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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2011/2012**

**COURSE NAME** : TRANSPORTATION SYSTEM AND  
ENGINEERING

**COURSE CODE** : BFT 4013

**PROGRAMME** : 4 BFF

**EXAMINATION DATE** : JUNE 2012

**DURATION** : 3 HOURS

**INSTRUCTION** : ANSWER QUESTIONS FROM  
SECTION A AND **THREE (3)**  
QUESTIONS FROM SECTION B.

THIS QUESTION PAPER CONSISTS OF **ELEVEN (11) PAGES**

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**SECTION A**

- Q1** (a) Operations are always related to level of services (LOS). Identify the types of LOS required to deliver an acceptable transportation system to the community. (10 marks)
- (b) In transportation management, there are two main components needed to ensure that the appropriate services are delivered effectively and efficiently. Explain the followings with examples:
- (i) Transportation Management System (TMS)
  - (ii) Transportation System management (TSM)
- (15 marks)
- (c) In determining the viability of a transportation system to be implemented, there are **FOUR (4)** methods of economic analysis that can be conducted:
- (i) Explain briefly the **FOUR (4)** different methods of analysis
  - (ii) Using data from **Table 1**, calculate the effectiveness score for the different plans based on the goals and objectives achievement matrices
  - (iii) Rank the plans in **Q1 (c) (ii)** and state your conclusion as an executive summary.
- (15 marks)

**SECTION B**

- Q2** (a) List **FIVE (5)** differences between types of transportation system. (5 marks)
- (b) In urban transportation system planning, or studies, it is usually recommended that evaluation procedures should consider a range of likely impacts.
- (i) Identify at least **EIGHT (8)** of the impacts recommended
  - (ii) Explain briefly the significance of the impacts on the proposed transportation system planning.
- (8 marks)

(c) Tanjung Jaya Motors has been in the bus industry for over 30 years. Its contribution is very instrumental to the Batu Pahat district community. However, the company has recently decided to employ a group of consultants to conduct a feasibility studies on its existing service and recommending new ideas for its new business approach. Based on the data given in **Figure Q2**;

(i) Determine which alternative will be the best option for the company by prioritization.

(ii) State which will be your long-term planning choice of transportation system for Batu Pahat district and give your reasons.

(7 marks)

**Q3** (a) Define IETS.

(4 marks)

(b) Explain the contributory factors to successful IETS initiatives.

(i) Identify and determine the advantages and disadvantages of transit system against automotive system (e.g. cars, taxis and buses)

(ii) Explain briefly on TBS proposal as an integrated terminal system

(8 marks)

(c) Based on the diagram illustrated in **Figure Q3**,

(i) Explain the correlations between Level of Influence and Cumulative cost.

(ii) What are the importance of planning, design, construction and maintenance (PDCM) in transportation system?

(8 marks)

**Q4** (a) Intelligent Transportation System is important to ensure efficiency and effectiveness of transportation flow in cities. Explain what is meant by the Integrated Transport Information System.

(5 marks)

(b) Kuala Lumpur has been experimenting many ways to combat congestions. The transportation system has undergone many changes especially the bus networks. State your opinion on the evolution of Kuala Lumpur transportation system pertaining to integration of existing public transportation networks.

(8 marks)

(c) Refer to **Q4 (b)**, sketch the growth of Kuala Lumpur transportation networks from its road networks to its transit networks. Suggest some improvements to the existing networks. (Use **Figure Q4** to explain your solution)

(7 marks)

- Q5** (a) What are the basic requirements of transportation planning? (5 marks)
- (b) There are many issues in transportation planning which include Housing and Land Acquisition Policies, The 3C process, Social Concerns, Legislation: Acts and Regulations, Planning Coordination and Equity. Explain what is meant by the 3C process. (7 marks)
- (c) Discuss what are the correlations between transportation planning and transportation system. Identify issues pertaining to cost, technologies, human resource and implementation. (8 marks)
- Q6** (a) Define the followings:
- (i) Transportation Management
- (ii) Transportation Operations (4 marks)
- (b) Management is important to reduce problems when establishing a transportation system. Explain the contributory factors to good transportation system management. (8 marks)
- (c) As a consultant, you are requested to comment on the existing plan to improve the Kuala Lumpur transit networks. However, the authority has also requested you to bench mark your review based on the expansion plans of the transit network in Los Angeles as shown in **Figure Q6**.
- (i) State your professional comments on the Los Angeles expansion plan
- (ii) What will you suggest the important elements that should be considered in the improvement plan for Kuala Lumpur? (8 marks)

