CHAPTER 1

Transport and Housing Bureau
Development Bureau
Transport Department
Lands Department
Environmental Protection Department

Planning, provision and management of public parking spaces

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PLANNING, PROVISION AND MANAGEMENT OF PUBLIC PARKING SPACES

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Executive Summary

1. With a transport policy which centres on the use of public transport, the Government's parking policy is to accord priority to considering and meeting the parking demand of commercial vehicles and to provide an appropriate number of parking spaces for private cars if overall development permits. Under the policy directives of the Transport and Housing Bureau, the Transport Department (TD) is responsible for parking-related matters for licensed vehicles. According to the Hong Kong Planning Standards and Guidelines (HKPSG), parking spaces in a development are generally divided into ancillary parking spaces (restricted to owners and authorised users) and public parking spaces (for use by the general public). Public parking spaces are mainly provided through: (a) incorporation of parking spaces in private, public housing and Government, Institution or Community (G/IC) developments, and open space projects; (b) short-term tenancy (STT) car parks administered by the Lands Department (LandsD); and (c) government multi-storey car parks and on-street parking spaces managed by TD. As at 31 December 2018, 756,909 parking spaces (including 238,320 public parking spaces) were provided to meet the parking needs of 744,191 licensed private cars, commercial vehicles and motorcycles (see para. 2). In 2018, the revenue from 11 government multi-storey car parks and metered parking spaces amounted to $220 million and $287 million respectively. The Audit Commission (Audit) has recently conducted a review to examine the Government's work in planning, provision and management of public parking spaces with a view to identifying areas for improvement.

Planning and provision of public parking spaces

2. ***Ratio of parking spaces to vehicles.*** From December 2006 to December 2018, the total number of licensed vehicles (private cars, commercial vehicles and motorcycles) increased by 44.4% from 515,341 to 744,191 while that of parking spaces only increased by 11.6% from 678,230 to 756,909. As a result, the overall ratio of parking spaces to vehicles (parking space ratio) dropped from 1.32 to 1.02. Audit analysis showed that during the same period, the parking space ratio for commercial vehicles increased by 4.9% from 0.61 to 0.64 and that for private cars

dropped significantly by 27.2% from 1.51 to 1.10 due to the substantial growth in the number of private cars by 53.4% from 401,692 to 616,220 (para. 2.3).

3. ***Need to closely monitor parking space ratio for private cars.*** According to the Second Parking Demand Study Final Report (2002 Study Report) issued in November 2002, there were surplus parking facilities for private cars up to 2011. Subsequently, in 2003 and 2014, the parking space standards of HKPSG for private housing developments were substantially revised, resulting in a reduction in the number of such parking spaces. However, since 2006, there have been changing circumstances on the demand and supply of private car parking spaces (i.e. the private car parking space ratio decreasing to 1.10 in 2018 (see para. 2) and further to a projected ratio of less than 1 in the coming years). The decreasing ratio revealing a shortfall of private car parking spaces has become a cause for concern (paras. 2.6 and 2.7).

4. ***Need to review planning standards of parking spaces in housing developments.*** Following the 2002 Study Report which predicted a surplus of private car parking spaces, from 2002 to 2018, HKPSG planning standards of ancillary private car parking spaces in housing developments were revised seven times. However, there was a significant increase in the demand for private car parking spaces in recent years. In view of the changing circumstances, TD needs to examine the need for refining the planning standards of parking spaces in housing developments promulgated in HKPSG (paras. 2.3, 2.8 and 2.9).

5. ***Need to consider promulgating new guidelines on provision of public parking spaces in G/IC and private developments.*** Unlike ancillary parking spaces, HKPSG does not promulgate guidelines for provision of public parking spaces. As a result, TD will decide on a case-by-case basis the incorporation of public parking spaces in G/IC and private developments, taking into account factors such as the demand and supply of parking spaces, and the illegal parking situation in the locality. TD needs to consider issuing internal guidelines for establishing the requirements for public parking spaces in new development and redevelopment proposals (para. 2.10).

6. ***Need to improve planning and provision of public parking spaces in G/IC and private developments.*** According to the 2018 Policy Address, the Government would follow the principle of "single site, multiple uses" to provide public car parking spaces in suitable G/IC facilities and public open space projects. With the support of

the Development Bureau, TD will identify suitable sites and liaise with relevant departments to incorporate public parking spaces into such facilities at the planning stage. Apart from providing parking spaces in G/IC developments and open space projects, the Government might require developers to provide parking spaces for public use in suitable projects (paras. 2.11 to 2.13). Audit examination has revealed room for improvement in planning and providing public parking spaces in G/IC developments (see Case 1) and private developments (see Cases 2 and 3):

