A LANDUSE PLANNING CONCEPT TO REDUCE CAR DEPENDENCY IN MALAYSIA HUMAN SETTLEMENTS
: Kelana Jaya, Taman Bahagia & Tmn Sri Permaisuri

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Problems

- Staying far from working place, facilities …
- Less convenient, less efficient public transport
- Traffic Jam
- Reducing quality of live
- The usage of public transport declined from 34% (yr 1985) to 16% (yr 2003) (Economic Planning Unit, 2006).

5 Person Own 1 Car in Malaysia

Number of Vehicle by Country, year 2002

Country	Total of Vehicle Registered ('000)		Total of Vehicle per 1000 population	
	Vehicle	**Car**	**Vehicle**	**Car**
U. S. of America	225,452	136,010	789	476
Japan	73,989	54,540	581	428
England	32,924	29,321	551	491
Australia	12,451	10,101	644	522
Malaysia	*12,022*	*5,001*	*490*	*204*

Source: Sin Chew Daily, 23 January, 2005.

Almost Half of Malaysian Families Less Than RM 2,000 per month

The Average Monthly Income for Malaysian Family

Level of Income	Year 1995	Year 1999	Year 2002	Note
RM 999 and below	34.5%	25.0%	19.0%	
RM 1,000 to RM 1,499	19.9%	18.8%	16.4%	**48.8%**
RM 1,500 to RM 1,999	13.1%	13.9%	13.4%	
RM 2,000 to RM 2,499	8.9%	10.1%	10.4%	Increasing
RM 2,500 to RM 2,999	6.1%	7.3%	8.3%	Increasing
RM 3,000 to RM 3,499	4.2%	5.7%	6.3%	Increasing
RM 3,500 to RM 3,999	2.8%	3.9%	4.7%	Increasing
RM 4,000 and above	10.5%	15.3%	21.5%	Increasing
Total	**100.0%**	**100.0%**	**100.0%**	

Source: Sin Chew Daily, 23 January, 2005.

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Move Forward

- **9th Malaysian Plan target - 30:70 public and private transport split**
- **9th Malaysian Plan doubling up the urban transport budget to RM 1.5 billion**
- **Landuse pattern. ..?**

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You want it ??? Or…

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Transit Oriented Development (TOD)

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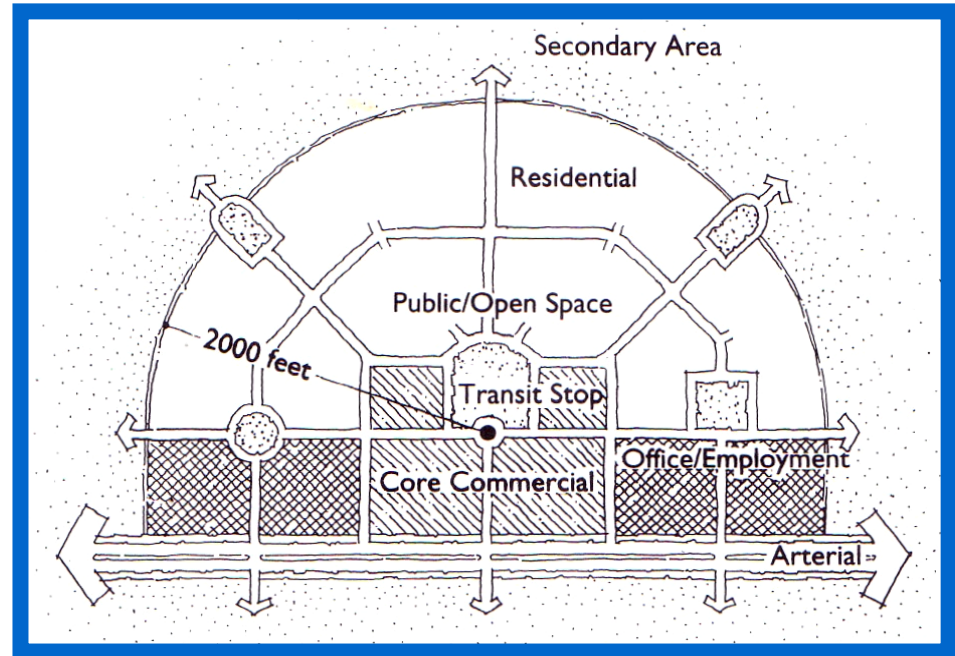# Transit Oriented Development (TOD)

- brings potential riders closer to transit facilities rather than building away from population centres & making people more dependent on roads & automobiles.

- increase the efficiency of public transport service, resulting in improved performance & cost effectiveness of public transport service.

