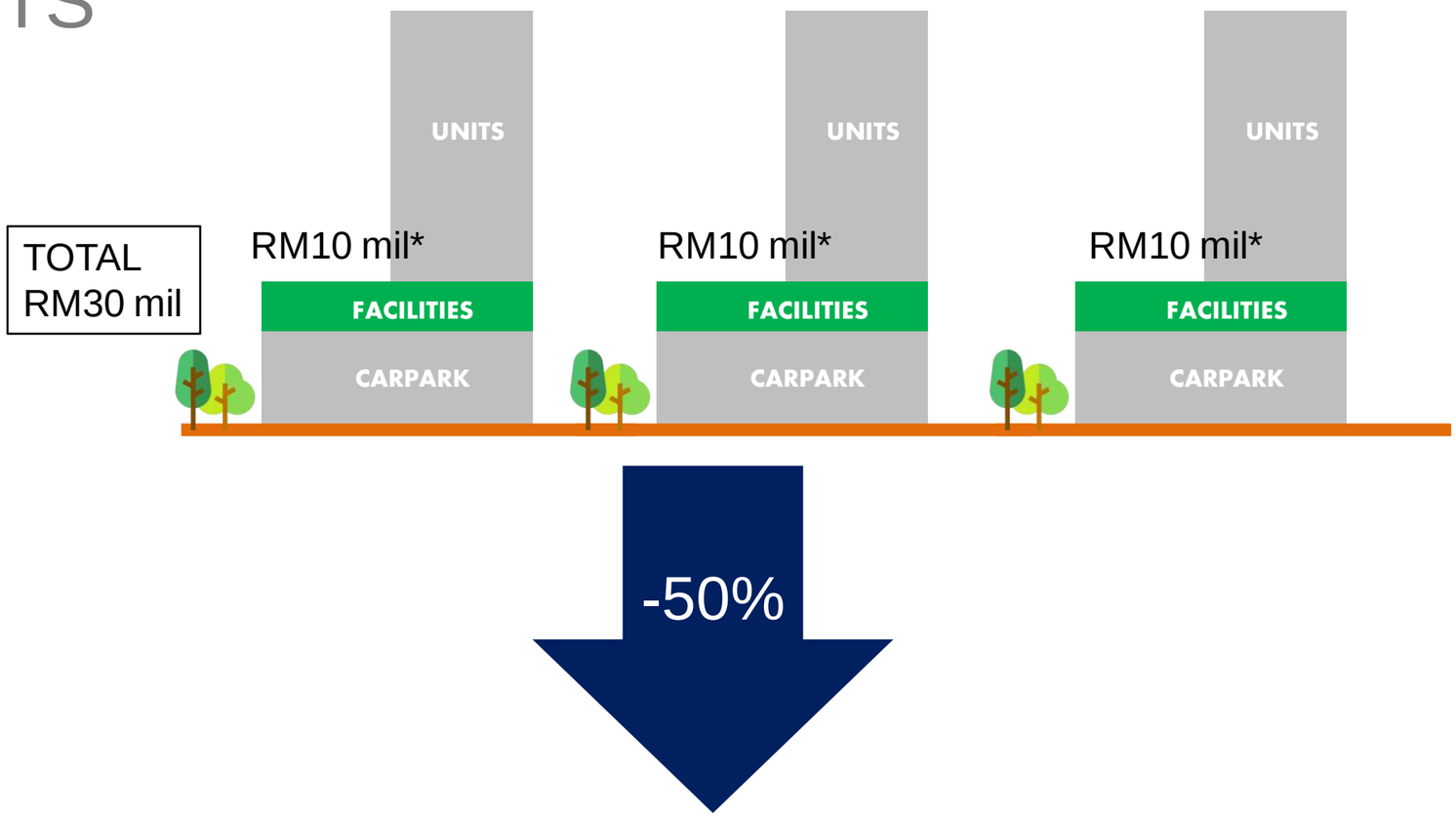
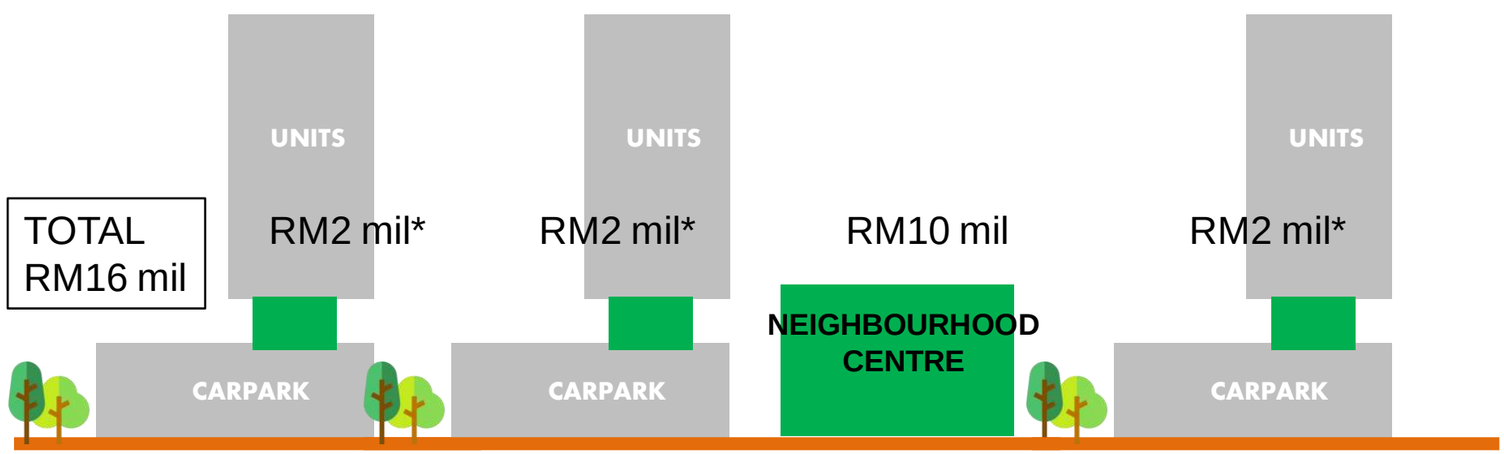
MESO-LEVEL: NEIGHBOURHOOD

INFRASTRUCTURE COSTS

Investing in existing facilities in the area or sharing the cost of building a precinct-wide facility

- Increase cohesion with local area
- Prevent the development from being an isolated unit
- Encourage local regeneration
- Enables smaller plots to be developed efficiently
- Requires proactive local authority and a precinct masterplan





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MESO-LEVEL: NEIGHBOURHOOD

INFRASTRUCTURE COSTS

Singapore's Neighbourhood Centres are shared by several developments.

Oasis Punggol, Punggol Township

References: Roadmap to Better Living by Singapore HDB

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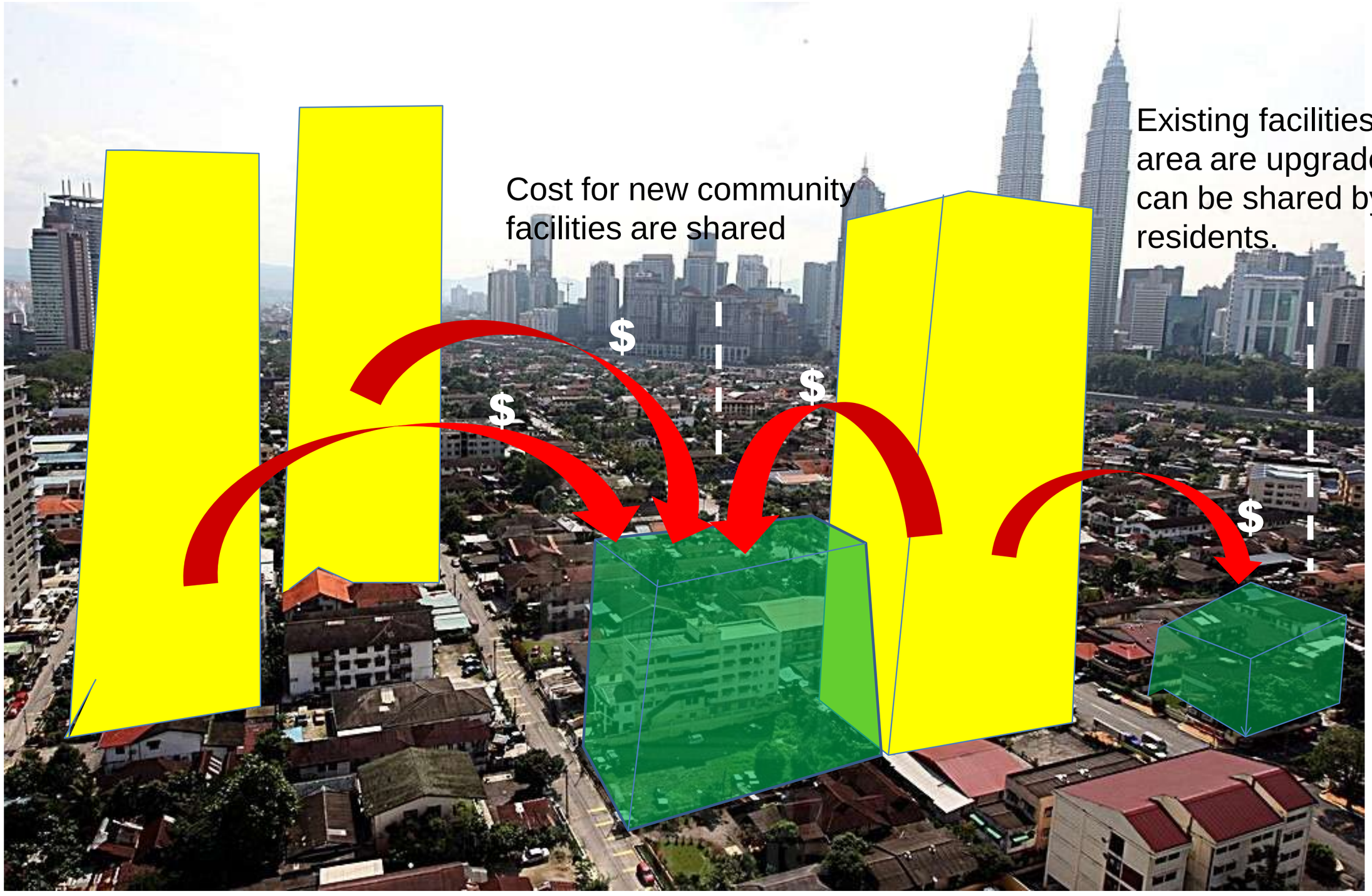

