

### 3. STUDY FINDINGS

#### 3.1 Introduction

3.1.1 This section reports the findings of the Study after the completion of the tasks described in Section 2. Based on these findings, remedial measures were proposed and recommendations made for the Study. The findings are categorised into three groups: the base year parking demand and supply situations, the proposed revisions to HKPSG and the future years parking demand and supply situations.



*An Example of Non-designated Parking Spaces*

#### 3.2 Problem Identification – Parking Supply and Demand

3.2.1 PDM-2 was adopted as the computational tool to produce future demand forecasts in both district and territory wide levels for different design years. It should be noted that PDS-2 introduced a number of fundamental improvements to the PDM developed in PDS-1. Firstly, PDS-2 developed an integral parking demand model covering all major vehicle categories, including cars (private cars, taxis, and light vans), motorcycles, various categories of goods vehicles, and coaches. Secondly, the PDS-2 parking demand models are compatible with other traffic models including CTS-3 and Base District Traffic Models (BDTM). Thirdly, as the parking demand models are either based on the information of vehicle registrations or on land use and socio-economic data, the forecasts can be updated on a regular basis. Fourthly, some of the data for model calibration are obtained from parking characteristic and other surveys which would give better insight into occupancy profiles and time dependent capacity.

3.2.2 In order to assess the day-time as well as night-time situations of parking or loading/

unloading activities, two sub-models were developed: Ownership-related and Usage-related Parking Demand Models.

3.2.3 Ownership-related parking demand refers to the need of the car owners to park their cars when not being used to make a trip. This demand is concentrated in residential developments since car owners will always want to park their cars at or near their home end for convenience. Usage-related parking demand refers to the need of the drivers to park their cars at the place they want to visit and is associated with operational needs and non-home end of the trip.

3.2.4 In contrast to ownership-related demand, which is a fixed over-night value, usage-related demand varies over time. The assessment of the parking surplus or shortfall therefore needs to consider the duration for each condition. The quoted usage-related demand corresponds to the peak demand, and the need for specific remedial measures at district level will have to take the duration of shortages into consideration.

3.2.5 The future year parking situations were assessed based on the forecasts produced by PDM-2 and the proposed HKPSG revisions. The assessments are based on the planning data provided by the Planning Department and the forecast parking demand is derived from the trip demand forecast output of the CTS-3 Model.

#### 3.3 Base Year Parking Situations

3.3.1 The base year 2000 parking demand/supply were analysed for ownership-related and usage-related facilities by vehicle type. The findings are summarised below with detailed results enclosed as Appendix A.

##### *Private Cars*

3.3.2 Ownership-related supply includes domestic plus a portion of non-domestic spaces, as most non-domestic parking spaces are also available for night-time residential parking. In the year 2000, there was an overall surplus of approximately 82,000 ownership-related spaces with local shortages in 4 districts - Central & Western, Yuen Long, North District and North Lantau.

3.3.3 There was no shortage in usage-related, i.e. day-time, parking provision for private cars, taxis and light vans in 2000 for all districts. On a territory wide basis, there was a surplus of about 98,200 spaces.



*Usage-related Parking*

### **Goods Vehicles**

3.3.4 There was a general shortfall of 9,000 spaces in ownership-related goods vehicle parking spaces in 2000.

3.3.5 The shortfall was mainly in New Territories with the exception of Kwai Tsing which had a surplus of some 5,000 parking spaces. This was due to the abundant supply of goods vehicle parking spaces from container terminals and container back-up sites in the Kwai Tsing district. In the urban areas, supply of night-time goods vehicle parking spaces was generally sufficient except in Central and Western, Wanchai and Wong Tai Sin districts.

3.3.6 It should be noted that there were vehicles laying over on the Mainland or in service during the night. Based on the results of the 2000 Cross-Boundary Travel Survey, the estimated number of vehicles staying overnight on the Mainland was 6,300 (3,700 M/HGV, 2,600 container vehicles). Based on observations, it was estimated that about 4,000 vehicles were in service during the night. These two factors would help to offset the territorial shortfall of 9,000 spaces.

3.3.7 In 2000, there was no overall shortage in usage-related parking for goods vehicles with an overall net surplus of 13,700 spaces. Local areas with shortfalls included Eastern and Tsuen Wan Districts and the shortfalls were generally small in number.