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**TABLE 1: Evaluation Matrix for Transportation System Alternatives**

ITEMS INDEX	EVALUATION MATRIX	Possible Effectiveness Score	Score for Plan A	Score for Plan B	Score Plan C	Score Plan D
A	Benefit-Cost Ratio	40	35	26	30	37
B	Persons Relocated	20	10	20	10	15
C	Transit Load Factor	20	10	15	3	15
D	Core Accessibility	10	2	5	10	6
E	Low Income Transit Availability	10	3	10	3	9

Note: *The evaluation of the items is considered good if the score is nearest to the possible effective score values.*

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Alternatives	Capital Cost (RM)	Types Of Coach	Improvement Implications (RM)	Annual Cost On Operation And Maintenance (RM)	Life Years	Overhaul Year	Remarks (per coach for buses and per car for tram)
<b>V1 – Improvement of existing bus fleet</b>	12M	Std. Coaches (Mini)	3.0M	50K	5	2 times	Capacity:28 passengers
		Air-conditioned Coaches	6.0M	120K	8	3 times	Capacity:45 passengers
<b>V2 – Integrating bus fleet with other companies</b>	10M	Air-conditioned Coaches (New)	4.0M	80K	8	2 times	Capacity:45 passengers
<b>V3 – Integrating existing bus system with proposed tram system</b>	150M	Std. Coaches (Mini)	3.0M	50K	5	2 times	Capacity:28 passengers
		Air-conditioned Coaches	6.0M	120K	8	3 times	Capacity:45 passengers
		Tram System	-	250K	25	Every 5 years	Capacity:30 passengers (A tram will have two cars)

Note: Assume that each bus will generate 20 trips per day with full capacity each time and each passenger will be paying RM1.00 per trip whereas for trams, it will generate 40 trips per day with full capacity and passenger paying RM2.00 per trip.

**FIGURE Q2:** Alternatives for Transportation Improvement in Batu Pahat District

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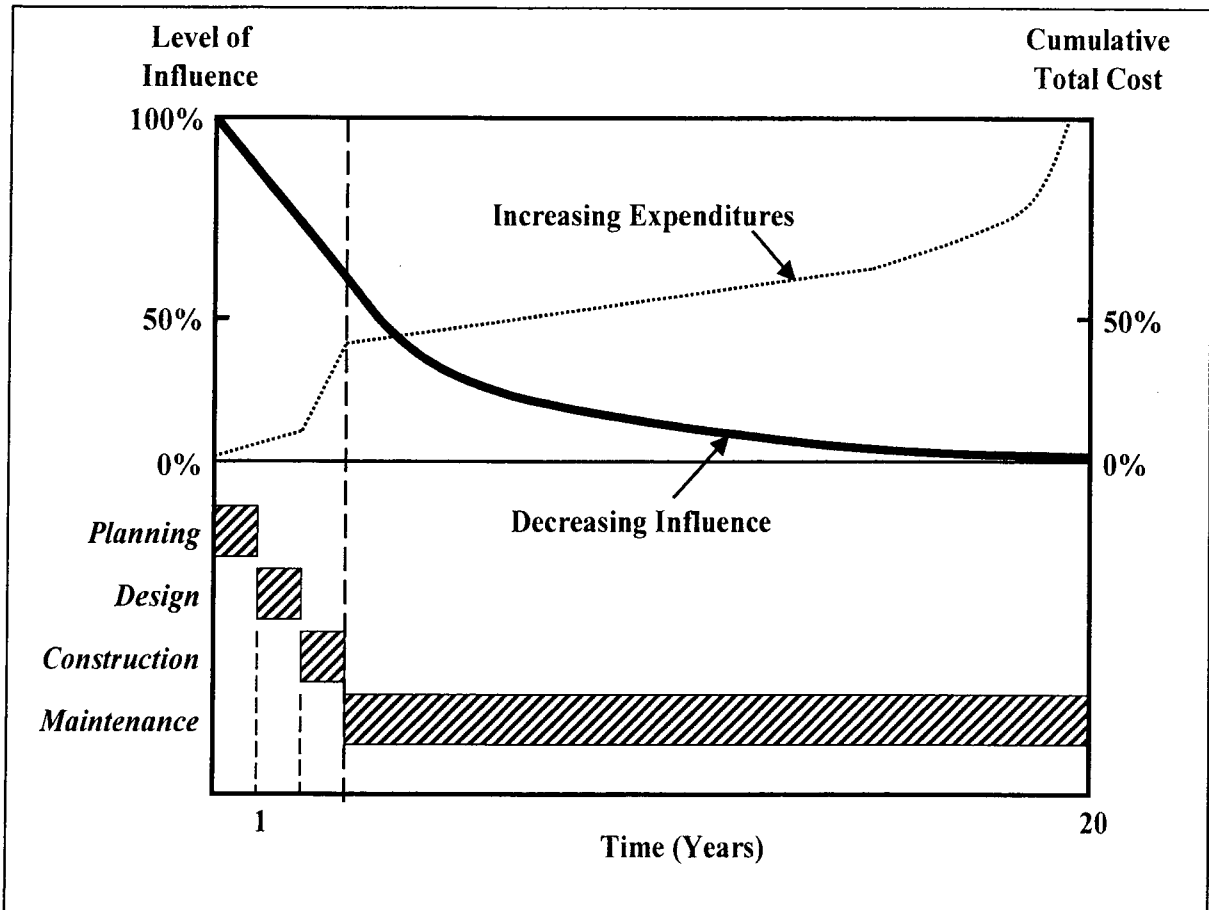