Transit Oriented Development (TOD)

- mix residential, retail, office, open space & public uses in a walkable environment, making it convenient for residents & employees to travel by transit, bicycle, foot or car

- Higher density, mixed-use business/neighbourhood centers to be clustered around transit stations

- around the transit station have higher-density, mixed-use, pedestrian-friendly development

Transit Oriented Development (TOD)

- around SkyTrain rail transit stations in Vancouver, BC - households located within 300m of a station owned about <u>10% fewer vehicles</u> on average than households located more than 1,000 meters from the station, & <u>average household vehicle ownership is 31% lower</u> than at suburban locations a few miles away (Victoria Transport Policy Institute, 2004)

Transit Oriented Development (TOD)

- <u>22% of Orenco (Portland) commuters regularly use public transit</u>, far higher than the 5% average for the region, and 69% of Orenco residents report that they use public transit more frequently than they did in their previous neighbourhood, and 65% would like to use public transit more than they do now (Victoria Transport Policy Institute, 2004).

Transit Oriented Development (TOD)

Metro 1994 Travel Behaviour Survey Results for Portland, Mulnomah County, Oregon.

Landuse Type	Mode share (in percentage, %)					Vehicle Miles of Travel per Capita	Autos per House hold
	Auto mobile	Walk	Transit	Bicycle	Other		
Good transit & mixed use	58.1%	27.0%	11.5%	1.9%	1.5%	9.80	0.93
Good transit only	74.4%	15.2%	7.9%	1.4%	1.1%	13.28	1.50
Rest of Mulnomah County	81.5%	9.7%	3.5%	1.6%	3.7%	17.34	1.74
Rest of Region	87.3%	6.1%	1.2%	0.8%	4.6%	21.79	1.93

Source: California Department of Transportation (2002)

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Transit Oriented Development (TOD)

- Across America, properties located within a five or 10 minute walk to a train stop are selling for <u>20-25 % more</u> than comparable properties further away (Andy Kunz, 2001)

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Komuniti Sejahtera

- Housing development based on neighbourhood unit with 5 minute walkable distance;

- Neighbourhood centre act as residents' focus & meeting point;

- Completed with necessary public facilities;

- Medium density to support for optimum public facilities;

- Mixed use with different development component, housing type, lot size, density, features and building design;

- Interconnected street network to increase the permeability and accessibility;

- Creating landmark as focus point;

- Providing safe public space;

- Providing safe and convenient pedestrian facilities;

- …

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Study

- Identifying a landuse concept for a more walkable and transit oriented neighbourhood

- through literature study and

- study on Kelana Jaya & Taman Bahagia, PJ & Taman Sri Permaisuri, KL.

Study Areas

- Areas within 800m radius from Light Rail Transit (LRT) stations of Kelana Jaya and Taman Bahagia at Petaling Jaya, and Salak Selatan (Bandar Sri Permaisuri) at Kuala Lumpur.

- Kelana Jaya and Taman Bahagia are mixed use development with houses, commercials, public facilities, LRT and feeder bus facilities. However, the major landuse within 800m from LRT stations is medium-low density development, which consists of 1 or 2 stories terrace houses, semi-detached houses, detached houses and shop houses.

- Bandar Sri Permaisuri is a higher density area. Major landuse in the 800m distance from LRT station is high rise housing development (apartment).

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APPLICABILITY OF "TOD" PRINCIPLES

Summary of TOD Principles (based on literature)	Applicability of TOD Principles in Local Context (Study Areas)	
	Yes	No
1. Lower car ridership for people living close to transit stop (within comfortable walking distance 2000ft. (609.6m))	Findings from PJ, private vehicle ridership decrease with shorter 'house to LRT station' distance. One third of respondents in '< 200m' distance from LRT station, walk to LRT station for work/school trip (Table 4)	Finding from KL with no significant difference. (Table 5)
	There are around 27% to 33% of respondents said that "stations near house" will encourage them to use public transport more frequently. (Table 10) Table 8 shows more than 95% of respondents (both sites) prefer to have walking distance < 11 minutes.	

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Table 4: Method Used to Work Place/School by House Distance from LRT, Petaling Jaya.