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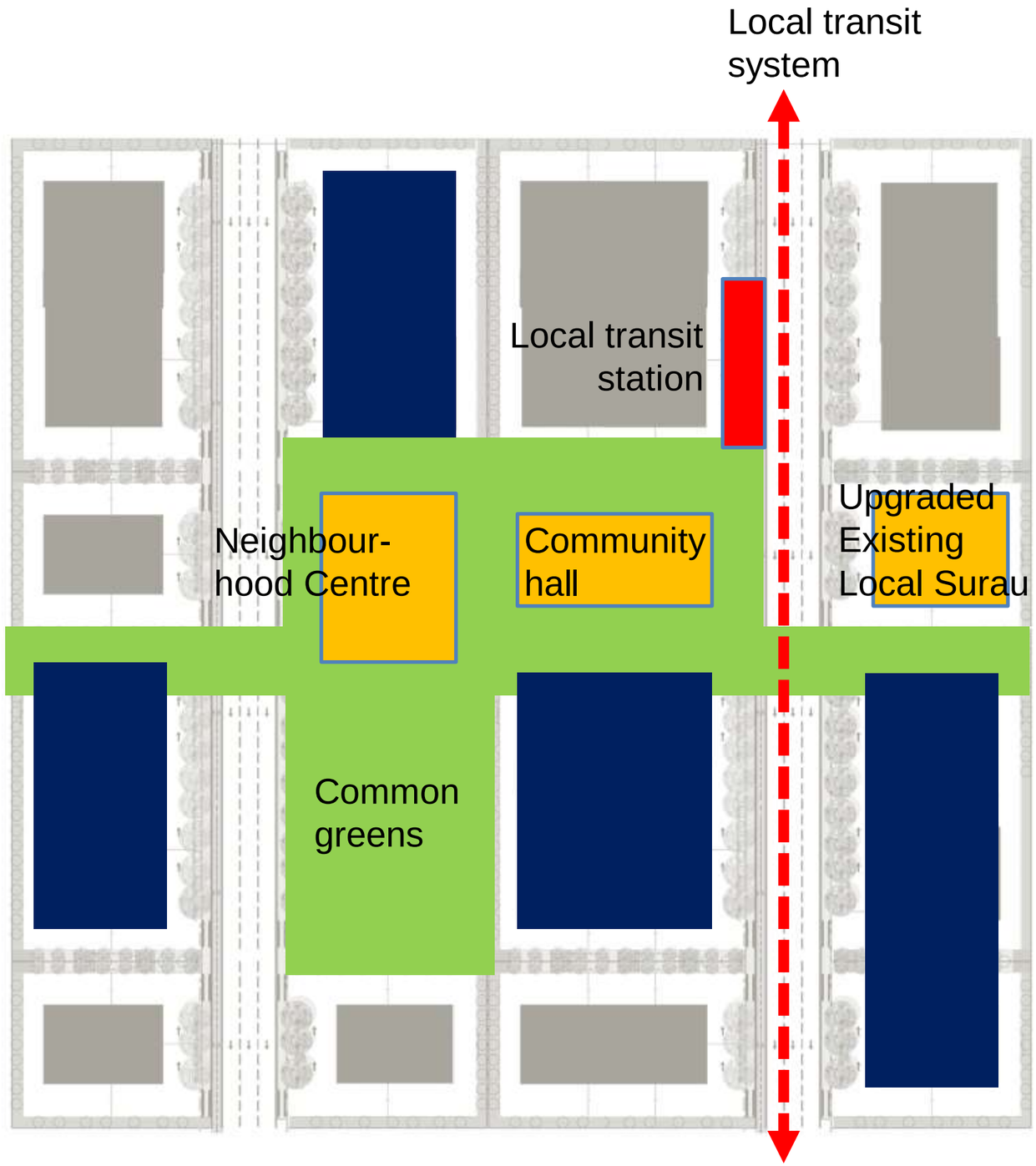
Weaving the development back into the local community, creating an interdependence – reduces costs!

- Removal of fences and hard boundaries such as the perimeter planting (at street-front boundary).
- Developers to provide publicly accessible walkways around the site through regulation
- 10% green can be pooled together to create a bigger open space



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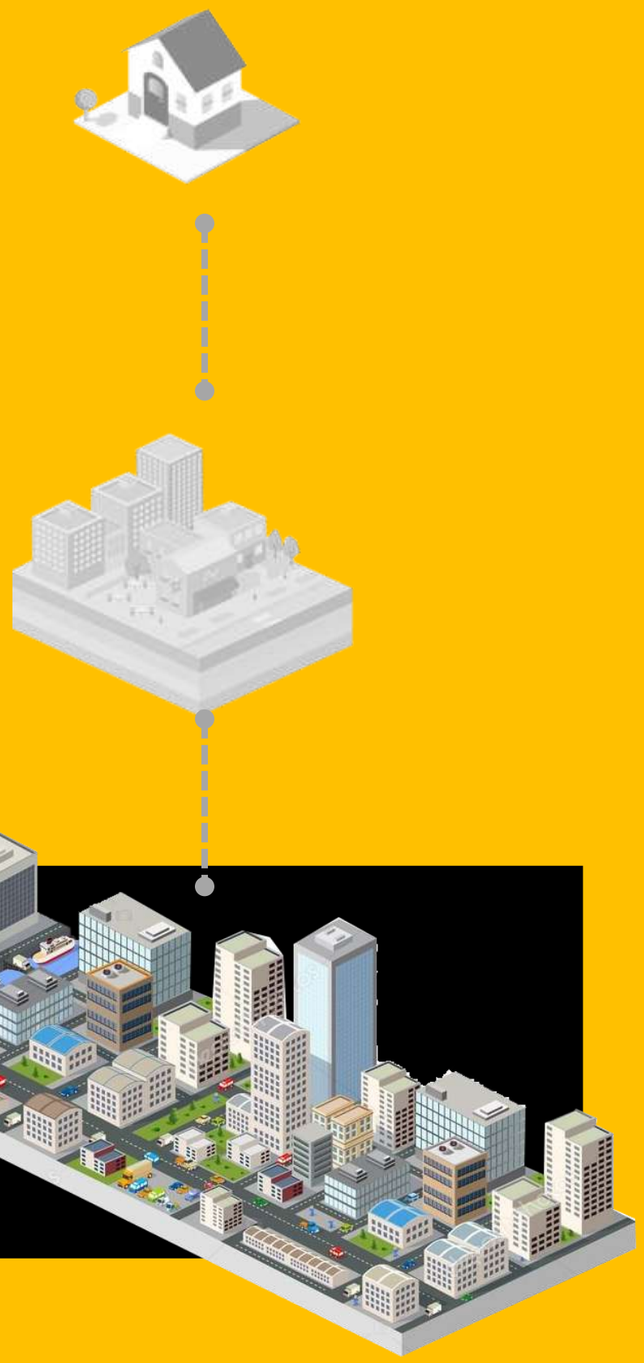
MACRO-LEVEL: URBAN

- Car park space
- Compliance fees



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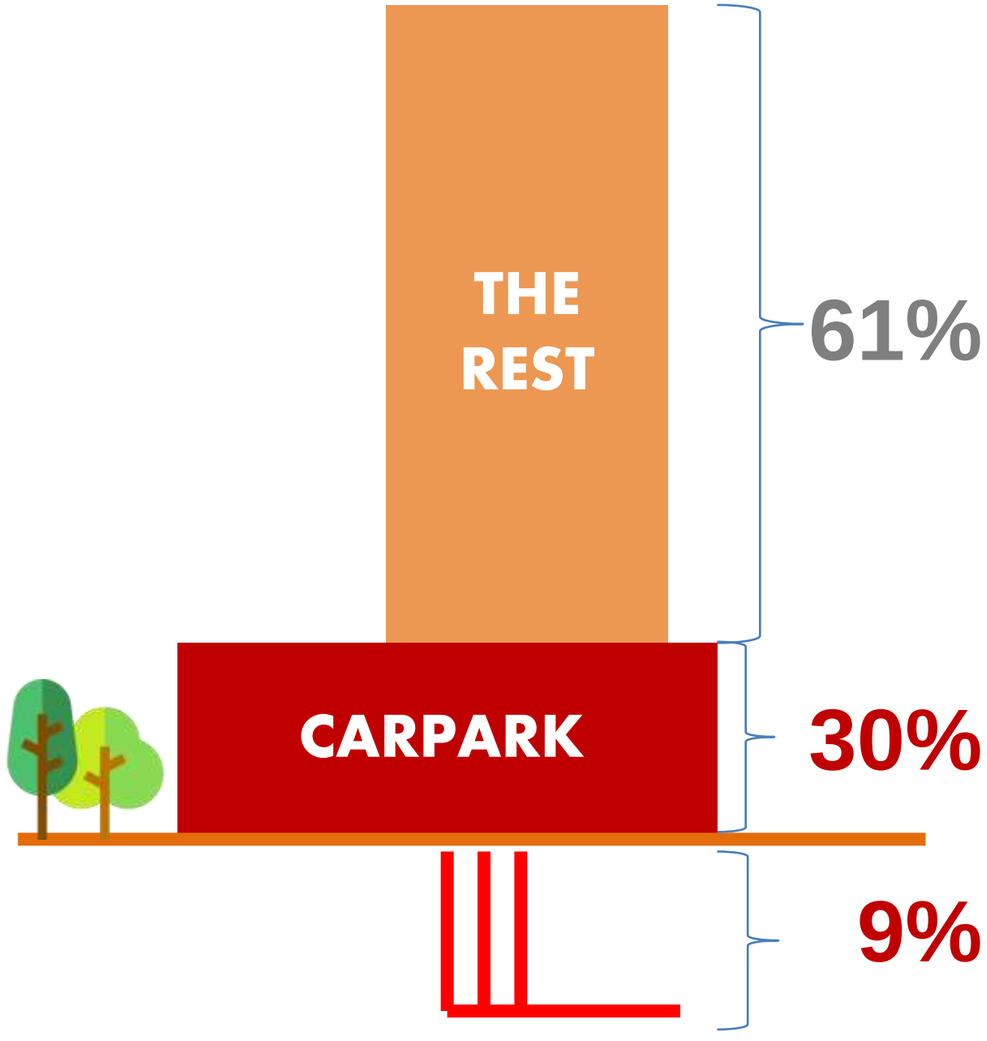
MACRO-LEVEL: URBAN

THE COST OF INEFFICIENT CITY ON HOUSING



Up to 20-30%% of construction cost of housing is due to required car park space in KL's city centre.

Another 9-15% of cost comes from compliance fees from utilities companies and local authorities.

Note: Costing based on JUBM Arcadis Construction Cost Handbook (2017) for a development of 936 units of 900 sqft, at 85% efficiency and based on current requirements by the authorities. It excludes land price as to avoid it being skewed by location factors.

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No	City	Car park required for residential
1	**Selangor**	**1 unit : 2 CP[1]**
2	Seoul	1 unit : 1.44 CP
3	**Kuala Lumpur**	**1 unit : 1.35 CP[2]**
4	Singapore	1 unit : 1.30 CP[2]
5	Beijing	1 unit : 0.52 CP[2]
6	Barcelona	1 unit : 0.25 CP[3]
7	Hong Kong	1 unit : 0.24 CP[2]
8	Central London (2-bed)	1 unit : less than 1 CP[3]

Reduce minimum car park requirement

1 Manual Garis Panduan Dan Piawaian Perancangan Negeri Selangor (Edisi Kedua) (2011) by Selangor State Government
2 Parking Policy in Asian Cities (2011) by Asian Development Bank
3 Europe's Parking U-Turn: From Accommodation to Regulation (2011) by ITDP

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17%
of Greater KL residents use
Public Transportation[1]

62%
of Singaporeans use
Public Transportation[1]

250 million hours
time spent on the road every
year by Greater KL residents[1]

1 Malaysia Economic Monitor June 2015 Transforming Urban Transport (2015) by the World Bank
2 Nielsen Global Survey of Automotive Demand (2013) by Nielsen Holdings
3 Department of Statistics Malaysia (2014)

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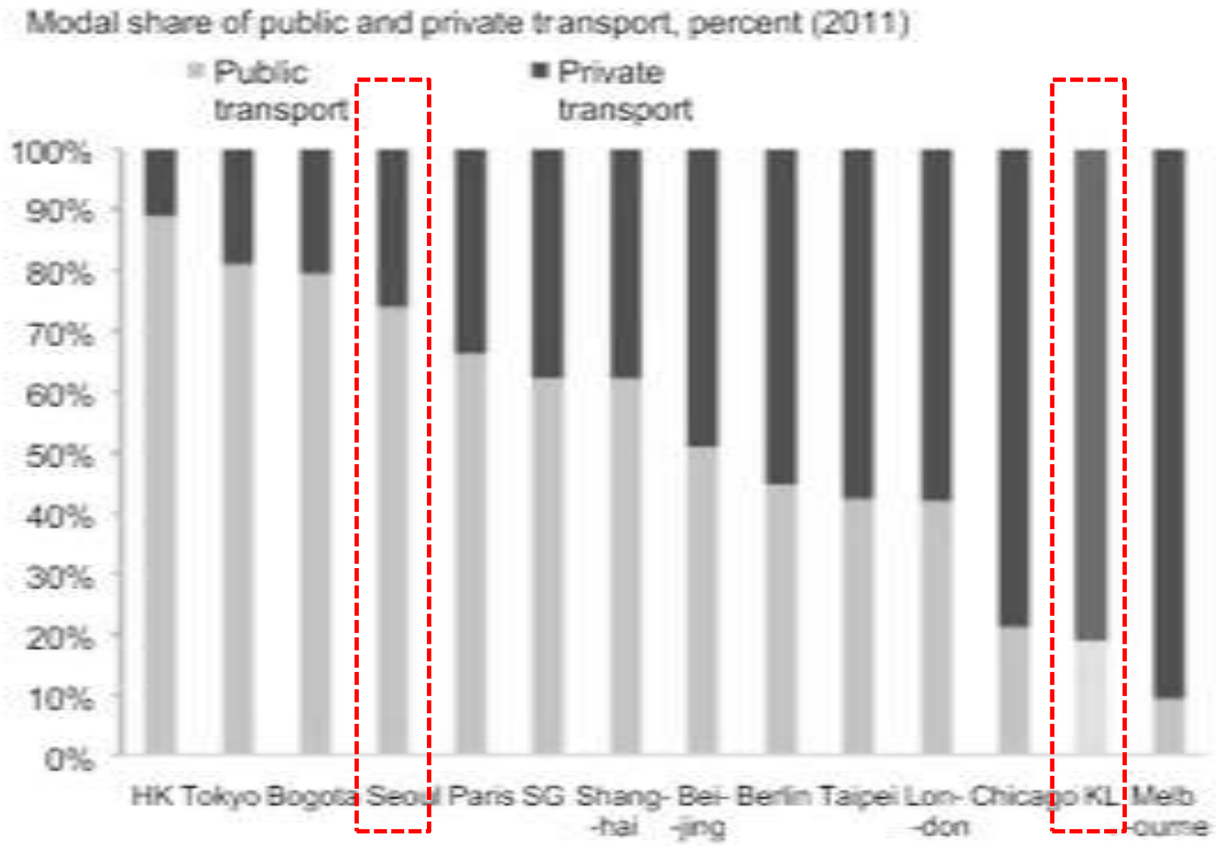
Seoul has less kilometres of rail (per million people) than KL but it is far more effective in getting residents to adopt it.