FIGURE Q3: Illustration of Level of Influence and Cumulative cost with number of years

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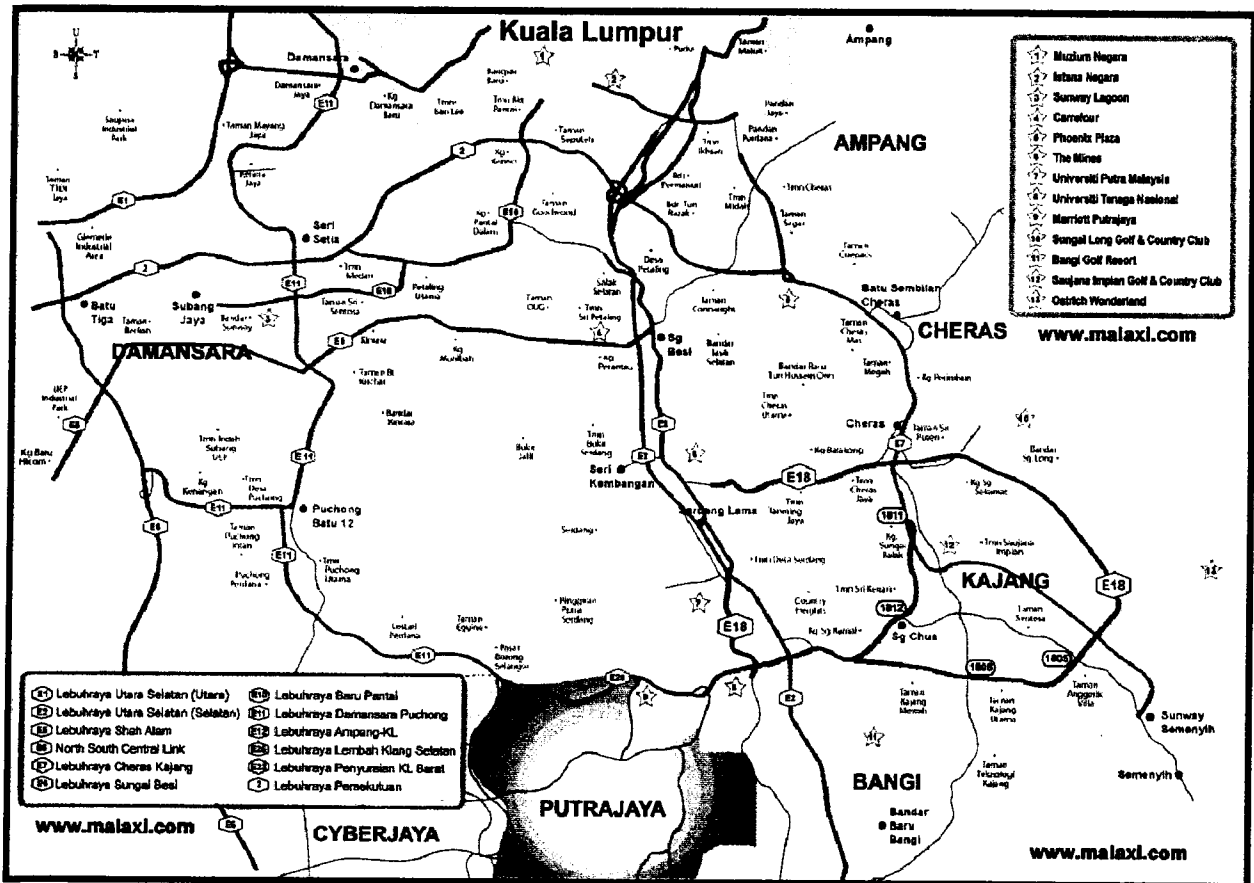