Distance from LRT	Method Use to Work Place / School (%)								TOTAL
	Walk-ing Only	Bus	Walking and LRT	Bus and LRT	Taxi and LRT	Bus, LRT and Taxi	Private Vehicle and LRT	Private Vehicle Only	
0 - 200 m	0.0	0.0	35.7	7.1	0.0	0.0	0.0	57.1	100.0 (14 sample)
201-400 m	18.8	0.0	12.5	0.0	3.1	3.1	3.1	59.4	100.0 (32 sample)
401-600 m	5.4	8.1	21.6	0.0	0.0	0.0	0.0	64.9	100.0 (37 sample)
601-800 m	3.2	3.2	16.1	0.0	0.0	0.0	0.0	77.4	100.0 (31 sample)

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Table 8: Convenient Walking Distance from LRT to House (by Percentage)

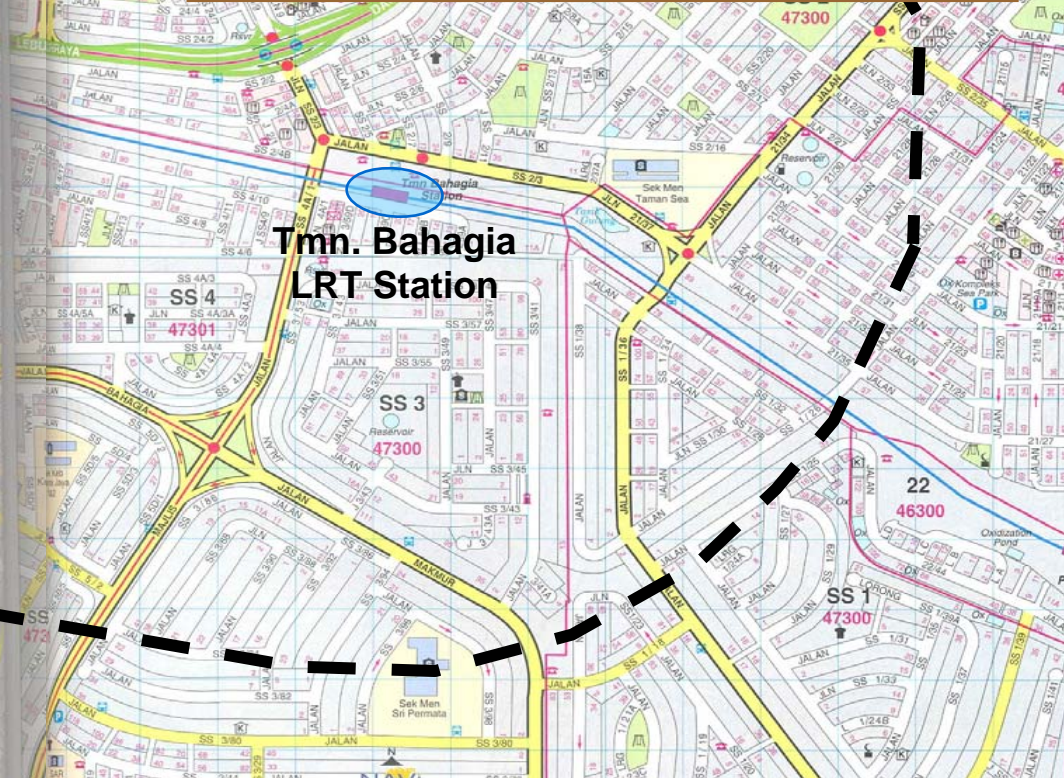|	PJ	KL
Less than 11 minutes	95.8	95.5
11 - 20 minutes	4.2	3.6
21 - 30 minutes	-	0.9
Total	100.0	100.0

2. Lower car ridership for areas with high quality public transport station at the neighbourhood centre (mixed with commercial).	LRT stations in study areas are not integrated with commercial, recreation & public facilities. LRT stations are located at 50 – 100 m from commercial areas. Respondent who chose private vehicle was high (57% to 77%). (Table 4 & 5)	
3. Recreational areas at neighbourhood centre. It will create liveable neighbourhoods and attractiveness of the neighbourhood centre (combining transit station, commercial and public facilities).	There are 13%-22% of respondents suggested to integrate transit station with commercial / facilities. (Table 10)	

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Houses & shops are located far form LRT station.

To shop house

To housing area

High Density Houses are located far form LRT station

>1km

Kelana Jaya LRT Station

Tmn. Bahagia LRT Station

800 m

Table 10: Suggestions to Make Yourself Use Public Transport More Frequent (%)

	PJ	KL
Station Nearer to House	32.7	26.6
Safe & Convenient Pedestrian Walkway	18.5	27.1
Supported by Feeder Bus	23.8	27.6
Integrate Public Transport with Commercial / Facility	22.3	12.8
All the listed proposals	1.9	1.0
Other	0.4	3.0
Definitely will Not Use	0.4	2.0
Total	100.0	100.0