(a) ***Case 1.*** In March 2011, the Sai Kung District Council (SKDC) supported the Leisure and Cultural Services Department (LCSD)'s proposed project scope for Town Park in Area 66 and 68 in Tseung Kwan O. Since February 2013, a portion in Area 66 has been used as a temporary car park under an STT. In the event, TD only proposed to split the Town Park project into two separate projects in November 2018, namely a Town Park project in Area 68 by LCSD as the project proponent and a Town Park with an underground car park project in Area 66 (providing 395 parking spaces) by TD as the project proponent. As at March 2019, while SKDC had indicated support to the Town Park project in Area 68, it had not endorsed the proposed Town Park with an underground car park project in Area 66. Audit noted that, upon the termination of the STT car park in Area 66, there would be a shortfall of about 380 parking spaces for meeting the estimated requirement of 880 parking spaces in the area (para. 2.12);

(b) ***Case 2.*** In December 1999, a public lorry park with 155 light goods vehicle (LGV) parking spaces was approved for inclusion as a special condition in the land lease of Development A. From October 2016 to August 2018, LandsD conducted seven inspections to check the owner's compliance with the land lease condition and found no lorry was parked in the lorry park. However, TD's survey on illegal parking in the area suggested that there was a demand for LGV parking spaces. TD needs to ascertain the reasons for under-utilisation of these LGV parking spaces (para. 2.13); and

(c) ***Case 3.*** In February 1999, LandsD included the provision of public parking spaces (not less than 200 for LGVs and not less than 178 for private cars) as a special condition in the land lease of Development B. LandsD's inspections in August and October 2018 found that some LGV parking spaces were occupied by private cars and letters were issued to the owner requiring rectification. In response, the car park operator informed LandsD that since cordoning-off of LGV parking spaces was not permitted, all LGV parking spaces were open to use by private cars which made it difficult to

manage. Audit's site visit in January 2019 revealed that some LGV parking spaces were still occupied by private cars and the non-compliance with land lease condition remained unrectified (para. 2.13).

7. ***Need to provide more long-term public parking spaces to meet the shortfall arising from termination of STT car parks.*** From 2011 to 2018, the number of STT parking spaces for commercial vehicles decreased by 3,235 (24%) from 13,344 to 10,109 and that for private cars by 1,626 (7%) from 23,055 to 21,429. According to TD, as at 30 September 2018, 41 STT car parks (providing 6,187 parking spaces for private cars and 2,115 for commercial vehicles) would be terminated for long-term developments in the coming years. TD needs to formulate a strategy for providing more long-term public parking spaces to meet the shortfall arising from the termination of STT car parks (paras. 2.15 and 2.16).

Management of government multi-storey car parks

8. ***Need to give due consideration to various factors in reviewing parking fees.*** As at 31 December 2018, TD managed 11 government multi-storey car parks providing a total of 5,547 parking spaces. To cater for different parking demands in different districts, parking fees are charged at different rates based on the parking duration. According to TD, parking fees should be reviewed every year taking into account: (i) the Government's policy objective to maintain the parking space availability rate of 15% during peak hours (i.e. a utilisation rate of 85%); (ii) parking fees to be comparable with fees charged by nearby public car parks; (iii) impact of fee revision on utilisation and the Government's policy objective of maximising government revenue; and (iv) public acceptability. Audit examination has revealed that there is a need to take into consideration the following audit observations in future parking fee review exercises (paras. 3.2, 3.3 and 3.5):

(a) ***Parking space average daily peak-hour utilisation rates exceeding 85%.*** According to TD, the average daily peak-hour utilisation rate of parking spaces in the 11 government multi-storey car parks for private cars, van-type LGVs and taxis increased from 66% in 2013 to 90% in 2018 (the utilisation rates had exceeded TD's target utilisation rate of 85% since 2015). In 2018, the average daily peak-hour utilisation rates in 10 of the 11 car parks ranged from 89% to 95% (paras. 3.4 and 3.6);

(b) ***Parking fees below average market rate.*** According to a market research conducted by TD in July 2018, the monthly parking fees of non-reserved parking spaces for private cars and van-type LGVs in all the government multi-storey car parks (ranging from $1,800 to $4,300) were the lowest as compared with nearby public car parks (i.e. within 15 minutes walking distance). In general, the monthly parking fees were 15% to 34% lower than the average market rates of nearby public car parks (para. 3.7); and

(c) ***Concessionary parking fees for taxis.*** In 1999, TD launched a scheme to sell monthly parking tickets for taxis at a concessionary rate. The monthly parking fees for taxis in 10 government multi-storey car parks had increased by 16% from $500 in 1999 to $580 in 2018. Audit's research revealed that the granting of concessionary rate was not common (e.g. in the Hong Kong Housing Authority's car parks, the monthly parking fees for taxis and private cars were the same) (para. 3.8).