FIGURE Q4 (a): Plan layout of Kuala Lumpur for main road networks (DBKL, 2012)



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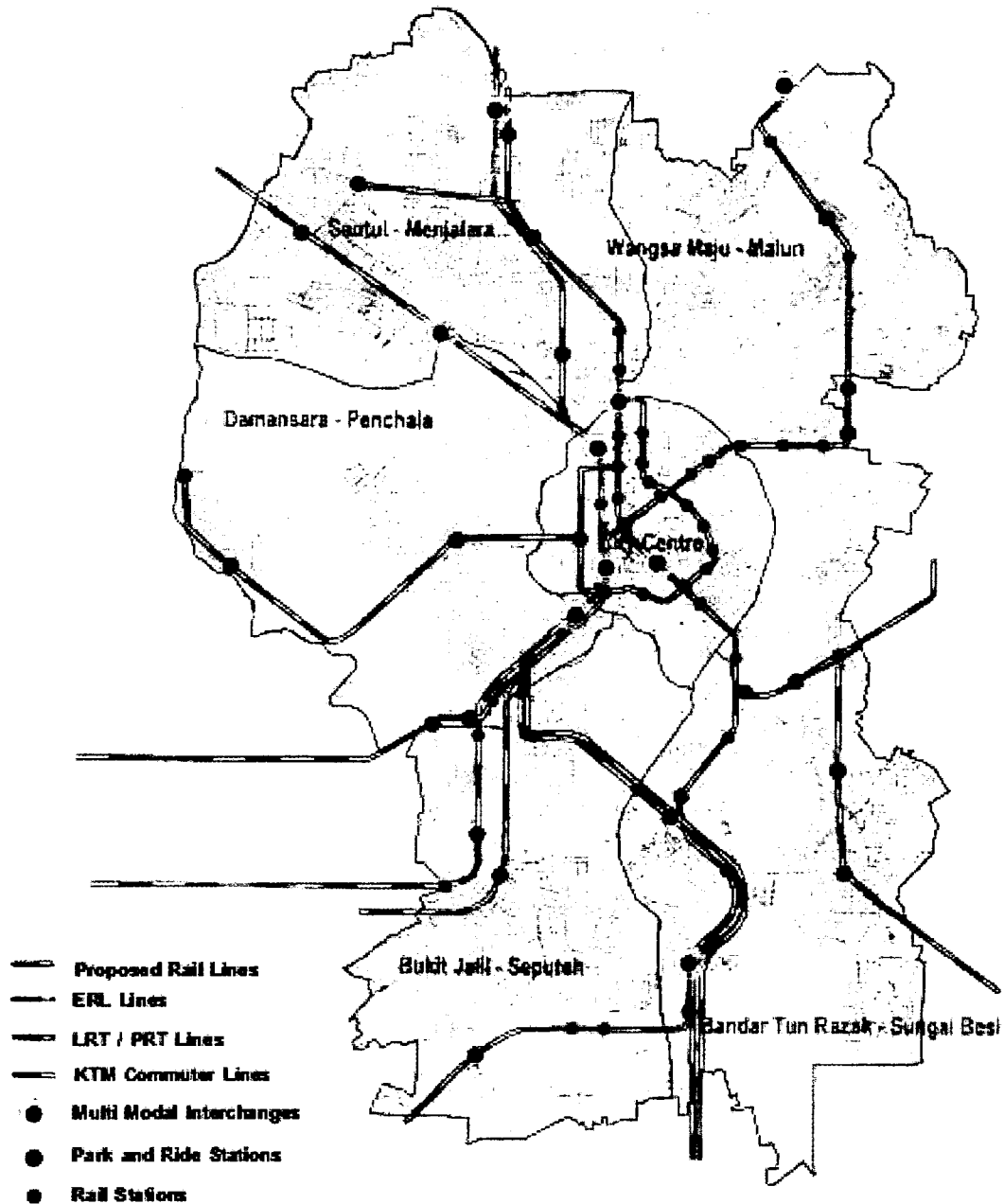