TOD PRINCIPLES & STUDY AREAS

To Kelana Jaya LRT station

River reserve as 'physical barrier' between LRT & houses
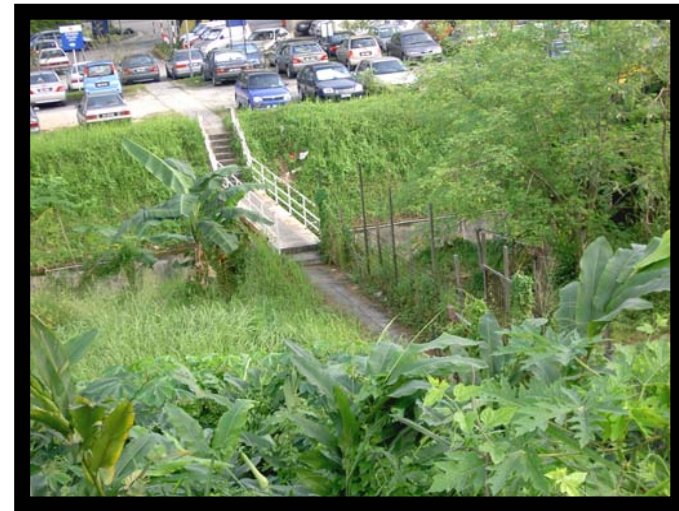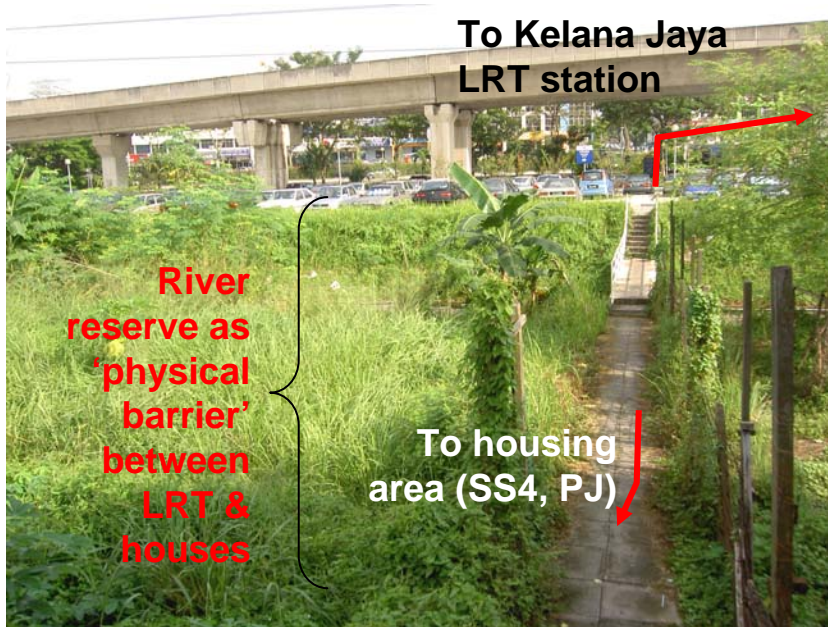
To housing area (SS4, PJ)

Photo 1:

| 6. Creating walkable neighbourhood through designing pedestrian friendly, low speed and safe street with sidewalks, street trees, building entries and sheltered parallel parking.	Table 9 shows 20.1% (PJ) & 50.1% (KL) respondents don't want to walk or cycle due to unsafe & inconvenient reasons. Respondents suggest to have a more convenient & safe environment for them to walk & use public transport (Table 10 & 11)	

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Salak Selatan LRT station

Town House, Villa Laman Tasik

Medium Cost Housing "Vista Tasik"