9. ***Need to improve sale arrangements of parking tickets.*** As at 31 December 2018, there were 3,811 (69% of 5,547 parking spaces) monthly and quarterly parking tickets made available for sale in the 11 government multi-storey car parks. Monthly parking tickets were sold on a first-come-first-served basis and quarterly parking tickets were sold by balloting. Audit found that monthly parking tickets for private cars and van-type LGVs had been sold out on the first day in four car parks (i.e. Tin Hau, Shau Kei Wan, Aberdeen and Kwai Fong Car Parks) for 5 to 6 consecutive months from July to December 2018. Audit's site visits in November 2018 and January 2019 also revealed that overnight queues existed in the four car parks. Since December 2018, TD has changed the sale arrangements of parking tickets in Sheung Fung Street Car Park from a first-come-first-served basis to a balloting arrangement. The balloting arrangement would also be extended to Rumsey Street and Yau Ma Tei Car Parks in March 2019. In Audit's view, apart from considering the extension of balloting arrangement to other car parks, TD also needs to explore the use of information technology (e.g. online application) to streamline the application process (paras. 3.9 to 3.11).

10. ***Need to put the rooftop parking spaces at Kwai Fong Car Park into effective use expeditiously.*** Audit found that the rooftop of Kwai Fong Car Park had been closed since October 2013 after the completion of the works to enhance the security of the Car Park. All the 75 parking spaces on the rooftop had not been open for public use. Upon enquiry, TD informed Audit that: (a) the surface of the rooftop

was subsequently found not suitable for parking and the repair works were completed in October 2018; and (b) TD planned to re-open the rooftop parking spaces as a temporary vehicle detention centre and afterwards for general parking purpose. In Audit's view, the prolonged closure of rooftop parking spaces at Kwai Fong Car Park was unsatisfactory because there was a great demand for parking spaces in Kwai Fong (paras. 3.16 to 3.18).

11. ***Need to remove abandoned vehicles to release occupied parking spaces expeditiously.*** As at 12 November 2018, there were 13 abandoned vehicles in 5 government multi-storey car parks. Of the 13 vehicles, 10 had been abandoned for more than one year to 11 years up to 31 December 2018. Audit found that the inadequacies in TD's follow-up actions on removing the abandoned vehicles had resulted in prolonged occupation of parking spaces in the car parks (paras. 3.20 and 3.21).

12. ***Need to review adequacy of closed-circuit television (CCTV) security systems.*** In 2018, 37 incidents (e.g. vehicle theft) in government multi-storey car parks were reported to the Hong Kong Police Force. Audit found that: (a) in 30 of the 37 incidents, no image was captured by the CCTV footage or the scene was not under the coverage of CCTV security systems during the occurrence of the incidents and thus no record could be provided to the Hong Kong Police Force for investigation; and (b) the number of CCTV cameras varied from 4 to 43 in each of the 11 government multi-storey car parks. In Audit's view, TD needs to review the adequacy of CCTV security systems (paras. 3.25 and 3.26).

13. ***Need to expedite the replacement work of car park management system (CPMS).*** CPMS is a critical car park system installed in each government multi-storey car park to control and monitor the entry and exit of vehicles. Up to early 2016, CPMS had been in use for more than 10 years and had already reached the end of its planned serviceable life. Audit found that the number of breakdowns had significantly increased by 110% from 197 in 2016 to 414 in 2018. According to TD, the replacement work for CPMS was planned to be completed by mid-2019. TD needs to expedite the replacement work and avoid recurrence of similar problem in future (paras. 3.27 and 3.28).

Management of on-street parking spaces

14. Under the existing Government's policy, on-street parking spaces are provided to meet drivers' short-term parking needs. On-street parking spaces should be metered and charged to ensure that about 15% of the spaces are maintained empty. As at 31 December 2018, there were 34,565 on-street parking spaces, of which 17,898 were metered. Having regard to the traffic situation and parking demand in the area where the parking spaces are located, parking fees (i.e. either $2 per 15 minutes (the high rate) or $2 per 30 minutes (the low rate)), types of "longest parking period" for each transaction and operating periods vary among different districts. In January 2018, the Government announced its plan to install a new generation of parking meter system, which would replace about 10,250 existing meters from early 2020 for completion by early 2022 (paras. 4.2, 4.3, 4.5 and 4.7).

15. ***Parking space availability objective not always met.*** According to TD, the territory-wide availability rate of on-street metered parking spaces decreased from 27% in 2015 to 19% in 2018. Audit analysis revealed that, from 2015 to 2018, on average, the objective of maintaining the 15% parking space availability rate was not met in 15 (40%) of 37 districts (paras. 4.8 and 4.9). TD needs to formulate measures to achieve the "15% availability rate" objective, taking into account the following observations:

(a) ***Need to review parking fees for meters charging the low rate.*** The Government's policy is to revise parking fees regularly to maintain a "15% availability rate". Audit noted that, of the 10 districts which had availability rates of lower than 15% persistently since 2015, there were metered parking spaces in 9 districts charging the low rate (i.e. $2 per 30 minutes). According to TD's 2018 surveys, most of the parking spaces which charged the low rate in the 9 districts recorded availability rates of less than 15%. Audit also noted that the parking fees at some meter locations were different from those at very close meter locations. TD needs to review the parking fees for meters charging the low rate (paras. 4.10 to 4.12);