Kuala Lumpur[2]

Density = 29 people/acre

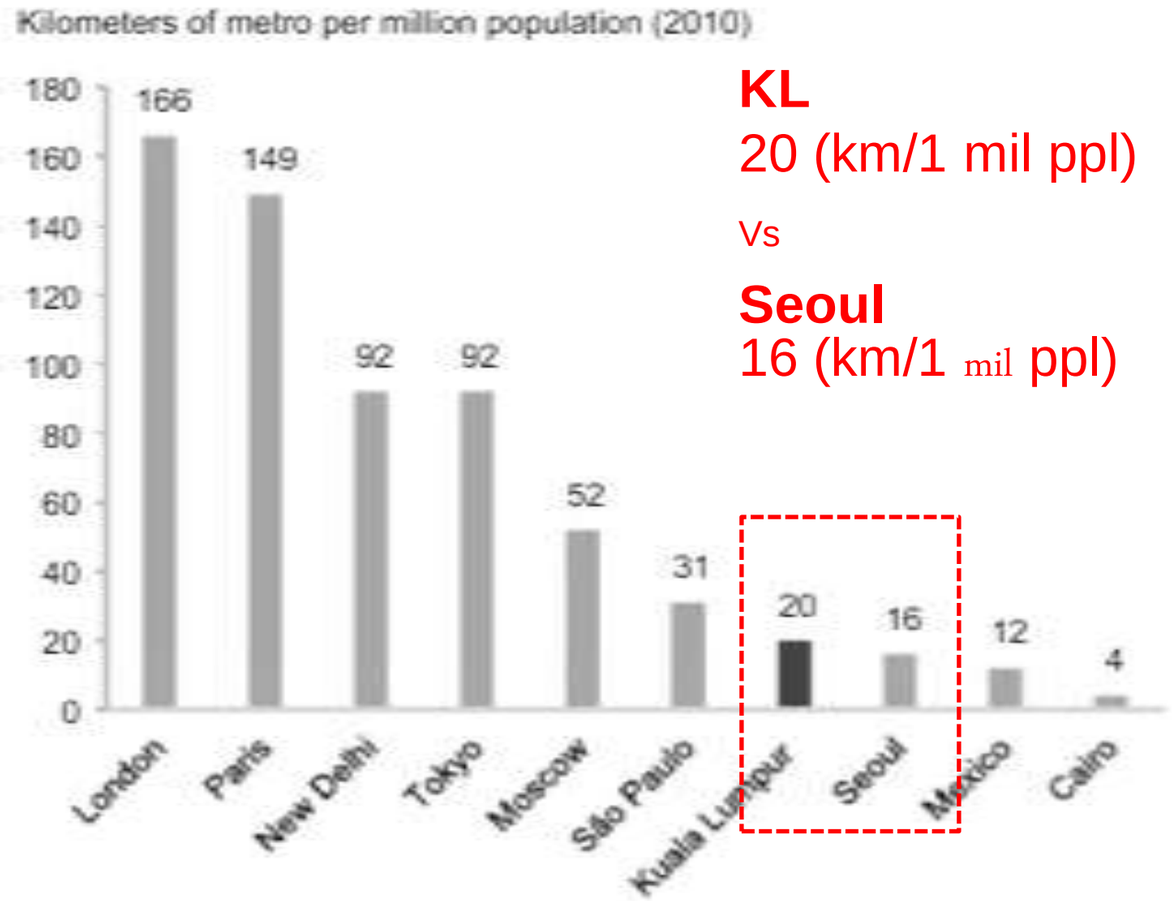
Seoul[3]

Density = 65 people/acre



Seoul
70%

KL
17%



KL
20 (km/1 mil ppl)

Vs

Seoul
16 (km/1 mil ppl)

1 Malaysia Economic Monitor June 2015 Transforming Urban Transport (2015) by the World Bank

2 Department of Statistics Malaysia (2017) estimate

3 Ministry of the Interior and Safety (2018) estimate

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Amongst top 50 highest in the world

for percentage of car ownership per 1,000 people[2]

Up to 2.2% of GDP (RM24.7bil)

Of economic losses due to traffic congestion[1]

Road accident is

2nd top cause of death

for Malaysians between 16-65 year olds[3]

1 Malaysia Economic Monitor June 2015 Transforming Urban Transport (2015) by the World Bank
2 Global Status Report On Road Safety 2015 (2015) by the World Health Organization
3 Department of Statistics Malaysia (2014)

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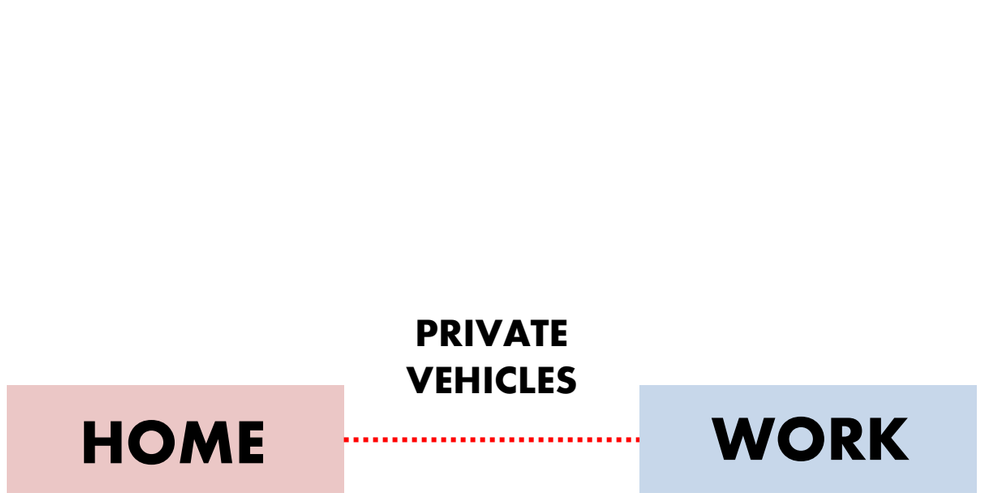
To reduce car park space, we need to re-organise the whole metropolitan area and its land-use patterns.



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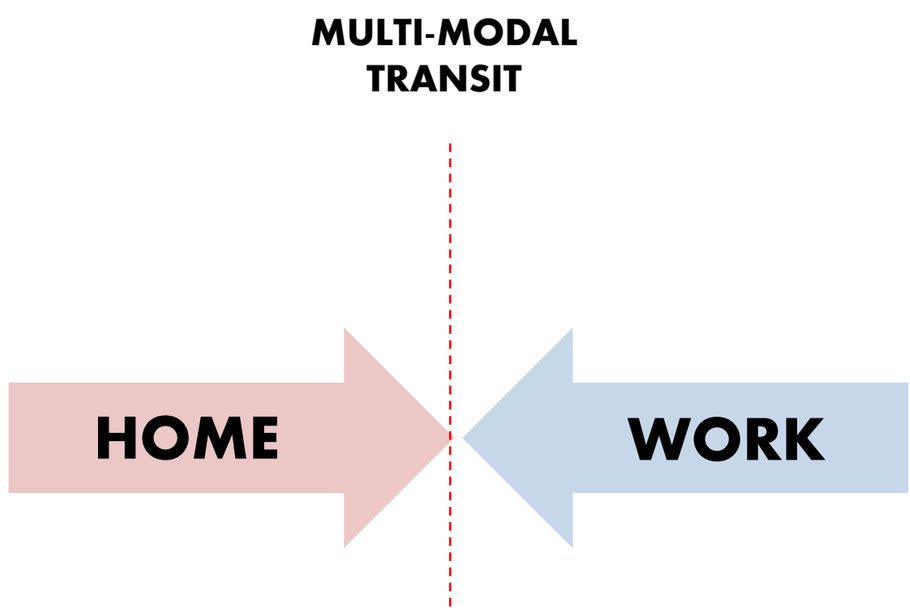