800m

500m
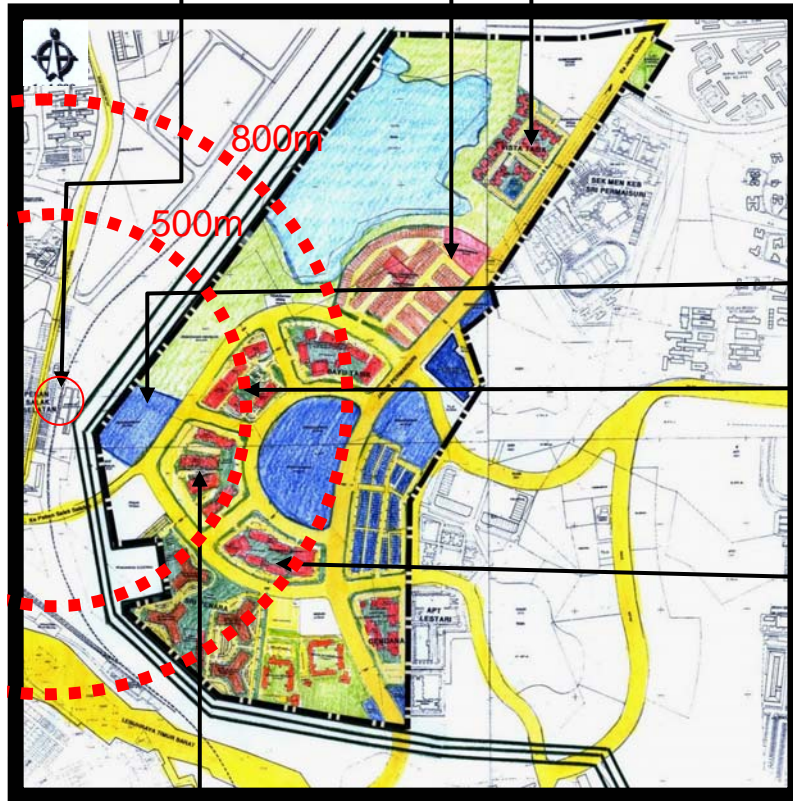
Shop Offices

Medium cost Condominium "Bayu Tasik 2"

Cemara

SOURCE: SITI RUSHIAH BINTI RANI (2005), PEMBANGUNAN BANDAR BARU KAJIAN KES: BANDAR SRI PERMAISURI KUALA LUMPUR, UiTM.

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Temporary food stall

To shop house & housing area

To LRT station

Photo 2:
Access to Salak Selatan LRT station from shop house & housing area, is not convenient even the distance is short.

| 7. Generating pedestrian activity that can encourage people to walk and enjoy the neighbourhood street life. | With the provided access (even not really good) between LRT stations & surrounding activities, the majority of LRT users from chosen respondents (especially in PJ) chose to walk. (Table 4 & Photo 1).

20% of the KL respondents walk to LRT station for work/school trip. There are only 4.8 to 8.6% of respondents who drive to LRT station for work / school trip. (Table 5 & Photo 2)

14% to 27% respondents said, with "enjoyable street", they will walk / use bicycle more frequently. (Table 11) | |

Table 4: Method Used to Work Place/School by House Distance from LRT, Petaling Jaya.

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0 - 200 m	0.0	0.0	35.7	7.1	0.0	0.0	0.0	57.1	100.0 (14 sample)
201-400 m	18.8	0.0	12.5	0.0	3.1	3.1	3.1	59.4	100.0 (32 sample)
401-600 m	5.4	8.1	21.6	0.0	0.0	0.0	0.0	64.9	100.0 (37 sample)
601-800 m	3.2	3.2	16.1	0.0	0.0	0.0	0.0	77.4	100.0 (31 sample)

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Table 5: Method Used to Work Place/School by House Distance from LRT, Bandar Sri Permaisuri, KL.

Distance from LRT	Method Use to Work Place / School (%)								TOTAL
	Walk-ing Only	Bus	Walking and LRT	Bus and LRT	Taxi and LRT	Bus, LRT and Taxi	Private Vehicle and LRT	Private Vehicle Only	
0 - 500 m	0.0	1.6	19.4	0.0	0.0	0.0	4.8	74.2	100.0 (62 sample)
501-800 m	0.0	0.0	20.0	0.0	0.0	0.0	8.6	71.4	100.0 (35 sample)

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TOD PRINCIPLES & STUDY AREAS

8. Creating a mix of housing densities, ownership patterns, prices and building types. This mixture of housing types and costs will make the TODs affordable to the diverse range of households and increase the social mix of different class of income groups and different races. Besides, the lower income will use the public transport and local retail more frequently than higher income groups.	Low cost apartment (Sri Penara) with lesser respondents choosing private vehicle, as compared to medium cost apartment (Cemera) within the same distance form LRT stations. Refer to Table 6.	

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Type of Apartment	Method Use to Work Place / School (%)				
	Bus	Walking and LRT	Private Vehicle and LRT	Private Vehicle Only	Total
Sri Penara (Low Cost Apartment) < 500m from LRT station	0.0	30.6	2.8	66.7	100.0% (36 sample)
Cemara (Medium Cost Apart.) < 500m from LRT station	3.8	3.8	7.7	84.6	100.0% (26 sample)
Bayu Tasik (Medium Cost Apart.) 500-800m from LRT station	0.0	20.0	8.6	71.4	100.0% (35 sample)