FIGURE Q4 (b): Plan Layout for Kuala Lumpur Transit Networks – Lines with land use indicator (Prasarana, 2012)

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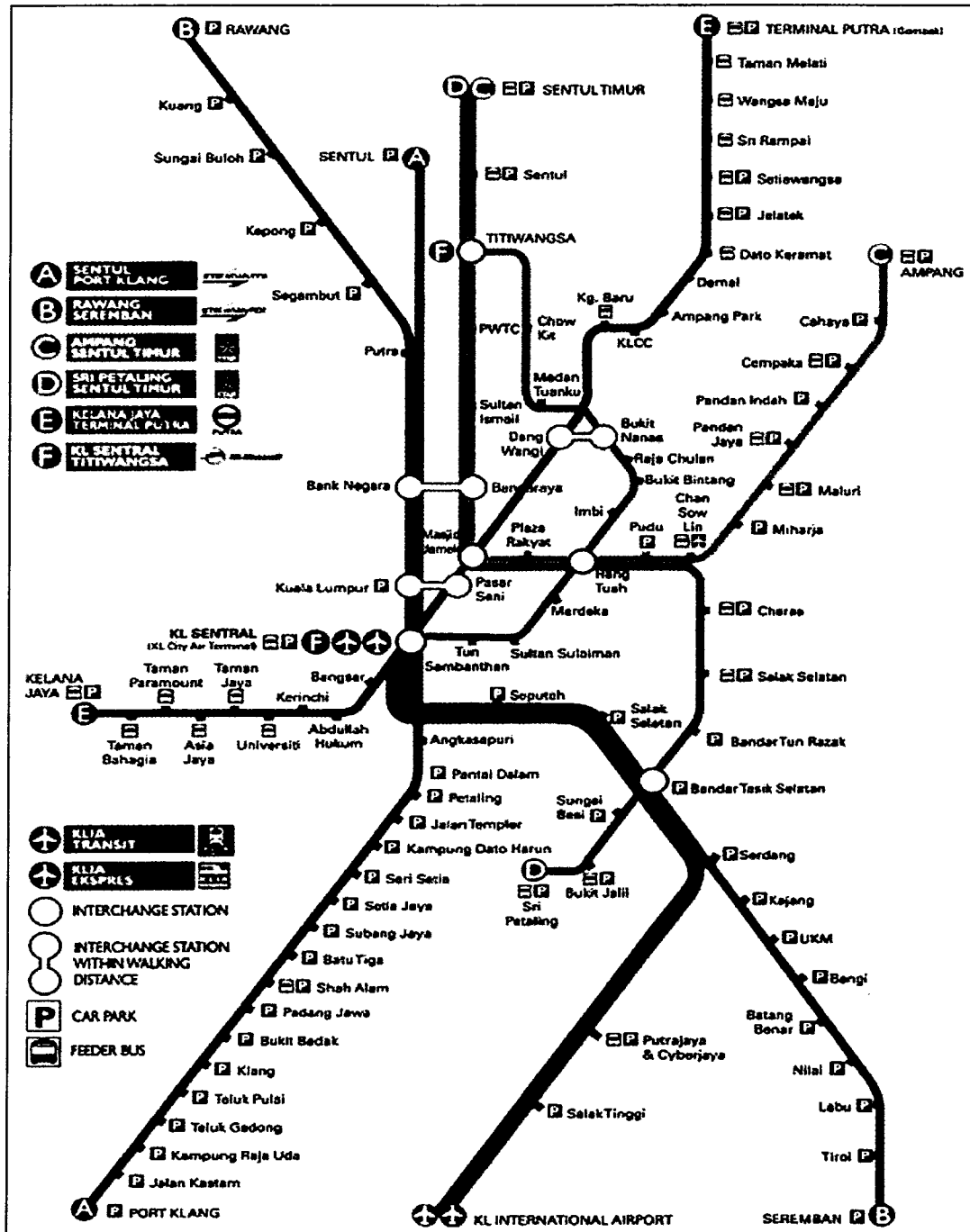