TO ACHIEVE AFFORDABLE HOUSING

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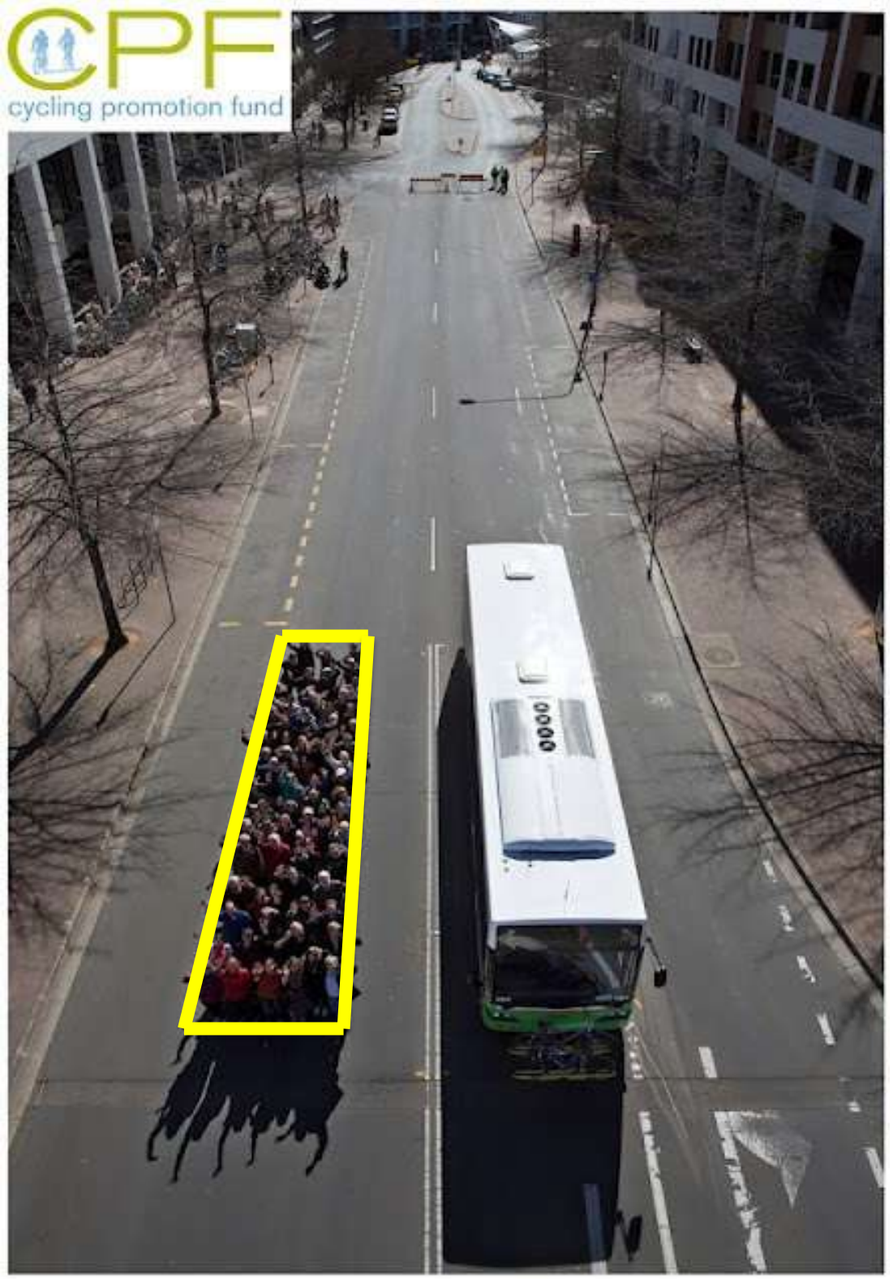
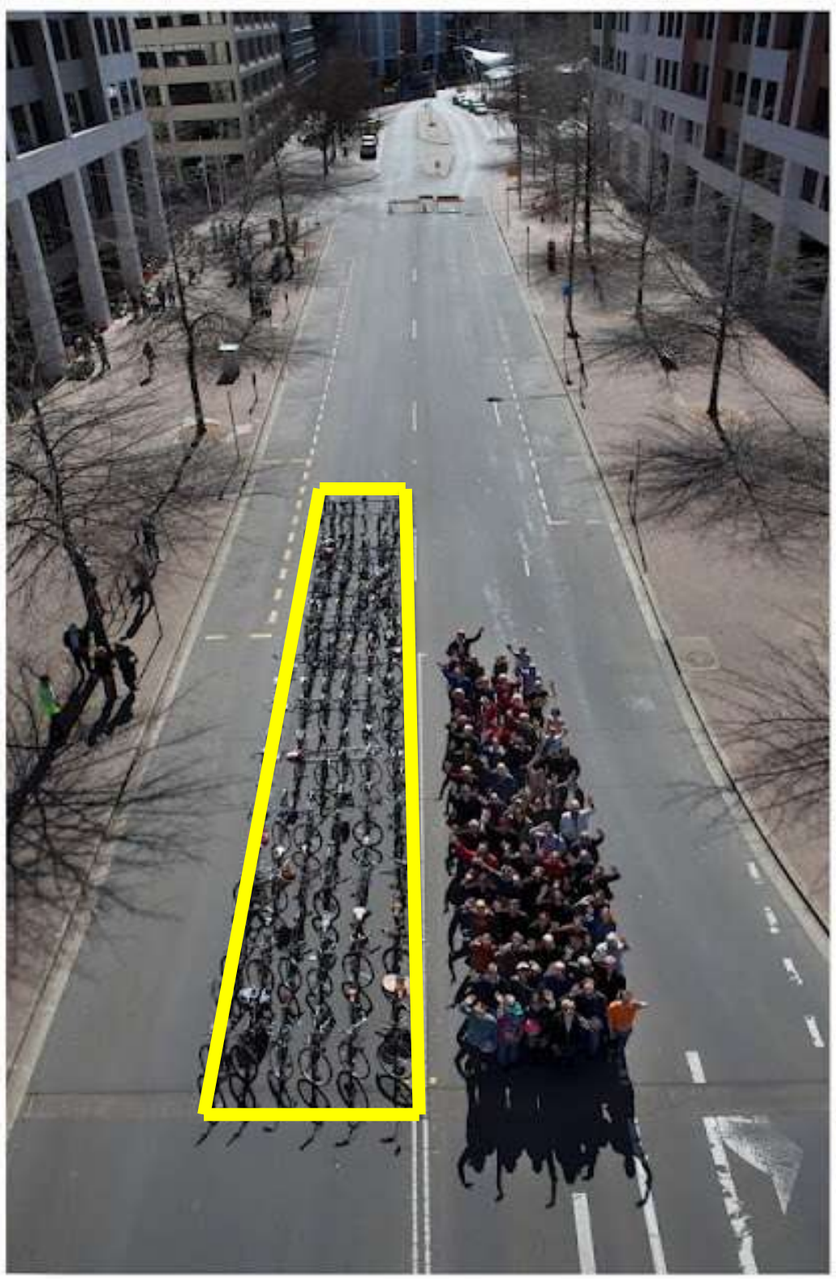
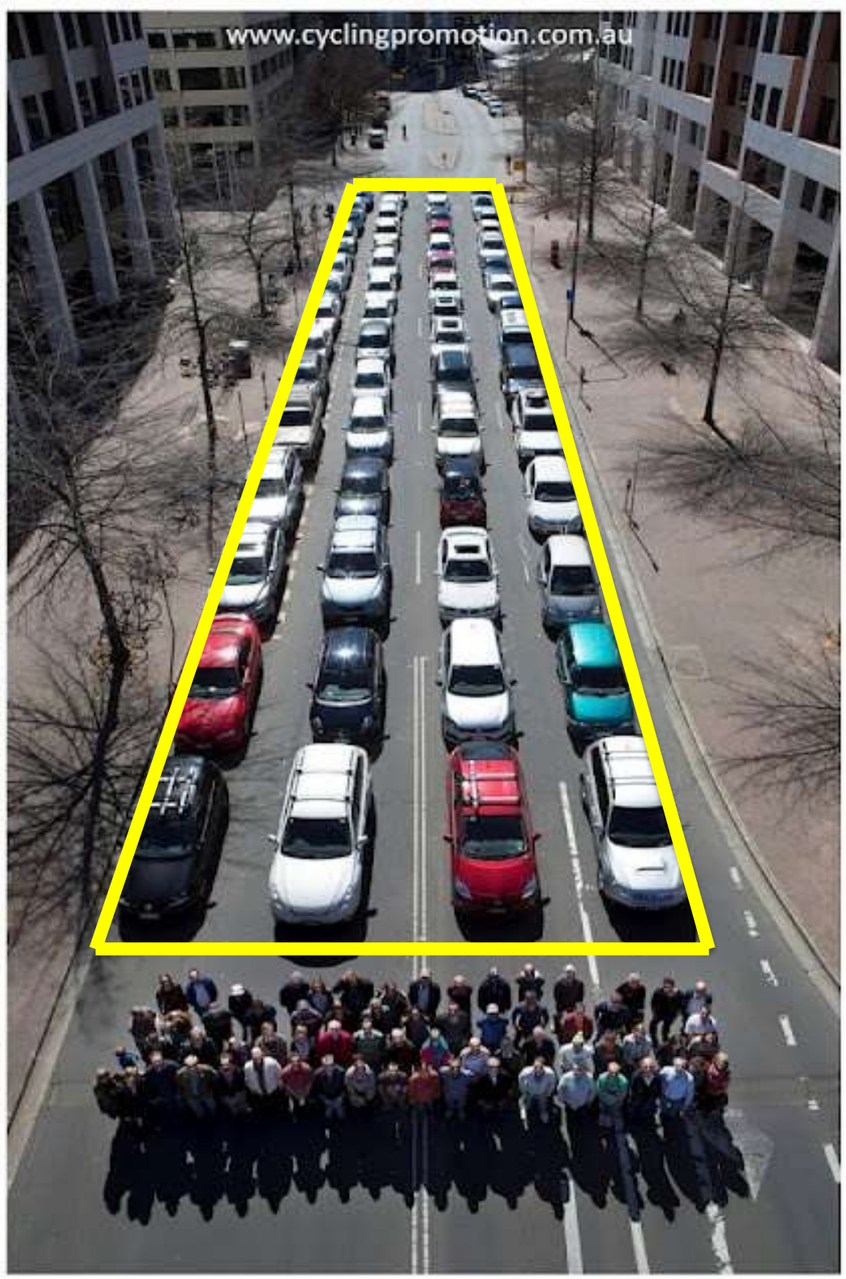
Space Required To Transport 60 People







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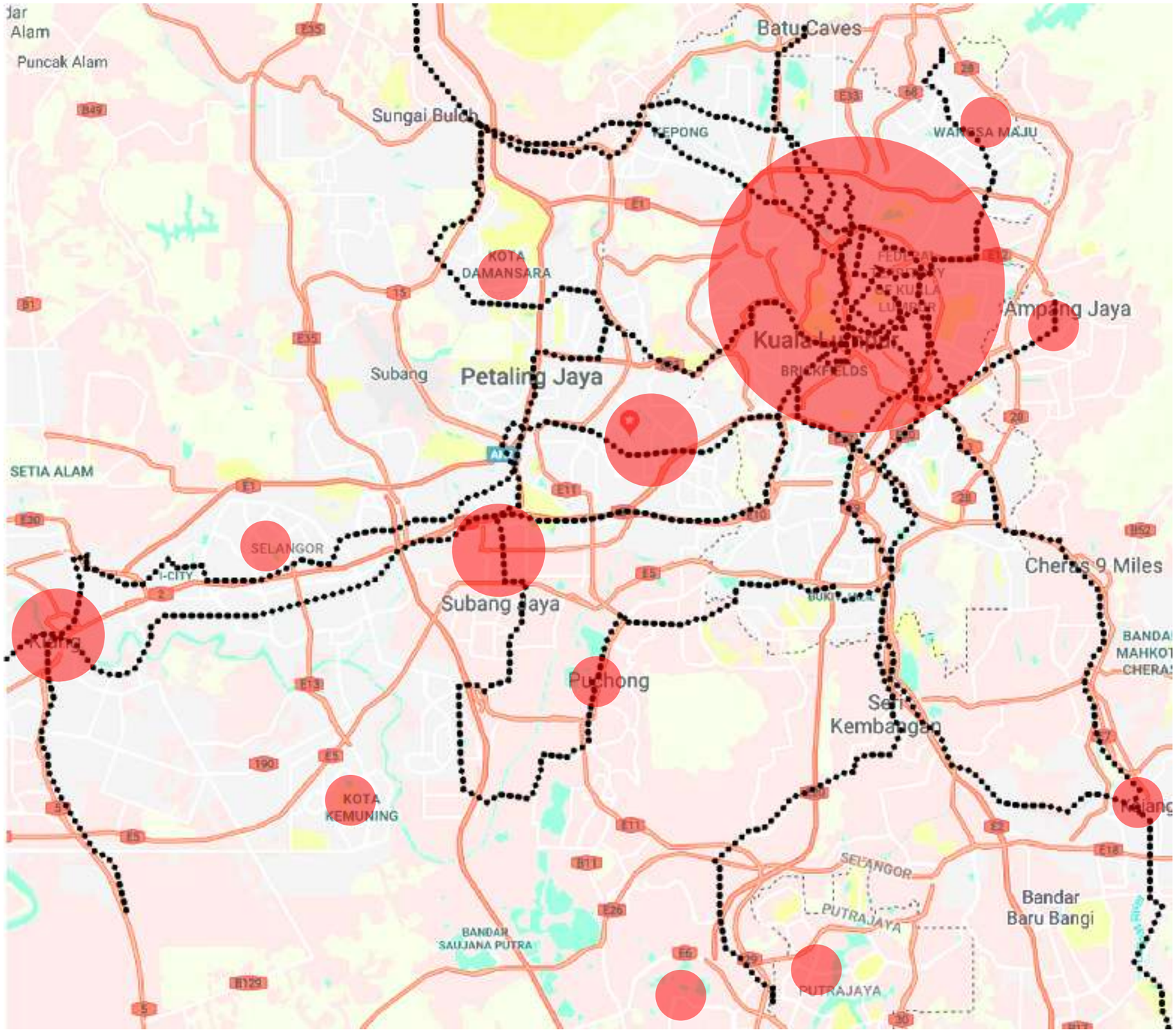
MACRO-LEVEL: URBAN

REDUCING CAR PARK PODIUM COSTS



Klang Valley jobs are mostly concentrated in KL.

Therefore the Transit System is only centred around serving KL.