### **Coaches**

3.3.8 In 2000, there was a shortfall of 3,300 coach parking spaces. There was parking shortage in almost all districts, with the exception of Wan Chai, Southern and North Lantau Districts.

3.3.9 Like goods vehicles, during the day, the majority of the coach fleet is on the move and the demand for parking spaces is much less than that for night-time. However, managing the uses of alighting/boarding spaces, especially at tourist/sight-seeing spots is an issue which needs to be addressed.

### **Motorcycles**

3.3.10 There was a general shortfall in night-time motorcycle parking of 9,000 spaces in 2000. The noticeable difference, when compared with the parking supply for other vehicle types, is that on-street parking makes up a large proportion of the total. The general observation is that while a large number of motorcycles park at non-designated spaces, their impact on traffic circulation is negligible.

3.3.11 In 2000, there was shortage of usage-related parking for motorcycles in Wan Chai, Eastern, Yau Tsim Mong, Sham Shui Po, Kowloon City, Tsuen Wan and North Lantau Districts. The observed incidence of illegal motorcycle parking was however small.

3.3.12 Motorcycle parking supply was dominated by on-street spaces, i.e., 4,500 on-street vs. 2,000 off-street. Although on-street parking was generally well utilised, the excess demand was usually served not only by the designated off-street spaces but more so by the use of undesignated spaces such as alley ways and spaces underneath flyovers and footbridges. The use of these undesignated spaces was common because, like on-street spaces, they are free of charge and convenient for motorcyclists. The territorial overall net shortfall of usage-related parking was about 500 spaces.

### **Other Vehicles**

#### **Public Light Bus (PLB)**

3.3.13 PLBs comprise the Red Mini-Buses (RMBs) and Green Mini-Buses (GMBs). As of 1976, Government has decided to maintain the

total number of PLBs at 4,350 and gradually replace RMBs by GMBs. The demand for PLB parking spaces is therefore stable. On the supply side, PLBs can park at STT sites and on-street parking spaces designated for motor vehicles other than motorcycles, medium and heavy goods vehicles and buses. PLBs can also park legally at PLB stands. Additional suitable roadside spaces have also been identified in Mongkok to deal with the local night-time parking problem.

### ***Private Light Bus***

3.3.14 In 2000, there were 2,100 private light buses and the fleet size remained fairly constant over the past few years. Since these light buses could be parked in a variety of spaces, parking demand was generally satisfied.

## **3.4 Review of Parking Standards in HKPSG**

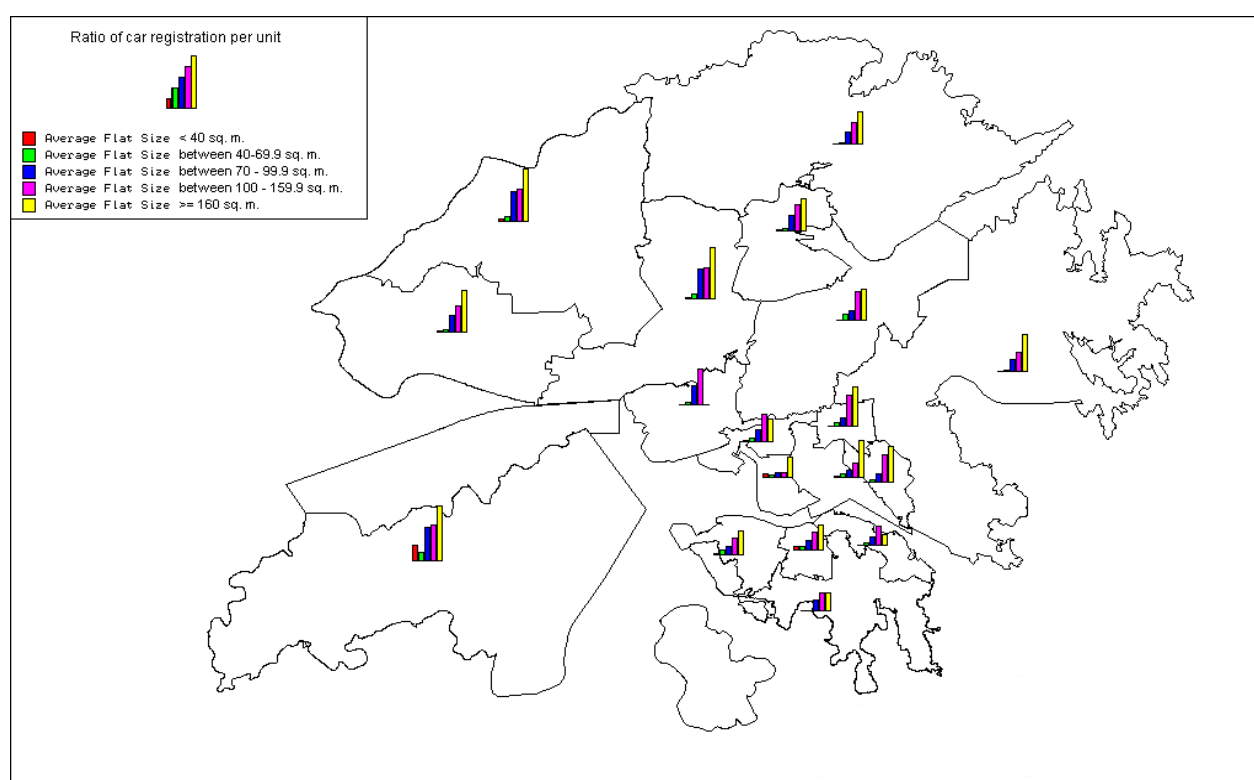
3.4.1 It is considered that encompassing parking provision in the planning process is the most direct way of controlling and influencing the supply of parking facilities to meet the demand. Regular review of parking standards in HKPSG is an effective measure to deal with the anticipated parking problems due to changes in circumstances.