FIGURE Q4 (c): Plan Layout for Kuala Lumpur Transit Networks – Lines only (Prasarana, 2012)

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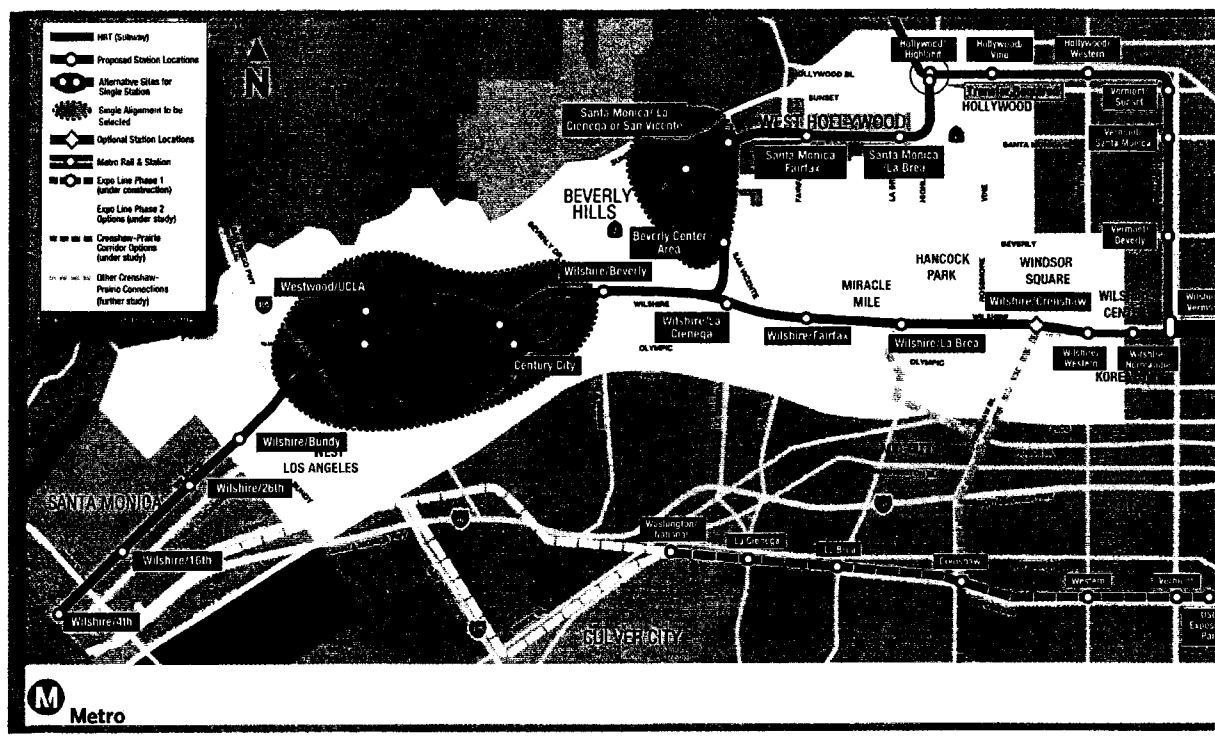


FIGURE Q6 : Plan Layout for Los Angeles Transit Networks – Lines and road networks (UCLA, 2011)