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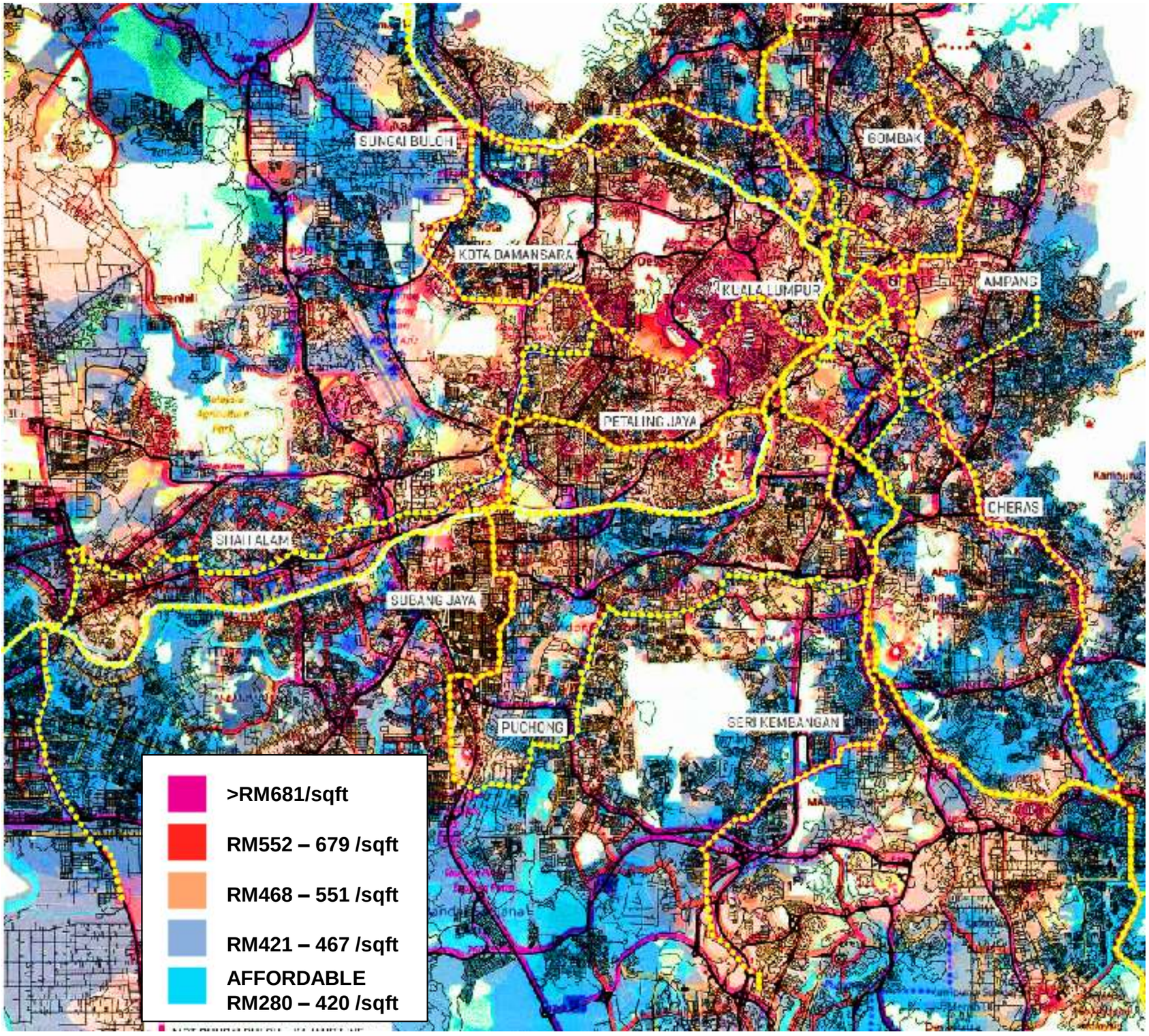
MACRO-LEVEL: URBAN

REDUCING CAR PARK PODIUM COSTS



As a result, location of jobs continue to be in expensive areas.

We must develop other centres of gravity, where there are opportunities for cheaper land and reduce job-home distance.

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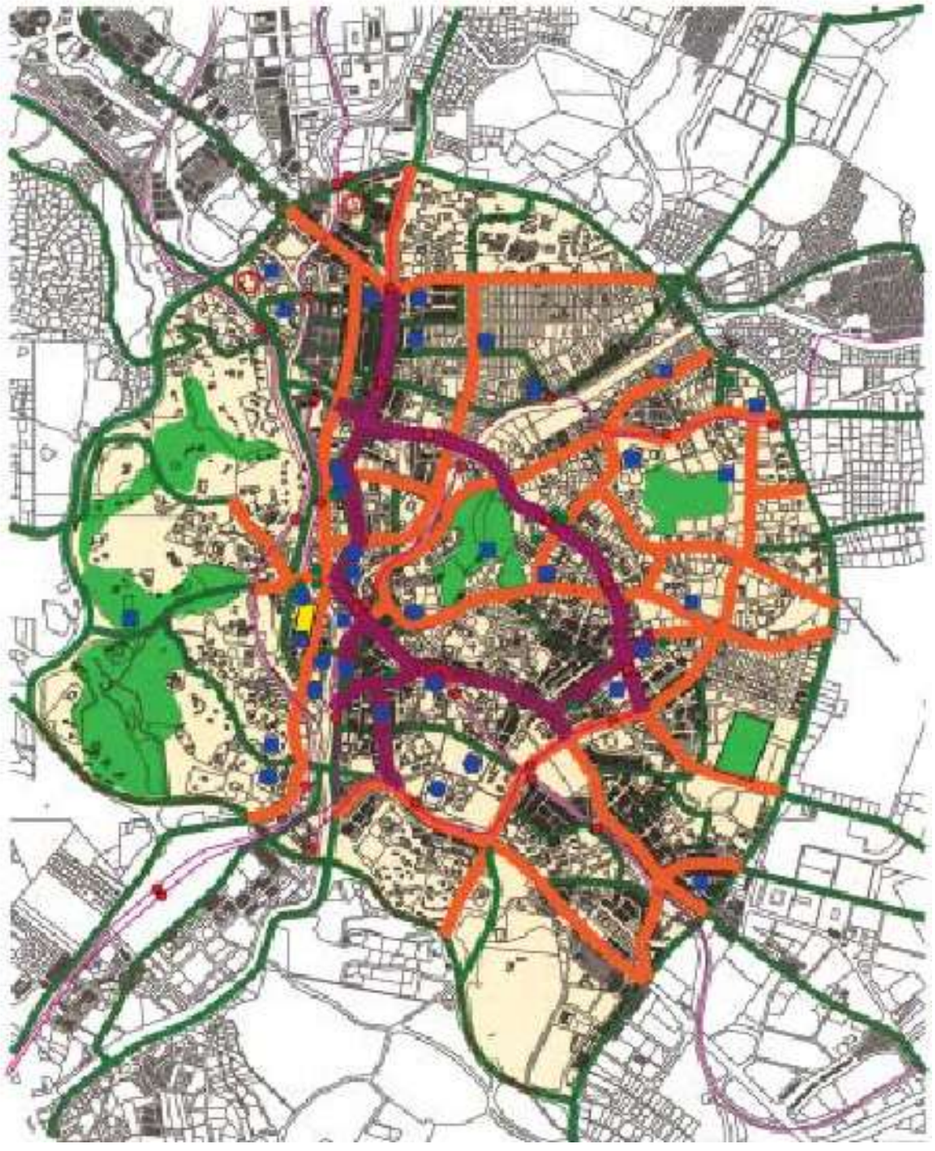

Major Pedestrian Network
Primary Pedestrian Network
Secondary Pedestrian Network
Rail Corridors
Parks
Plaza
Public Transport Nodes
Pocket Gardens
Seasonal Activity
Daily Activity

DBKL's Pedestrian Masterplan for KL City Centre is an example of a successful infrastructure to support the TOD zone.

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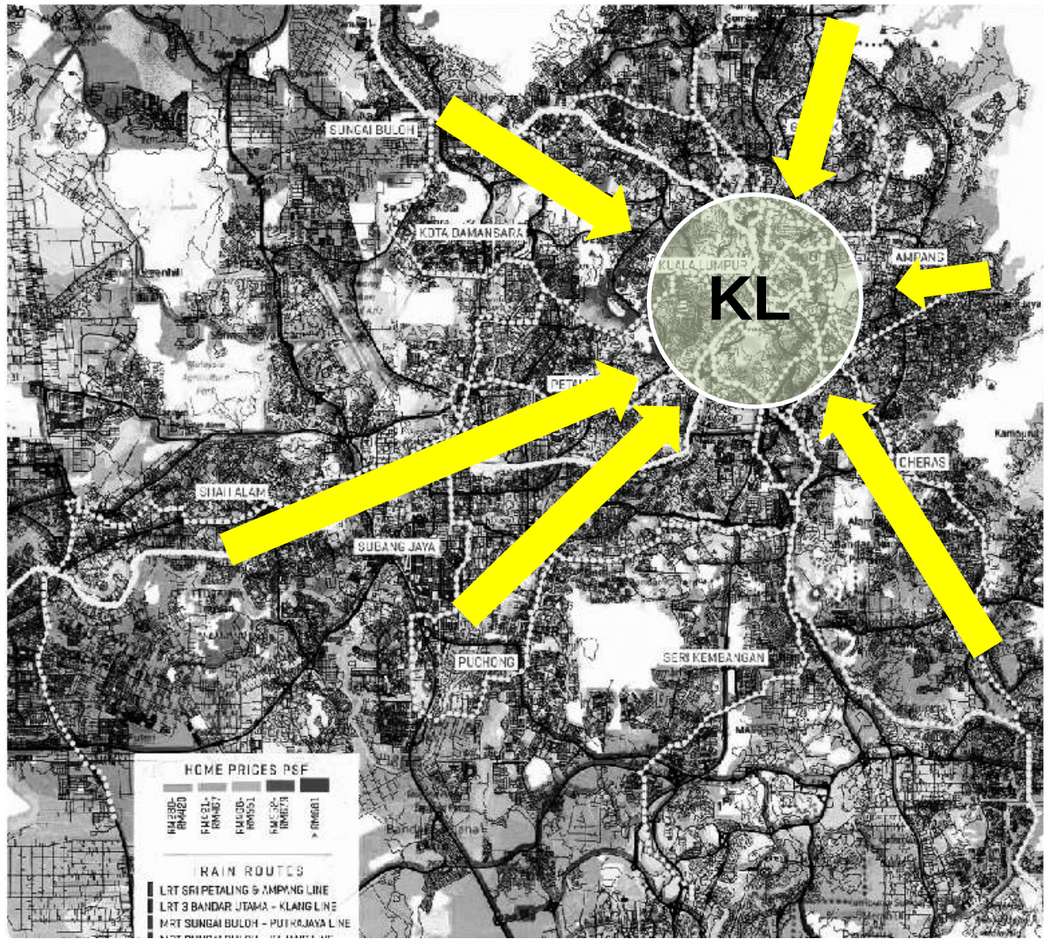