3.4.2 Through the review and necessary revision of planning standards and guidelines in HKPSG, future developments and re-developments can accommodate the associated parking and loading/unloading requirements. This would minimise any potential adverse effect on the adjacent road network.

3.4.3 PDS-2 reviewed the parking standards in HKPSG at two levels: applicability of current standards under existing and future situations and adequacy of the determining parameters in the current standards to reflect the factors that affect parking. A summary of the recommended major changes to parking standards in HKPSG is given in the following paragraphs, whilst the details are shown in Appendix B.

### ***Residential Developments***

3.4.4 The most notable revisions relate to private car parking provision in subsidised and private housing developments. The existing standards for private cars are based upon the residential zone in which a private development falls and upon the housing type in the case of public housing development. The revised parking provision will be based upon a global parking standard (GPS), applicable to both private and subsidised housing with built-in adjustment factors. The application of the new



**Figure 3.1 : Relationship between Flat Size and Car Ownership by District**

standards will provide flexibility in setting parking requirements.

3.4.5 In the case of private housing, two adjustment factors, “demand indicator” (affordability) and “accessibility”, will be applied to the GPS. The “demand indicator” factor largely reflects the propensity to own a car and varies in accordance with the average flat size. Figure 3.1 illustrates the relationship between flat size and car ownership in all the districts. The “accessibility” factor acknowledges that less parking will be needed for developments located near rail stations by applying a 15% discount to parking rates for developments within a 500m catchment area. This is supported by detailed assessment with the aid of GIS tool and is in line with the transport policy of using railways as the backbone of passenger transport system. In the case of subsidised housing, the “accessibility” factor is the same as for private housing. The “demand indicator” factor is 0.45 for subsidised housing developed by Hong Kong Housing Authority under the “Flexible Housing Production Mix Strategy”. However, a factor of 0.6 may be used if all sub-sized units are for sale (see Appendix B).

3.4.6 A comparison of the existing and proposed parking standards is given in Table 3.1.

**Table 3.1 : Existing and Proposed Parking Standard for Residential Development**

Existing Standards	Private Development	Zone 1	1 car space per 4 – 7 flats			
		Zone 2	1 car space per flat or for every 100m <sup>2</sup> of gross floor area, whichever is the fewer			
		Zone 3 and 4	Minimum 1.5 car parking spaces for each dwelling			
	Public Rental Estates		1 car space per 13 – 16 flats			
	HOS/PSPS/HS		1 car space per 5 – 8 flats			
Proposed Standards	Global Parking Standards		1 car space per 6 – 9 flats			
	Demand Indicator Adjustment	Subsidised housing: 0.45 for sale/rent 0.6 for sale <sup>1</sup> only				
		Private Housing Average Flat Size (GFA)				
		<40m <sup>2</sup>	40m <sup>2</sup> – 69.9m <sup>2</sup>	70m <sup>2</sup> – 99.9m <sup>2</sup>	100m <sup>2</sup> – 159.9m <sup>2</sup>	>159.9m <sup>2</sup>
		0.6	1	2.5	5	9
	Accessibility Adjustment		15% discount to parking provision where >50% of development site falls within a 500m radius of rail stations			