(b) ***Need to review "longest parking period" for each transaction of 2-hour meters in core commercial areas.*** According to TD, parking meters for private cars and van-type LGVs should be of 30-minute duration in core commercial areas, and 2-hour duration at the outskirts. However, "core commercial areas" were not defined. Audit noted that for many parking meters which might be located in core commercial areas (e.g. Causeway

Bay), the "longest parking period" for each transaction was set at 2 hours. To encourage vehicle turnover of on-street metered parking spaces, TD needs to review the "longest parking period" for each transaction of the 2-hour meters installed at parking spaces in core commercial areas (paras. 4.13 and 4.14); and

(c) ***Need to consider extending meter operating periods of metered parking spaces with high utilisation.*** As at 31 October 2018, there were 10 types of operating periods for 17,869 on-street metered parking spaces. Most of them operated from 8:00 a.m. to midnight on weekdays, and from 10:00 a.m. to 10:00 p.m. on general holidays. Audit found that in some parking places, there were different meter operating periods, despite the fact that the parking spaces were provided for the same vehicle type and the demand should be the same. Audit's site visits of 10 parking places (covering 274 metered parking spaces that were free-of-charge after 8:00 p.m.) from December 2018 to January 2019 between 8:00 p.m. and midnight found that most of the parking spaces were occupied. TD needs to consider extending the meter operating periods of metered parking spaces with high utilisation (para. 4.15).

16. ***Need to optimise deployment of parking meters.*** The new generation of parking meter system would be installed by early 2022 (see para. 14). Therefore, the existing parking meters which have been put in use since 2003-04 would need to operate for a total of about 17 years, which is much longer than their normal serviceable life of 7 to 10 years. Since the production of current model of parking meters had ceased, there were only limited spare parking meters for installation at new parking places. In this connection, TD has been redeploying parking meters from low-utilised parking places for implementation of metering at other parking places. Audit however found that: (a) 212 parking meters covering 399 parking spaces with persistent low utilisation from 2016 to 2018 were not redeployed; and (b) some requests for installation of parking meters were not accepted due to insufficient spare parking meters (paras. 4.16 and 4.17).

17. ***Need to take measures to improve on-street motorcycle parking.*** As at 31 December 2018, 10,404 (62%) of 16,667 non-metered parking spaces were for motorcycles. In 2017, TD conducted a territory-wide survey on on-street motorcycle parking spaces and found that the overall utilisation rate was 102%, and 618 motorcycles considered not roadworthy were found in 278 (47%) parking places.

Audit surveyed 100 parking places (covering 1,644 parking spaces) from November 2018 to January 2019 and found that: (a) the high demand had persisted (utilisation rate was over 100% in 88 parking places); (b) motorcycles considered not roadworthy were found in 28 parking places; and (c) some motorcycles were parked on pavements nearby, jeopardising pedestrians' safety. TD needs to take measures to ensure that on-street motorcycle parking spaces are utilised effectively (paras. 4.21 and 4.25 to 4.27).

18. ***Need to take measures to improve on-street non-metered parking spaces for other vehicle types.*** As at 31 December 2018, 6,263 (38%) of 16,667 non-metered parking spaces were for vehicles other than motorcycles. Audit's site visits from November 2018 to January 2019 to 10 parking places where such non-metered parking spaces were located found that: (a) most of the non-metered parking spaces were occupied and the target of maintaining 15% parking space availability rate was not achieved; (b) parking spaces in some locations (such as those near beaches) were provided for meeting longer-term parking demand (e.g. for whole day) and kept as non-metered despite the high demand in holiday seasons; (c) there were cases where both metered and non-metered parking spaces were provided in the same location; and (d) there were cases of non-metered parking spaces occupied by abandoned vehicles or other objects. TD needs to take measures to ensure that on-street non-metered parking spaces are utilised effectively (para. 4.28).

19. ***Need to ensure accuracy of list of non-metered parking spaces.*** A comparison of the results of Audit's site visits with TD's inventory list of on-street non-metered parking spaces as at 31 December 2018 revealed discrepancies between the list and the actual number of parking spaces available. To provide accurate parking information to the public, TD needs to ensure the accuracy of the inventory list of on-street non-metered parking spaces (para. 4.29).