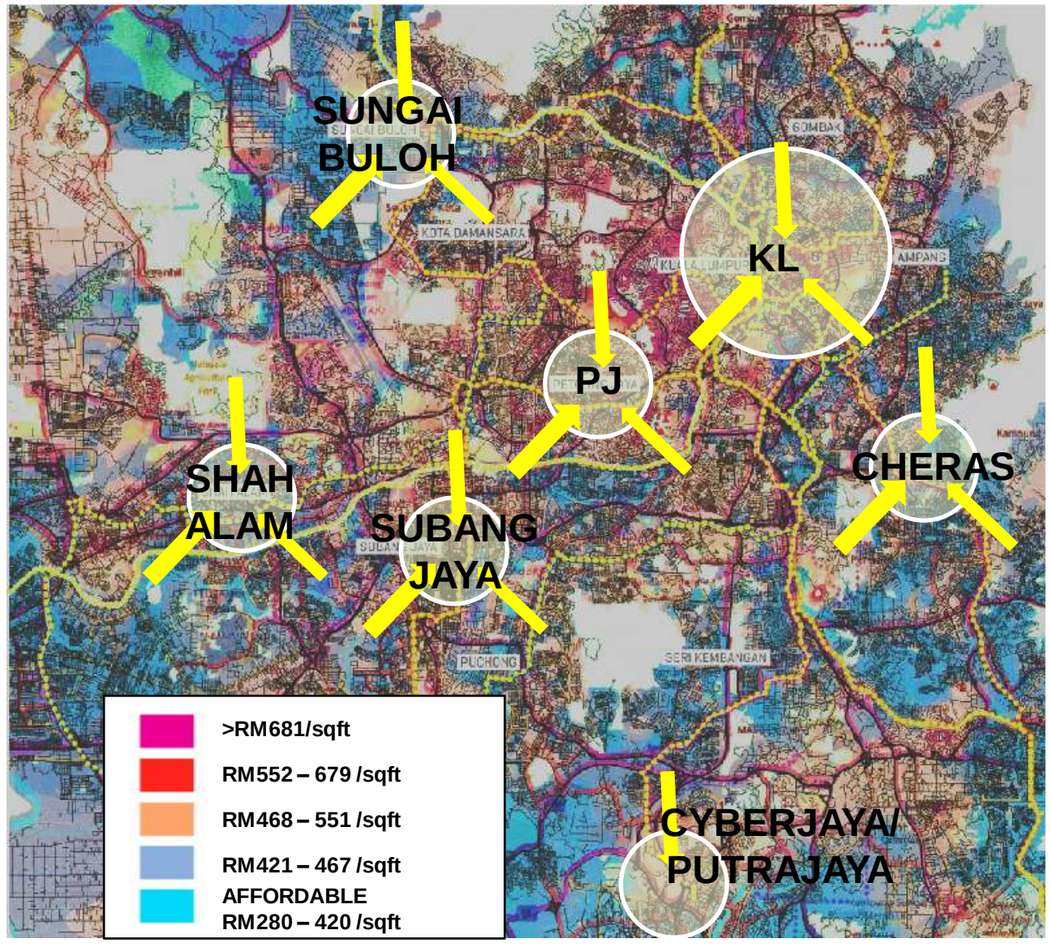

Encourage new centres (polycentric city) along Transit lines

- TOD as town centres: Basic government services, healthcare, schools/universities, banks

- Affordable housing in the extended TOD zones

- Diverse commuting pattern with secondary transit lines crossing the primary lines

Source: UN Habitat Sustainable Housing For Sustainable Cities A Policy Framework For Developing Countries

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MAIN TRANSIT ALIGNMENT

(MRT/LRT)

CAR SHARING

NON MOTORISED

LOCAL TRANSIT

TOD ZONE (300M)
- Direct access to a Station
- High property value
- High job / commercial concentration
- Few should be developed as Town Centres (basic government services, healthcare, schools, etc.)

TOD TOWNSHIP
THE EXPANDED LAST MILE (1500M)
- Secondary transit system (BRT, Tram)
- Cycling and non-motorised solutions
- Car sharing
- High residential concentration
- Potential for affordable housing zone

The TOD Zone requires a further expansion to **create more spaces that are cost-effective** for development of affordable housing - without eliminating future potential for higher value developments at prime areas next to the station.

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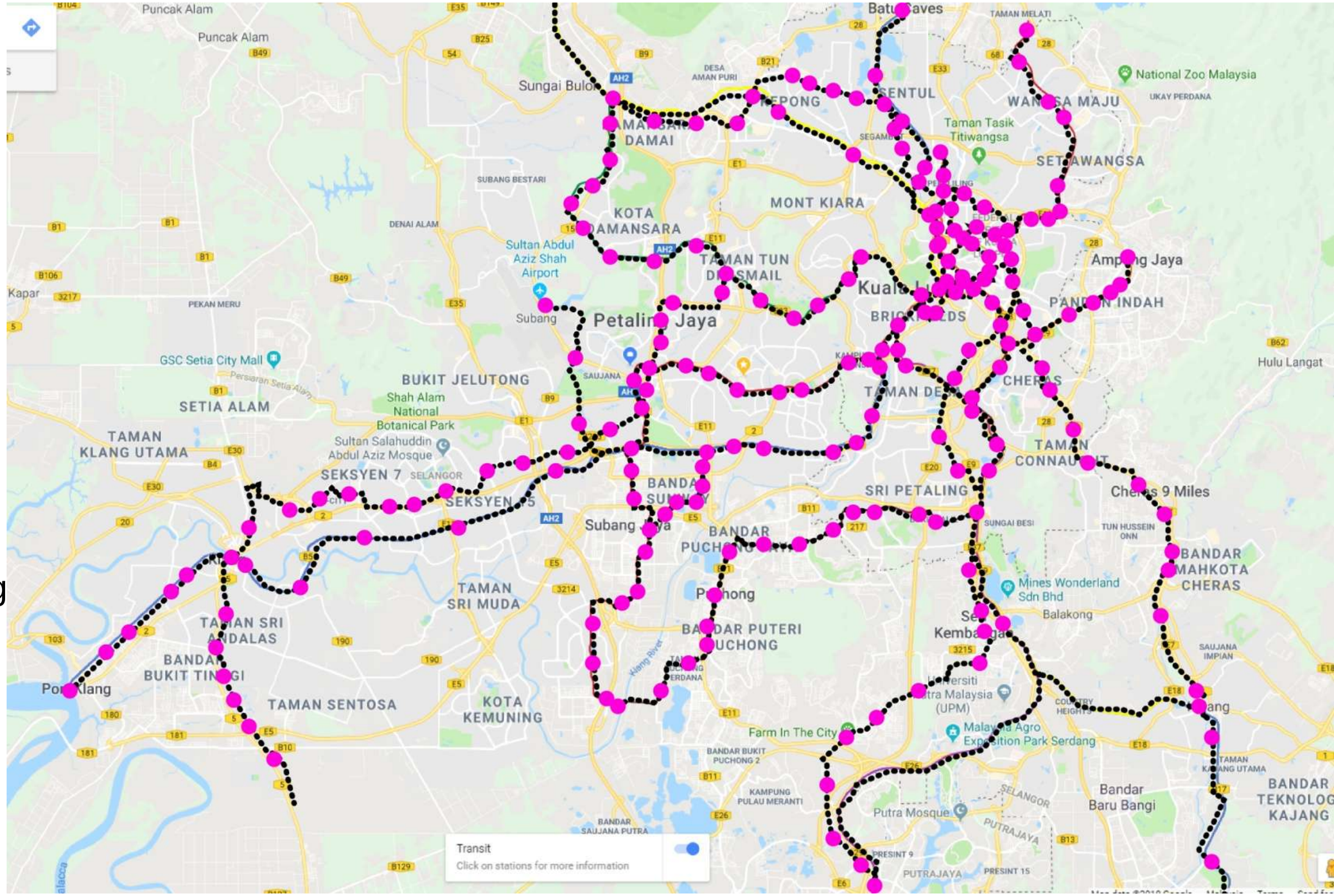
TOD Zone (300m radius) leaves many areas unserved.

As a result it is often viewed as premium land. Affordable housing in the this zone will be met with reluctance.



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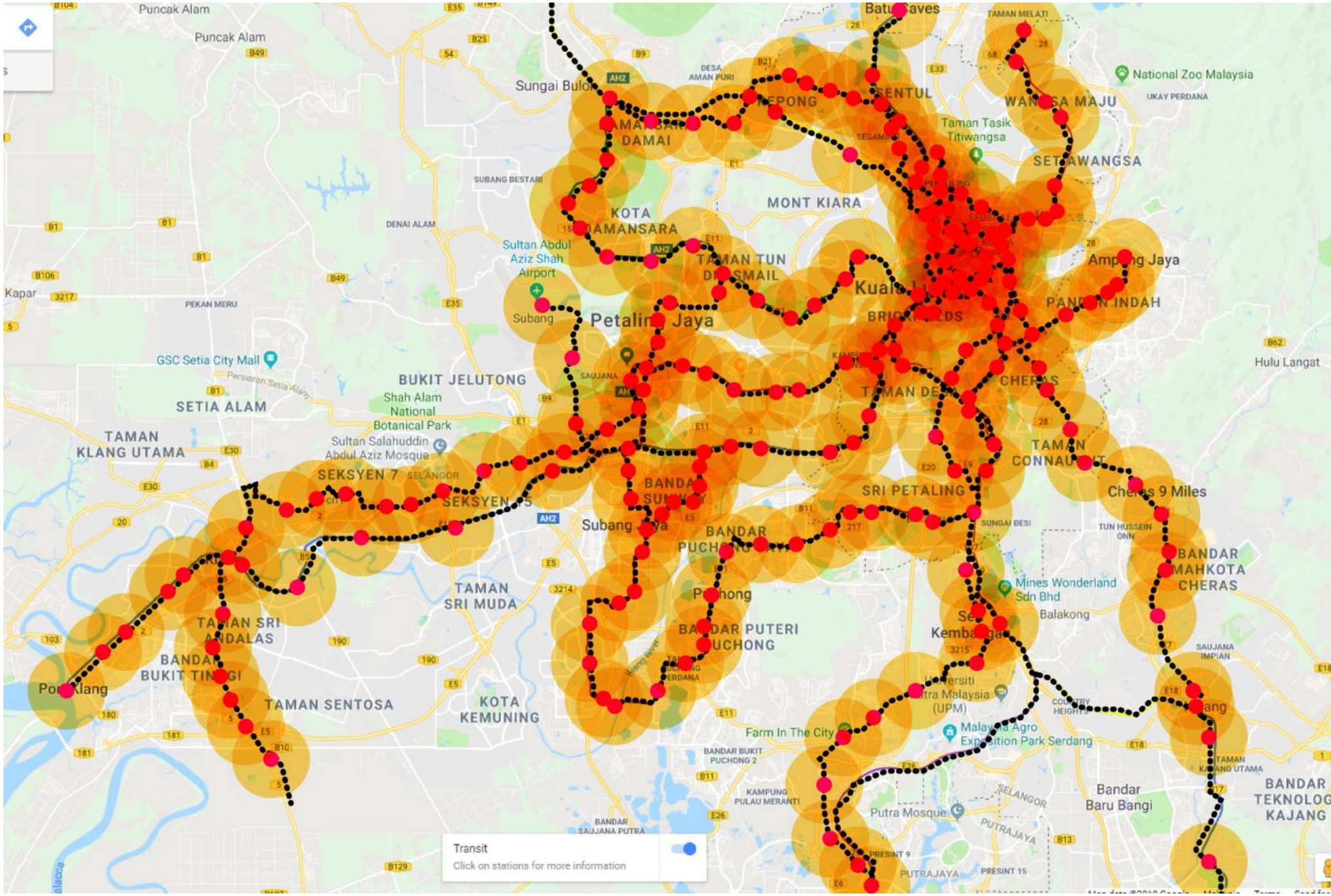
Expanded TOD Zone

Introduction of local transit and non-motorised transport infrastructure will unlock a vast area for affordable housing.



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1. BRT & Buses

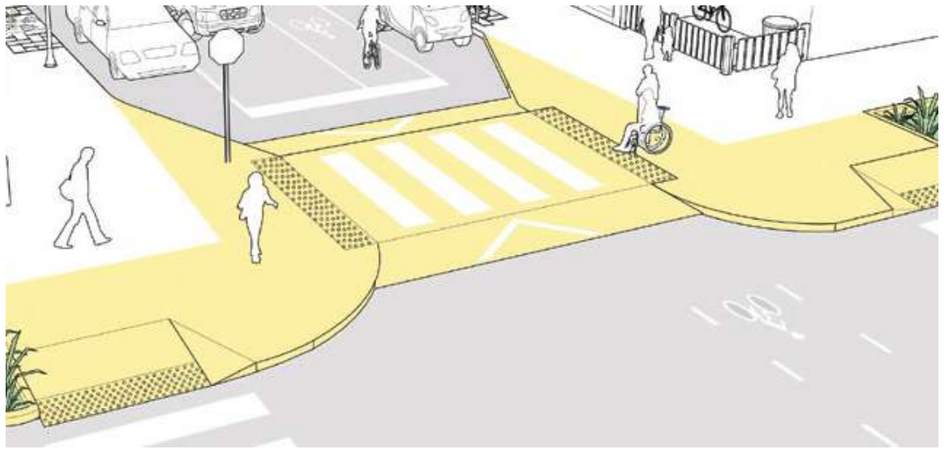
- Effective, low construction, operational and maintenance cost
- Success models across Asia & Latin America
- Can be upgraded into Tram system and self-driving tram lanes without interruption

2, CYCLING INFRASTRUCTURE

- Success depends on the continuity and length of network
- Must be accompanied by city-wide showering facilities
- Mechanised and surface bike parking
- Can include segway and e-scooters

3. PEDESTRIAN PRIORITY ZONES

- The last leg of transit requires an uninterrupted pedestrian environment
- Traffic calming strategy is essential at TOD town centres



Secondary transit systems are crucial to the success of the new Expanded TOD zone, therefore crucial to unlocking new affordable housing zones.