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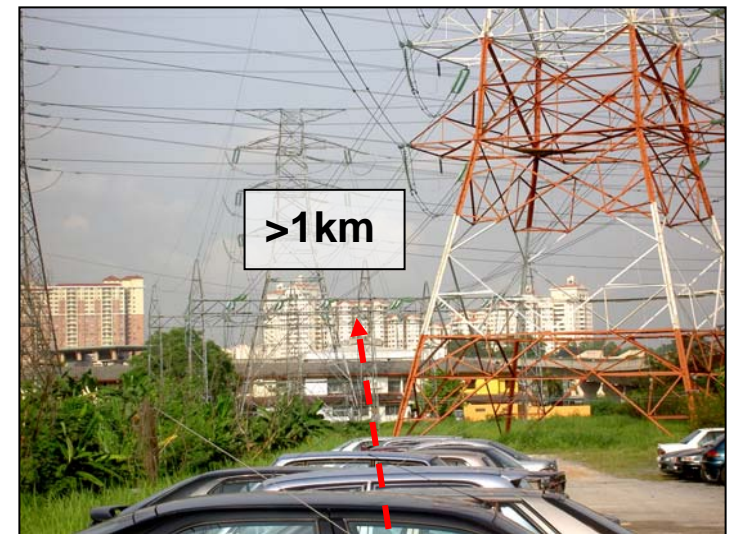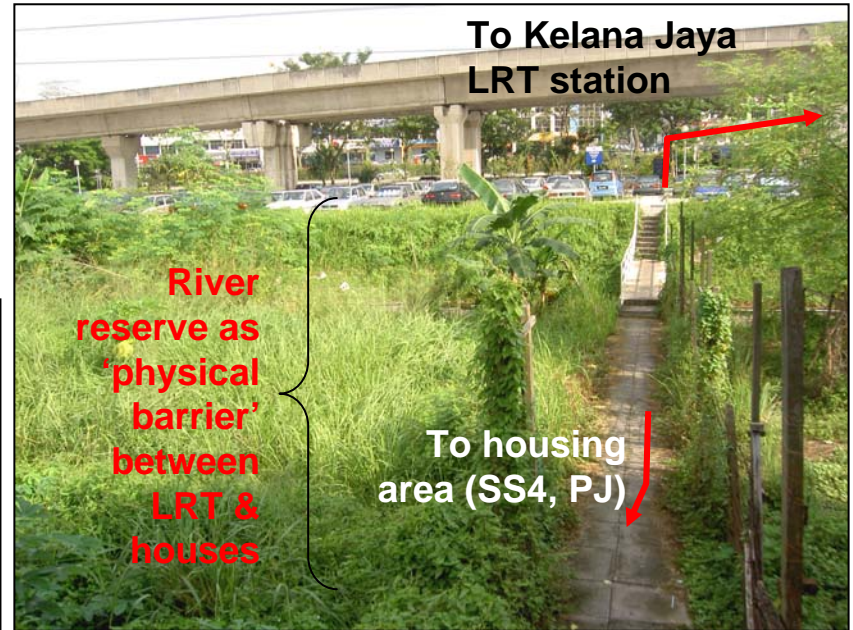
9. Restricting parking in the station area. If new development projects in station areas provide large parking lots, people living or working in the transit oriented neighbourhood will take advantage of it to drive. Besides, large parking area acts as a physical barrier between the station and the surrounding neighbourhood and reduce commercial and residential land.	Buffer (including river reserve) and parking areas keep the surrounding development / activities far from LRT station. It reduces the number of residents that stay close to LRT facilities. Refer to photo 1, 3 & 4. In order for a more frequent use public transport, a high percentage of respondents propose shorter distance to public transport station with a safe & convenient walking environment. (Table 10)	

To shop house

To housing area

To Kelana Jaya LRT station

River reserve as 'physical barrier' between LRT & houses

To housing area (SS4, PJ)

>1km

'Park and ride' is discouraging a real TOD.

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TOD PRINCIPLES & STUDY AREAS