Implementation of parking-related technology initiatives

20. ***Need to enhance the dissemination of parking information.*** Since July 2016, TD has been providing locations of on-street parking spaces, entrances and exits of off-street car parks, and real-time parking vacancies at some car parks via its dedicated website and mobile application. Since June 2017, TD has also uploaded parking vacancy data and information of the 11 government multi-storey car parks onto the one-stop Public Sector Information (PSI) Portal for free use by the public

and the industry to develop mobile applications (paras. 5.2 and 5.3). Audit examination has revealed the following major areas for improvement:

(a) ***Car park location and parking vacancy information.*** As at 31 December 2018, there were 2,071 car parks providing public parking spaces. However, TD's mobile application only showed locations of 1,546 (75%) car parks and parking vacancy information of only 263 (17%) of the 1,546 car parks. Moreover, of the 19 public car parks in government venues with location information in the mobile application, parking vacancy information of only 7 (37%) car parks was made available (paras. 5.6 to 5.8);

(b) ***Supplementary information of car parks.*** Audit's sample check of 30 car parks revealed that supplementary information (e.g. information about charging services for electric vehicles (EVs)) was rarely provided in TD's mobile application (para. 5.9); and

(c) ***Further opening up of parking data in PSI Portal.*** As at 31 December 2018, while parking vacancy information of 263 car parks was made available in TD's mobile application, parking vacancy data of only 27 (10%) of these car parks were uploaded onto the PSI Portal (para. 5.11).

21. ***Need to improve the provision and management of EV charging facilities.*** Since 2012, the Environmental Protection Department has been responsible for providing EV charging facilities in some of the existing government car parks. As at 30 September 2018, 321 EV chargers in 275 parking spaces were provided in 8 of the 11 government multi-storey car parks. In view of the significant increase in the number of licensed electric private cars from 314 in December 2013 to 10,660 in September 2018, there is merit to explore the need and feasibility of installing EV chargers in the remaining 3 car parks. Moreover, Audit's site visits to the 8 car parks in November and December 2018 found that: (a) 168 (69%) of 242 parking spaces equipped with EV chargers were occupied by non-EVs (the remaining 33 (275 minus 242) parking spaces were vacant); and (b) EV chargers were mainly located on lower floors and near the entrance. Coupled with the lack of a display and guidance system to show the availability of parking spaces on higher floors, non-EV drivers might prefer to park their vehicles at parking spaces with EV chargers on the lower floors for convenience sake. There is merit to consider introducing administrative measures

to ensure that parking spaces equipped with EV chargers are available for use by EVs (paras. 5.15 and 5.16).

22. ***Need to step up efforts in implementing automated parking systems.*** According to the 2002 Study Report (see para. 3), one of the measures to address the parking problems in the long-term was the use of automated parking systems. However, it was not until some 16 years later in 2018 that TD commissioned a consultant to conduct a pilot study with a view to establishing the feasibility on developing public car parks with automated parking systems. As another few years would be required to proceed with the design and construction of public car parks with such systems after the completion of the study, there is a need to step up efforts in implementing automated parking systems (paras. 5.20 and 5.22).

Audit recommendations

23. **Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that:**

(a) **the Commissioner for Transport should:**

(i) **closely monitor the parking space ratio for private cars and review the planning standards of parking spaces in the housing developments promulgated in HKPSG (para. 2.17(a) and (b));**

(ii) **critically review the demand for parking spaces in reprovisioning of car parks, improve the planning and provision of public car parks in private developments and formulate a strategy for providing more long-term public parking spaces (para. 2.17(e), (f) and (i));**

(iii) **take into due consideration the high utilisation rates of parking spaces, the lower-than-market parking fees for private cars and van-type LGVs, and the concessionary parking fees for taxis in TD's future parking fee review exercises (para. 3.12(a));**

(iv) **take further actions to improve the sale arrangements of parking tickets in the government multi-storey car parks (para. 3.12(b));**

(v) **put the 75 rooftop parking spaces at Kwai Fong Car Park into effective use and explore feasible ways to remove abandoned vehicles in the government multi-storey car parks expeditiously (para. 3.23(a) and (b));**

(vi) **review the fee charging arrangements of on-street metered parking spaces and take measures to ensure that on-street non-metered parking spaces are utilised effectively (paras. 4.19(a) and 4.30(a)); and**

(vii) **take measures to improve the dissemination of parking information via TD's mobile application and website, and step up efforts in implementing automated parking systems in government car parks (paras. 5.13(a) and 5.23);**

(b) **the Secretary for Transport and Housing should, in consultation with relevant government bureaux and departments, promulgate a circular setting out the criteria for considering whether and how public parking spaces should be provided under individual G/IC developments and open space projects (para. 2.19); and**

(c) **the Director of Environmental Protection should explore the need and feasibility of installing EV chargers in the three government multi-storey car parks without EV chargers (para. 5.17(a)).**

Response from the Government

24. The Government generally agrees with the audit recommendations.

PART 1: INTRODUCTION

1.1 This PART describes the background to the audit and outlines the audit objectives and scope.

Government parking policy

1.2 In Hong Kong, the Government adopts a transport policy based on public transport (including railways, trams, buses, minibuses, taxis and ferries) with railways as the backbone. Every day, over 12 million passenger trips are made through different public transport services, which account for over 90% of the total passenger trips. In other words, less than 10% of the total passenger trips are made through private cars.