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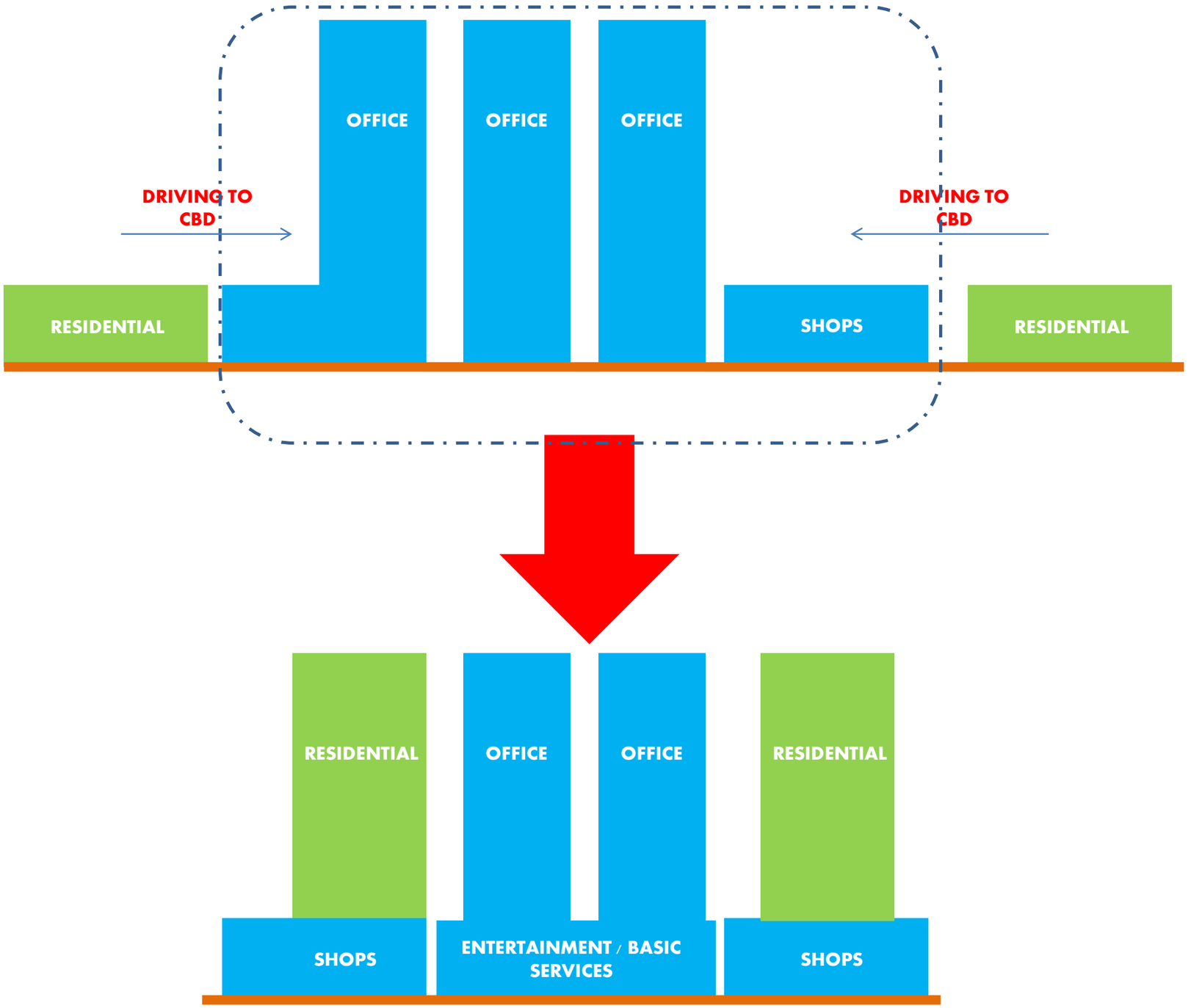

More mixed-use zones, reduce single-use zoning

- Distribute jobs and services across the metropolitan area
- Live/Work/Play within walking distance
- Transit station-accessible

1 Malaysia Economic Monitor June 2015 Transforming Urban Transport (2015) by the World Bank

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Incorporate new forms of private transport into housing regulations

- Discourage private ownership of cars

- Incentivise shared systems

- Provide the proper legal and physical infrastructure for car-sharing, bike-sharing, and ride-hailing apps

- Some included in housing complex, many more in Neighbourhood Centres

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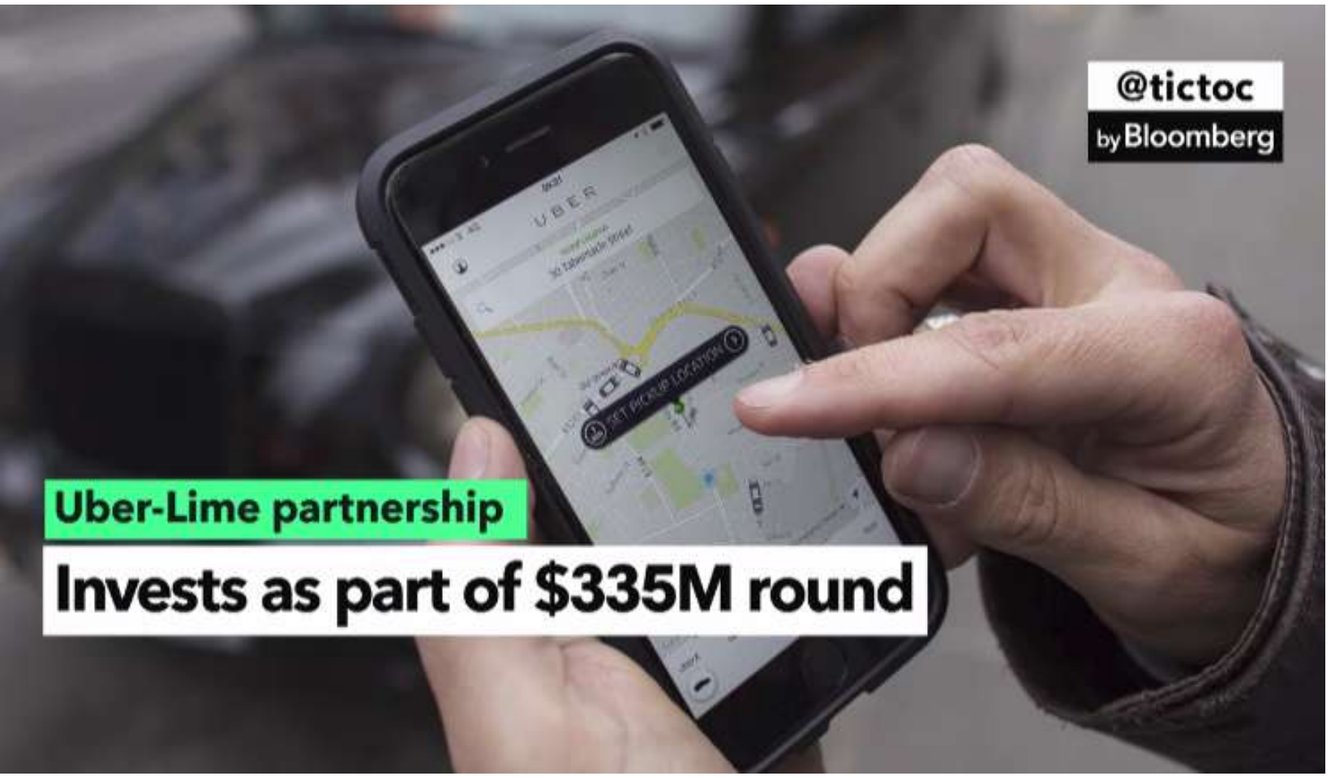

Hyperdrive

Uber Will Rent Scooters Through Its App in Partnership With Lime

Bloomberg

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moovby
Rent cars from the local community

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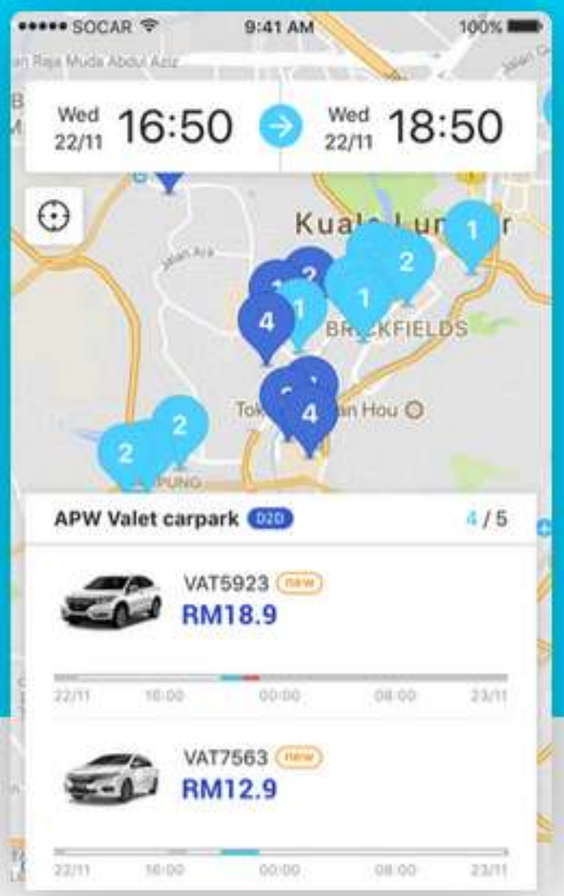
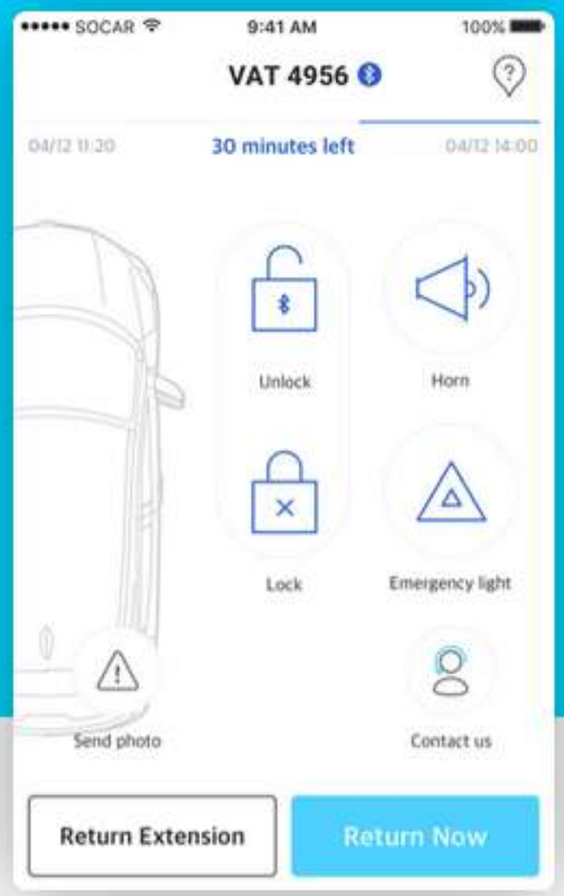
How it works