(1) See Appendix B Table B.1

### **Industrial Development (General Industrial Use)**

3.4.7 The current HKPSG consists of only “Industrial Zones” under Industrial Developments (General Industrial Use). After Planning Department’s review of the planning framework for the reservation and provision of industrial land, a new zoning mechanism, the “Other Specified Use” (“OU”) annotated “Business” or “OU (Business)” has been introduced. This new land use category is set to recognise the trend for convergence or integration of various economic activities and regularise the existing development mix of industrial and office uses to meet the changing needs.

3.4.8 Under the recently introduced “OU (Business)” group of Industrial Developments, there are four types of developments, namely Industrial Buildings, Industrial/Office Buildings, Office Buildings and Business Buildings. A set of parking and loading/unloading provisions is proposed for these developments as summarised in Appendix B.

### **Other Types of Developments**

3.4.9 Revisions to parking and loading/unloading provisions for other types of developments are also recommended and summarised in Appendix B.

### **New Guidelines**

3.4.10 In view of the increased community aspirations for green transportation and the growing role of the tourism industry in the local economy, guidelines for bicycle parking and for coach loading/unloading facilities have been proposed for inclusion in HKPSG.

## **3.5 Future Year Parking Situations**

3.5.1 The future year 2006 and 2011 ownership-related and usage-related parking demand/supply situations were analysed by vehicle type. The proposed revisions to parking standards in HKPSG have been incorporated into the forecasts. The findings are summarised below with detailed results enclosed as Appendix C for year 2006 and Appendix D for year 2011.



### **Private Cars**

3.5.2 During night-time there will be a territory wide surplus of 73,500 and 48,500 parking spaces for private cars, taxis and light vans in 2006 and 2011 respectively as compared with the year 2000 surplus of 82,000. The gradually reducing and more reasonable surplus largely results from the revised HKPSG standards recommended in the Study.

3.5.3 The forecast indicates that in 2006 and 2011 during the day-time there would be surpluses of usage-related parking for private cars, taxis and light vans of 109,000 and 99,700 respectively, as compared with surplus of 98,200 spaces in year 2000.

3.5.4 The surpluses of usage related spaces remain consistent as future supply, in accordance with HKPSG, is set to just meet demand. It should also be reiterated that a portion of the day time spaces are required to meet overnight demand.

### **Goods Vehicles**

3.5.5 The 2006 forecasts indicate a shortage of 10,400 spaces for ownership-related goods vehicle parking. The shortfall will be in the New Territories except Kwai Tsing which has surplus goods vehicle parking spaces. There will be sufficient night-time parking spaces in all urban districts except Wanchai and Wong Tai Sin.

3.5.6 For usage-related parking for GV in 2006, it is predicted that there will be an overall surplus of about 17,500 spaces. Eastern District is the only district that will have a small deficit of day-time GV parking spaces.



*GV Parking*

3.5.7 The deficit in ownership-related goods vehicles parking spaces is predicted to be 10,700 spaces in 2011 distributed among Wan Chai and districts in the New Territories except Kwai Tsing. The surplus of usage-related parking facilities is forecast to be 17,200 spaces.

### **Coaches**

3.5.8 The forecast reflects a shortage of 4,100 ownership-related parking spaces for coaches by 2006 and 4,800 spaces by 2011. For usage-related parking of coaches, because of the small fleet size and since the majority of the coaches are on the move during day-time, no problem is envisaged for usage-related parking spaces in 2006 and 2011.

### **Motorcycles**

3.5.9 The forecast indicates, by 2006, there will be a shortage of 10,600 spaces for ownership-related parking for motorcycles and a shortfall of 600 spaces for usage-related parking. The utilisation of on-street motorcycle parking spaces is high given that on-street parking is free of charge and more convenient for motorcyclists.



*On-street Motorcycle Parking*

3.5.10 The 2011 forecast indicates a shortage of 10,800 spaces for ownership-related parking of motorcycles. An overall shortage of about 700 parking spaces for usage-related parking is predicted for 2011.

### **Public Light Bus (PLB) & Private Light Bus**

3.5.11 As discussed in Section 3.3, the total numbers of PLB & private light bus remain fairly constant and the parking conditions generally remain unchanged.

**This page was left blank intentionally.**