1.3 As at 31 December 2018, there were about 784,400 licensed vehicles, including 565,800 private cars, 54,900 motorcycles and 123,600 commercial vehicles (Note 1). Commercial vehicles carrying passengers or goods play a key role in the logistics industry, tourism industry, as well as the overall economy of Hong Kong. Provision of parking spaces is essential to commercial transport operators as well as private car owners/drivers. With a transport policy which centres on the use of public transport, the Government's parking policy is as follows:

(a) priority is accorded to considering and meeting the parking demand of commercial vehicles which play a key role in the economy and have a genuine operation need for parking; and

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Note 1: *According to the Transport Department, regarding parking needs, commercial vehicles included light goods vehicles, medium goods vehicles, heavy goods vehicles, coaches and non-franchised public buses, but excluded van-type light goods vehicles as they might also be parked at parking spaces for private cars. Other licensed vehicles totalling 40,100 comprised: (a) 18,150 taxis which generally operated on the road round the clock and their parking demand was mainly for short duration stay; and (b) 6,150 franchised buses, 4,300 public light buses, 3,350 private light buses, 1,750 special purpose vehicles and 6,400 government vehicles, most of which were parked at depots, bus stops within public transport termini as well as stands.*

(b) as regards private cars, the Government provides an appropriate number of parking spaces for them if the overall development permits, but at the same time not to attract passengers of public transport to opt for private cars instead, thereby aggravating road traffic congestion.

1.4 The Transport and Housing Bureau (THB) is responsible for formulating policies on matters relating to Hong Kong's internal and external transportation, including the provision of parking spaces for licensed vehicles. Under the policy directives of THB, the Transport Department (TD) is responsible for a number of specific parking-related matters for licensed vehicles, including:

(a) the conduct of parking-related studies/surveys by the Strategic Studies Division of the Planning Branch and the Traffic Survey and Support Division of the Technical Services Branch;

(b) the provision of advice on the interface between land use and traffic/transport issues, including the provision of parking spaces and handling of parking-related complaints at district levels by the Urban and New Territories Regional Offices;

(c) the management of government multi-storey car parks and on-street (roadside) metered parking spaces (see para. 1.8(c) and (d)) by the Management Services Division of the Management and Paratransit Branch and that of on-street non-metered parking spaces by the Regional Offices; and

(d) the implementation of parking-related technology initiatives by the Smart Mobility Division of the Technical Services Branch and the Strategic Studies Division of the Planning Branch.

Given the diverse nature of TD's parking-related work carried out by various Branches/Regional Offices, the relevant expenditures are subsumed in three different programmes in its Controlling Officer's Report, namely planning and development,

district traffic and transport services, and management of transport services (Note 2). An extract of TD's organisation chart as at 31 December 2018 is at Appendix A.

Parking needs of commercial vehicles and private cars

1.5 According to TD, parking needs of commercial vehicles and private cars have different characteristics, as follows:

(a) ***Commercial vehicles.*** Commercial vehicles carry passengers and/or goods. As most of them operate in day time, the demand for commercial vehicle parking spaces is high after the drivers have finished work. Commercial vehicle drivers tend to park their vehicles near their homes so as to save transportation costs. As such, it is necessary to provide commercial vehicle parking spaces in various instead of a few centralised locations. Furthermore, of the different types of commercial vehicles, coaches are in need of not only night-time parking, but also waiting areas/parking spaces in the vicinity of tourist attractions and other places (e.g. shops) frequented by tourists/tour groups for easy drop-off and pick-up at day time; and

(b) ***Private cars.*** Since a private car requires parking spaces at both the home-end and destination-end, it requires more than one parking space, and the parking demand is generally higher during night time at the home-end and during day time at the destination-end.

1.6 ***Number of vehicles and parking spaces from 2006 to 2016.*** According to a paper on parking policy submitted by THB and TD to the Legislative Council (LegCo) Panel on Transport in May 2017, the Government has always been concerned about the demand for, and supply of, parking spaces for different types of vehicles. The surge in the size of vehicle fleet (in particular the private car fleet) in recent years has aggravated road traffic congestion and brought about an adverse impact on the community. In the ten-year period from December 2006 to December 2016, the total number of licensed vehicles (including private cars, commercial vehicles and

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Note 2: *The estimated expenditures in 2018-19 for the three programmes, i.e. planning and development, district traffic and transport services, and management of transport services amounted to $571.9 million, $573.4 million and $482.6 million respectively.*

motorcycles — see Note 1 to para. 1.3) increased by 37% from 515,341 to 706,126, with an average annual growth rate of 3% (and 3.8% for private cars). During the same period, the total number of parking spaces for various types of vehicles increased from 678,230 in 2006 to 742,938 in 2016, representing a growth of 9.5% (equivalent to an average annual growth rate of only 1%), which was much smaller than the 37% increase of licensed vehicles. As a result, the overall ratio of parking spaces to vehicles in the period dropped from 1.32 in 2006 to 1.05 in 2016.