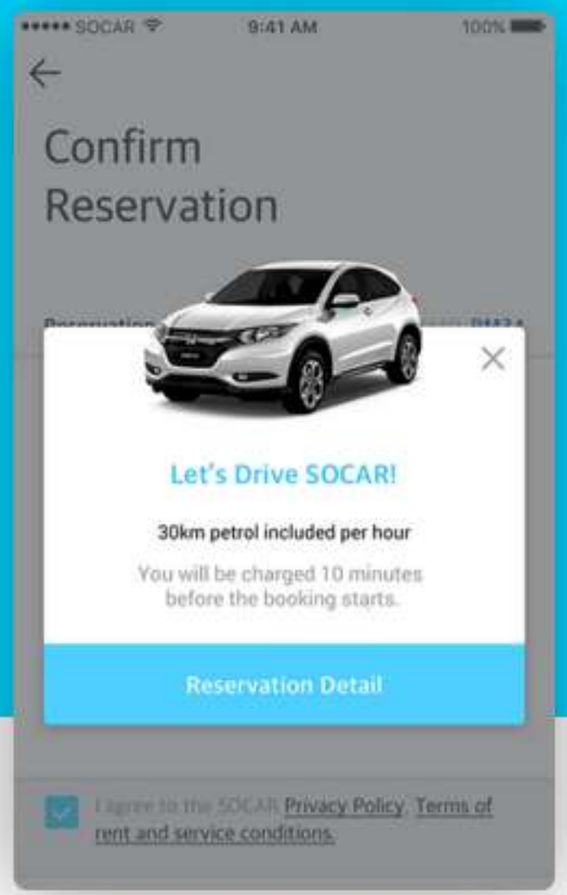
Book



Unlock



Drive



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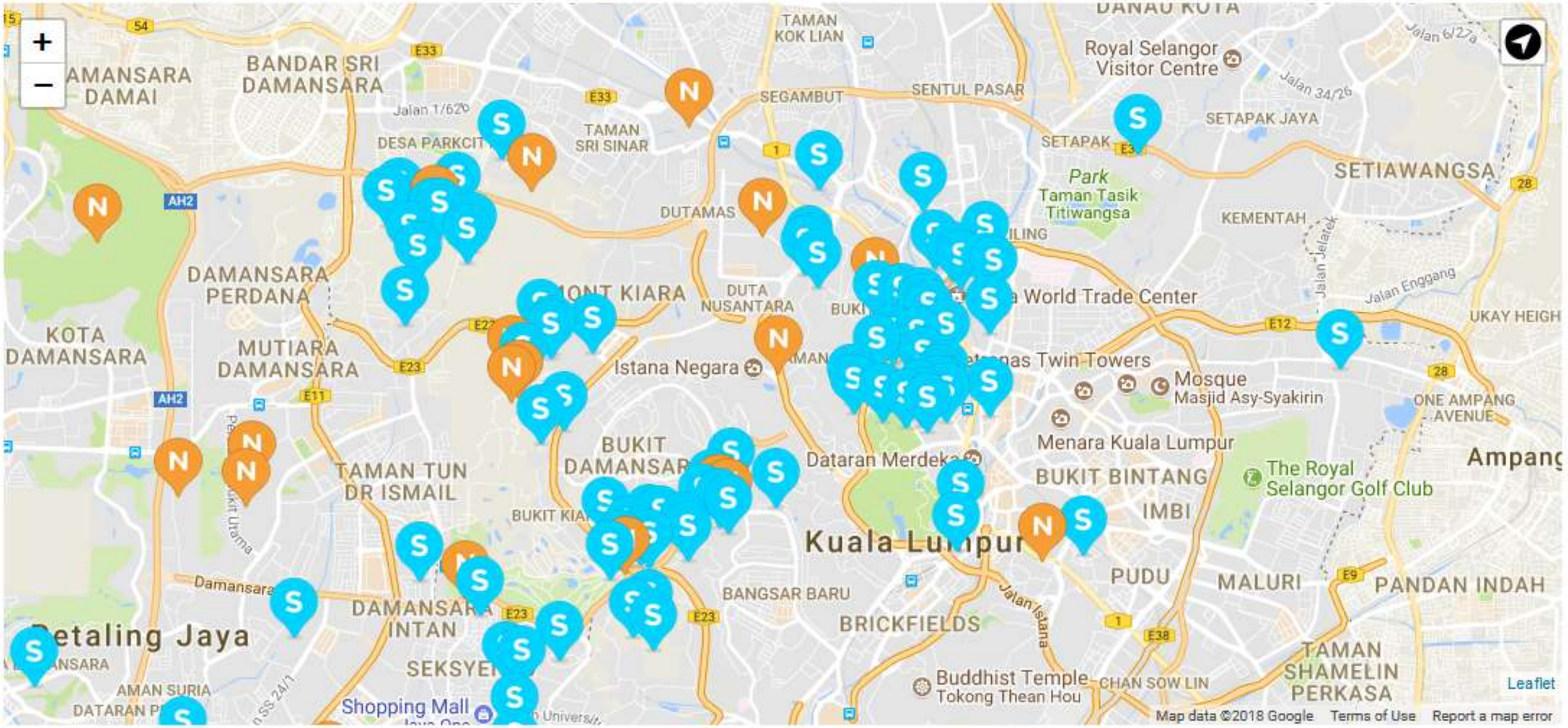

COST OF CAR OWNERSHIP

RM **72,000** BASE COST

90% LOAN Over 9 years

10% DOWN PAYMENT

RM **19,800** INSURANCE

Insurance for 9 years with no-accident discounts for:

Year 1	25%
Year 2	30%
Year 3	38.33%
Year 4	45%
Year 5+	55%

RM **810** ROAD TAX Over 9 years

RM **10,000** MAINTENANCE

Conservative estimate, covering consumables and labor.

RM **27,000** PETROL

RM250 a month for 9 years

BASE COST + INTEREST (Your interest rate may vary, based on credit rating and make of car)

RM72,000 + RM17,496 = RM89,496

INSURANCE & ROAD TAX + MAINTENANCE + PETROL

RM19,800 + RM10,000 + RM27,000

TOTAL COST OVER 9 YEARS

RM146,296 or **RM1,355** a month

Source : http://blog.socar.my/2018/06/29/car-ownership-vs-car-sharing-how-much-can-you-actually-save/

VS.

COST OF MULTI-FLEXING

RM **476.80** SOCAR RM14.90/hour @ 8 hours/week

RM **250** RIDE SHARING

RM **80** PUBLIC TRANSPORT

TOTAL COST PER MONTH

RM476.80 + RM250 + RM80 = **RM806.80**

Multi-flex means having multiple options to get from point A to point B at the flexibility of when you need it.

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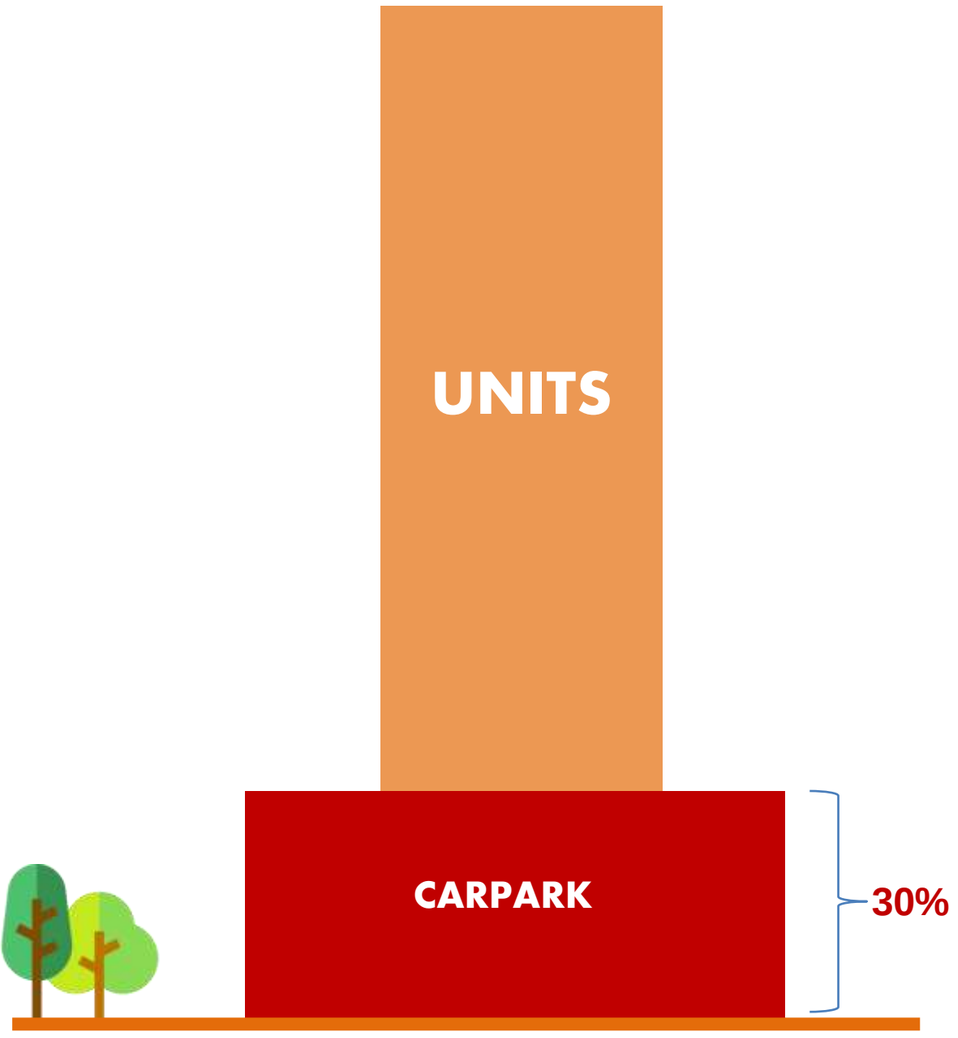

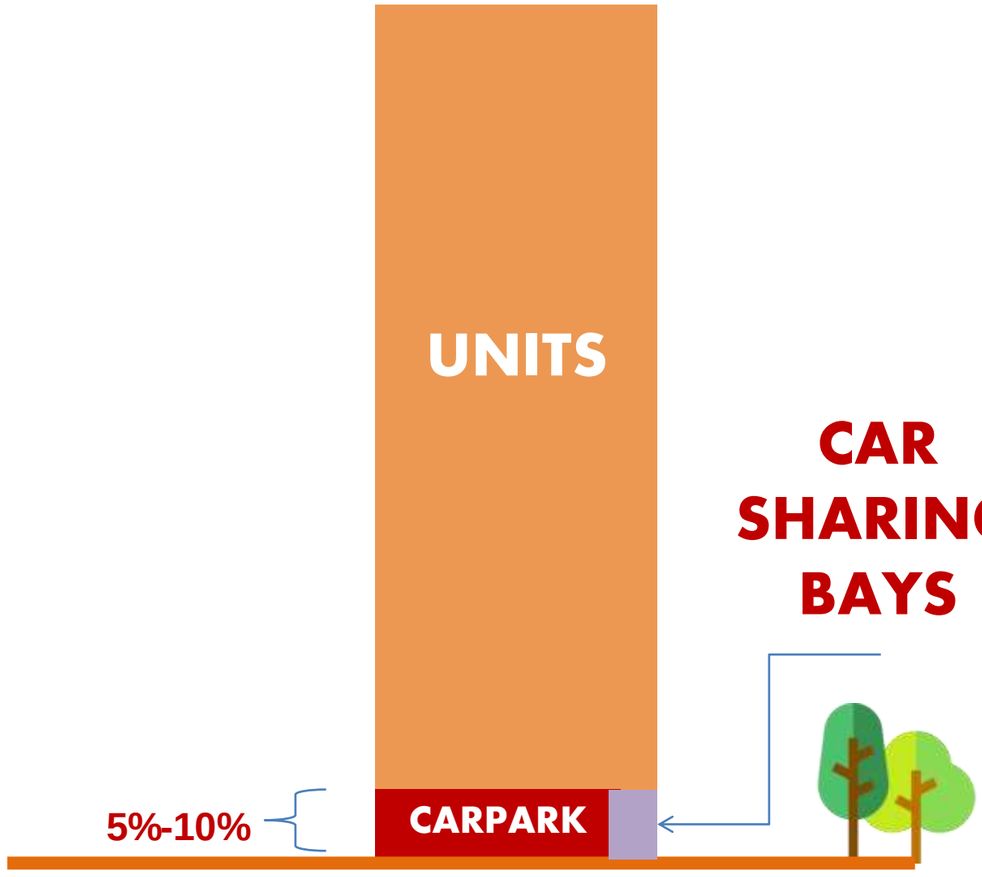

A.
Encourage new centres (polycentric city)

B.
More mixed-use zones, reduce single-use zoning

C.
Reduce minimum car park requirement

D.
Incorporate new forms of private transport into housing regulations

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THANK YOU