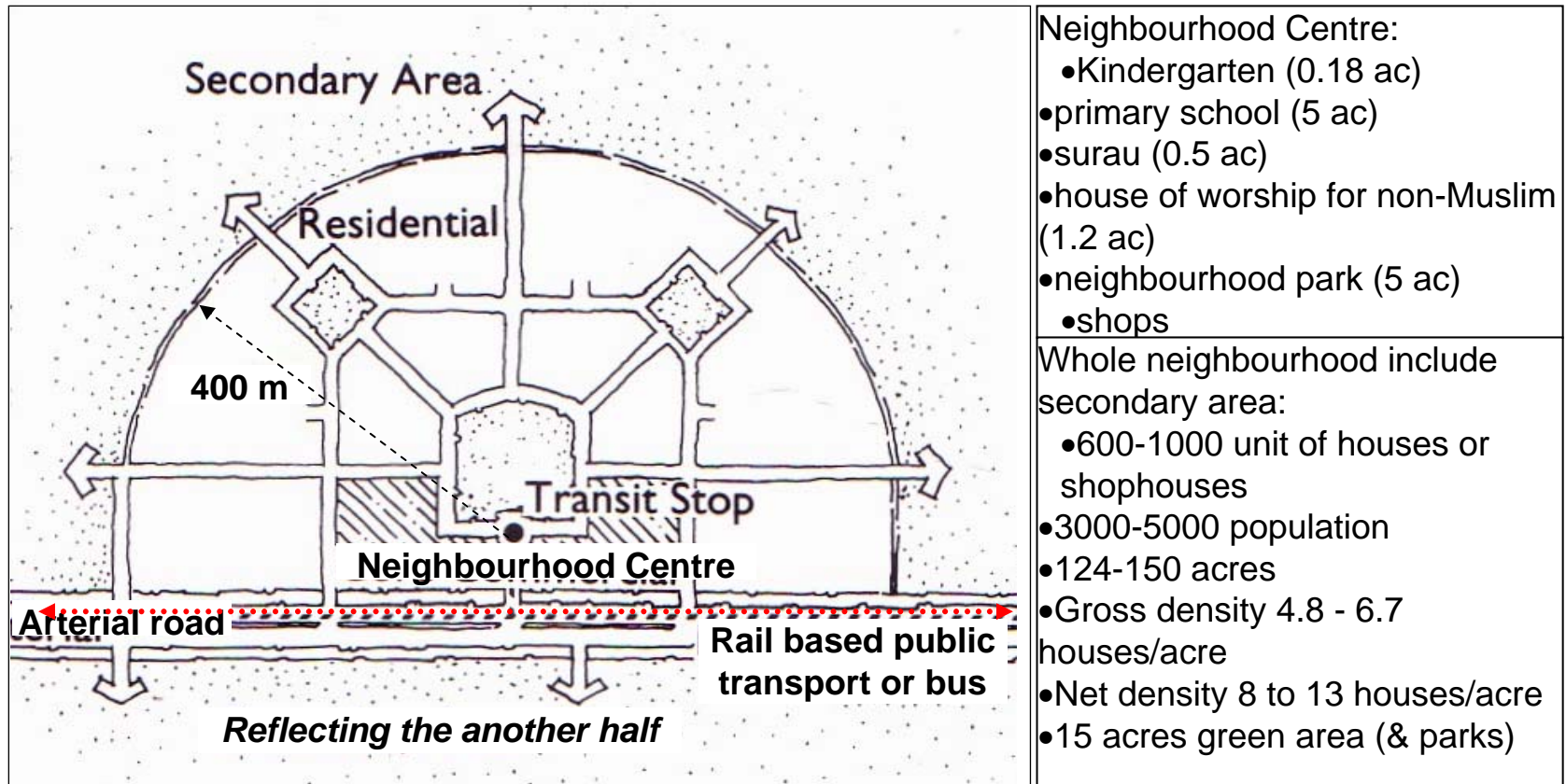|		
10. TODs must be located on or near existing or planned segments or a trunk transit line or feeder bus network. TOD is not just the design for individual neighbourhoods or urban areas only, but, the regional network of public transport service.	More respondents who stay in PJ study areas and work/study in KL and PJ-Damansara area are using public transport especially LRT. KL and PJ-Damansara areas are connected by LRT network, it encourages people to use LRT. However, respondents who work in Subang Jaya and Shah Alam did not use LRT as no service is available. (refer to Table 7)	

Location of Working / Study Area	Method Use to Work Place / School								
	Walking Only	Bus	Walking and LRT	Bus and LRT	Taxi and LRT	Bus, LRT and Taxi	Private Vehicle and LRT	Private Vehicle Only	TOTAL
Kuala Lumpur			34.5	3.4				62.1	100.0 (29sample)
Petaling Jaya & Damansara	13.6	5.1	16.9		1.7		1.7	61.0	100.0 (59sample)
Subang Jaya	11.1							88.9	100.0 (9sample)
Shah Alam								100.0	100.0 (3sample)

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Model Constructing

- Small size, with higher density and mixed-use area with different types of houses
- Located close to neighbourhood centres with public transport stations, public facilities and shops.
- Safe, convenient and enjoyable for pedestrian and public transport riders.
- It is important to identify size and minimum density of a transit oriented neighbourhood area -- able to have the following basic mix of landuses