Planning for ancillary parking spaces and public parking spaces

1.7 The Hong Kong Planning Standards and Guidelines (HKPSG — Note 3) provides general guidelines to ensure that, during the planning process, the Government will provide appropriate facilities to meet the needs of the public, including parking facilities. Under HKPSG, car parking spaces in a development (proposed by a private developer or a government department) are generally divided into two types, namely ancillary parking spaces and public parking spaces (see Appendix B for the parking standards on various development types). According to THB and the Lands Department (LandsD), salient features of the two types of parking spaces are as follows:

(a) ***Ancillary parking spaces.*** Ancillary parking spaces in a development (Note 4) serve the parking requirements of the development, and are

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Note 3: *HKPSG is a Government manual of criteria for determining the scale and locational requirements of various land uses and facilities. According to the Planning Department, it is responsible for coordinating the compilation of HKPSG, and government bureaux and departments will from time to time formulate/review their planning standards and guidelines in HKPSG, taking into account their policies and requirements.*

Note 4: *These are sometimes referred to as "private parking spaces" in private developments as they are not normally available for public use (e.g. parking spaces for owners/tenants' use in residential developments). However, for certain types of developments with facilities open to the general public (e.g. commercial complexes, shopping arcades, office/hotel buildings, swimming pools and recreational complexes), authorised users may include members of the public using the facilities, and the owners may not place stringent checking on whether the drivers and their passengers actually use the facilities in the developments after parking their vehicles there. In addition, some privately owned parking spaces are offered by their owners for public use at market-driven fees. These parking spaces may in effect not be different from public parking spaces (see para. 1.7(b)).*

restricted to owners and authorised users or bona fide visitors (e.g. visitor car park is one type of ancillary parking). The ancillary parking needs are usually met by the proponents of developments (private developers or government departments) in accordance with HKPSG standard provisions (usually specified as a range) for the number of parking spaces to be provided in these developments (Note 5). To meet the needs of individual districts, TD advises relevant departments (e.g. LandsD, which is the authority in preparing land leases) to flexibly require, within (and beyond) the ranges of parking standards, the number of parking spaces for development projects with reference to other traffic and transport-related factors (Note 6); and

(b) ***Public parking spaces.*** Public parking spaces (in addition to ancillary parking spaces) in a development are intended specifically for use by the general public and serve the areas around which the parking spaces are located.

Public parking needs are normally met through providing parking spaces (both ancillary and public — see (a) and (b)) in suitable private developments, public housing developments, Government, Institution or Community (G/IC) developments (Note 7), vacant sites let out on short-term tenancy (STT), government multi-storey car parks and on-street parking spaces. In addition, public parking spaces may also include some privately-owned parking spaces (i.e. ancillary parking spaces — see (a)) that are offered for public use by the owners (see Note 4 to (a)).

Note 5: *The parking standards stipulated in HKPSG are mainly formulated on the basis of land use and scale of the development projects (including floor area, number and size of flats, number of related facilities and development densities) and their distance from railway stations.*

Note 6: *These factors include: (a) availability of public transport services in the vicinity and their scales; (b) availability of public car parks in the vicinity and their utilisation; (c) accessibility of pedestrian linkage to railway stations and other major transport interchanges; (d) traffic conditions of local road network; and (e) parking demand and supply condition in the vicinity.*

Note 7: *G/IC development is intended primarily for the provision of G/IC facilities serving the needs of the local residents and/or a wider district, region or the territories. It is also intended to provide land for use directly related to or in support of the work of the Government, organisations providing social services to meet community needs, and other institutional establishments.*

Provision of public parking spaces

1.8 The Government provides public parking spaces mainly by the following means:

(a) ***Private, public housing and G/IC developments.*** Apart from requiring developers or project departments to provide parking spaces to serve the developments' own parking needs (see para. 1.7(a)), the Government, having regard to local needs, will require developers or project departments to provide additional parking spaces for public use in suitable projects when appropriate opportunities arise. The number of parking spaces will depend on individual circumstances. Considerations include the local shortfall of parking spaces, the impact on the development projects and the traffic impact on the local road networks (Note 8). As at 31 December 2018, there were 150,241 public parking spaces in private developments, 7,726 in public housing developments managed by the Hong Kong Housing Authority and the Hong Kong Housing Society, and 9,220 in G/IC developments;

(b) ***STT car parks administered by LandsD.*** Notwithstanding the scarcity of land resources with competing temporary uses, TD, with the support of LandsD, has been identifying suitable government land which does not yet have immediate implementation programme for its long-term planned use and is temporarily available in various districts with parking demand for use as temporary fee-paying public car parks (Note 9). The layout of parking spaces of STT car parks and the types and number of vehicles that can be parked therein are generally the commercial decision of the car-park tenants. Nevertheless, TD may take into account the actual circumstances and advise LandsD to stipulate in the tenancy agreement the ratio or the number in relation to the vehicle types that can be parked, so as to meet the local parking demand for specific types of vehicles. As at 31 December 2018, there were 193 STT car parks providing a total of 31,021 public parking spaces;