  - 1 kindergarten
  - 1 primary school
  - 1 surau
  - 1 house of worship for non-Muslims
  - 1 neighbourhood park
  - 1 row of shops (around 8 units)
  - Different cost of houses, low cost housing adjacent to public transport station
  - 1 public transport station with good access to the surrounding area (barrier-free)
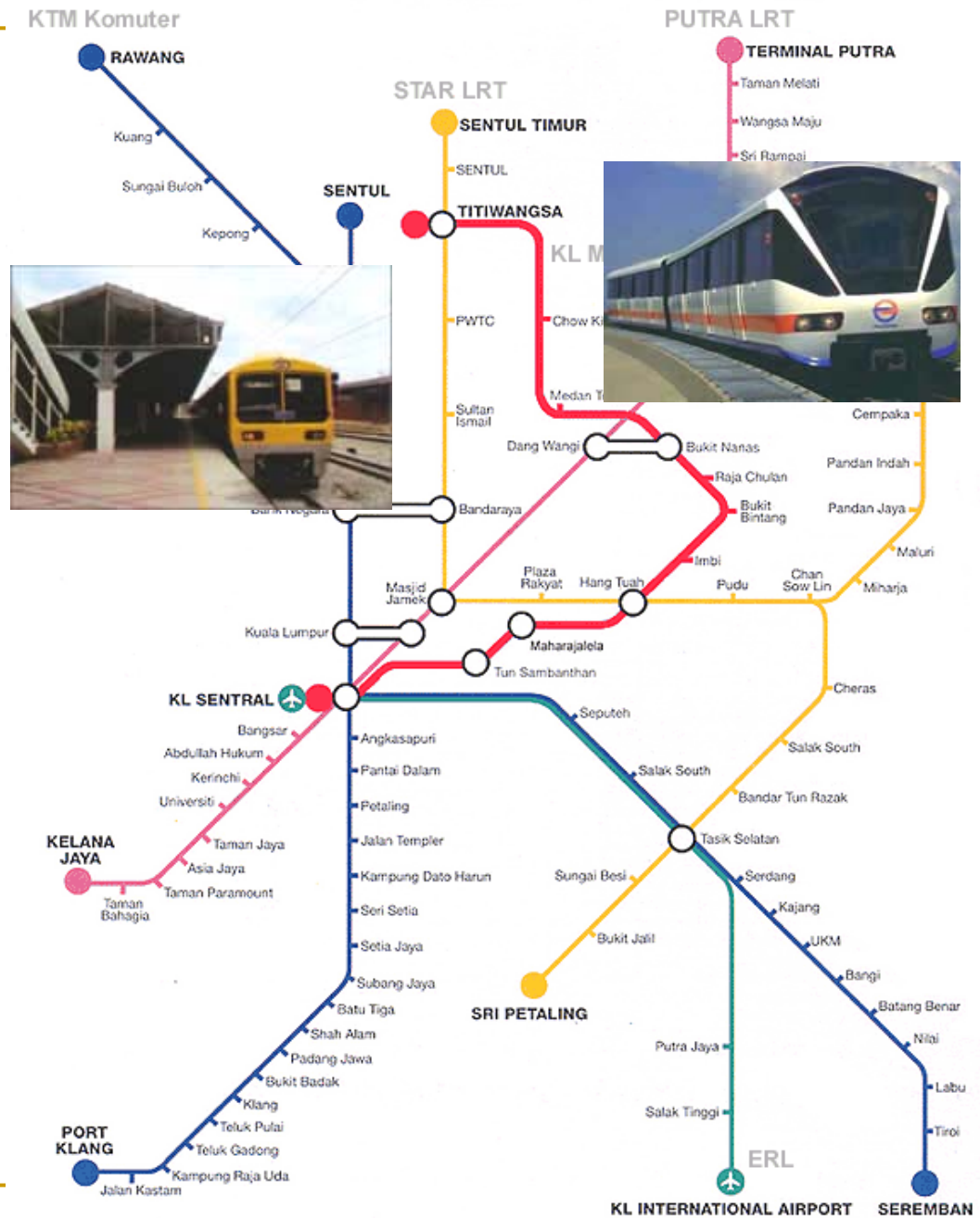
Model Constructing

Diagram 2: Model for Transit Oriented Neighbourhood

Neighbourhood Centre:
- Kindergarten (0.18 ac)
- primary school (5 ac)
- surau (0.5 ac)
- house of worship for non-Muslim (1.2 ac)
- neighbourhood park (5 ac)
- shops

Whole neighbourhood include secondary area:
- 600-1000 unit of houses or shophouses
- 3000-5000 population
- 124-150 acres
- Gross density 4.8 - 6.7 houses/acre
- Net density 8 to 13 houses/acre
- 15 acres green area (& parks)

Labels within diagram: Secondary Area, Residential, 400 m, Transit Stop, Neighbourhood Centre, Arterial road, Rail based public transport or bus, *Reflecting the another half*

Conclusion

Transit oriented neighbourhoods should be located along existing rail line to minimize investment in railway development. Infill development should be encouraged to increase density of existing built up areas along railway lines.

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Thank You.