Note 8: *TD will assess these factors for a particular development and recommend the number of public parking spaces to be provided therein.*

Note 9: *LandsD grants STTs at full market rents to tenants through open tenders for operating public car parks.*

(c) ***Government multi-storey car parks managed by TD.*** As at 31 December 2018, there were 11 government multi-storey car parks under TD's management, providing a total of 5,547 parking spaces, comprising 4,823 for private cars, van-type light goods vehicles (LGVs) and taxis, and 724 for motorcycles with parking fees charged at different rates depending on the parking duration ranging from one hour to three months. TD outsources the management, operation and maintenance of the 11 car parks to two contractors. In 2018, the revenue from the 11 car parks amounted to $220 million; and

(d) ***On-street parking spaces managed by TD.*** The Government's existing policy is to provide parking spaces in development projects as far as possible to reduce the possible traffic impact brought about by the designation of on-street parking spaces. However, for locations with parking demand, TD provides on-street parking spaces to cater for drivers' short-term parking needs. At some locations with higher on-street parking demand, TD has installed parking meters for charging parking fees to facilitate turnover of the parking spaces so that they can be used by more drivers. As at 31 December 2018, there were 17,898 metered parking spaces and 16,667 non-metered (i.e. free of charge) parking spaces, making a total of 34,565 on-street parking spaces. TD outsources the management, operation and maintenance of all parking meters (Note 10) to a contractor. In 2018, the revenue from metered parking spaces amounted to $287 million.

1.9 ***Distribution of public parking spaces.*** According to TD, about one-third of the parking spaces in the territory are public parking spaces. Table 1 shows the distribution of public parking spaces in public and private developments as at 31 December 2018.

Note 10: *Some 9,700 parking meters which accept only Octopus cards for payment of parking fees have been in use since 2003-04 to control the on-street parking spaces.*

Table 1

Distribution of public parking spaces
(31 December 2018)

Type of public parking spaces	Number of public parking spaces	
(a) G/IC, public housing and private developments		
(i) G/IC developments (Note 1)	9,220	
(ii) Commercial and residential areas in public housing developments (Note 2)	7,726	
(iii) Private developments	150,241	167,187
(b) STT car parks		31,021
(c) Government multi-storey car parks		5,547
(d) On-street parking spaces		34,565
Total		238,320

Source: *Audit analysis of TD records*

Note 1: *These included mainly parking spaces in government buildings, parks, sport facilities, markets, education institutions and hospitals.*

Note 2: *These included parking spaces managed by the Hong Kong Housing Authority and the Hong Kong Housing Society.*

Measures to increase the number of parking spaces

1.10 The Government is actively pursuing various measures to increase the number of parking spaces, as follows:

(a) ***Short-term measures.*** At the invitation of the Secretary for Transport and Housing in March 2014, the Transport Advisory Committee (TAC — Note 11) conducted a study to identify various factors contributing to road

Note 11: *TAC comprises 16 non-official members including the chairman and three ex-officio members, i.e. the Permanent Secretary for Transport and Housing (Transport) or his representative, the Commissioner for Transport and the Commissioner of Police or his representative. TAC's function is to advise the Chief Executive-in-Council on transport matters including broad issues of transport policy with a view to improving the movement of both people and freight.*

traffic congestion in Hong Kong and put forward recommendations to the Government to tackle road traffic congestion. TAC submitted its report (TAC Report) in December 2014 and recommended a total of 12 short, medium and long-term measures at territorial level to contain road traffic congestion. In May 2015, THB submitted the Government's response to TAC Report to LegCo Panel on Transport. In May 2017, TD informed the Panel that the Government had been actively rolling out various immediate measures (i.e. short-term measures) to provide more parking spaces (in particular for commercial vehicles) as soon as possible, as follows:

(i) ***On-street night-time parking.*** In 2016, TD launched a scheme for increasing on-street night-time parking spaces for commercial vehicles (i.e. coaches and goods vehicles). Up to 31 May 2017, 80 such on-street night-time parking spaces had been put into service; and

(ii) ***Parking spaces for goods vehicles and coaches in STT car parks.*** When new STT car parks were tendered and when the STTs of existing car parks were re-tendered, TD would request LandsD to impose conditions stipulating the provision of a minimum number of parking spaces for goods vehicles and coaches at the car parks where TD and LandsD considered appropriate. Up to 31 May 2017, 16 STT car parks had been required to provide parking spaces for commercial vehicles in accordance with their tenancy conditions.

In addition, as an on-going measure, the Government Property Agency (GPA) will continue to identify government buildings to open up car parks for public parking outside office hours. As at 31 October 2018, about 1,100 parking spaces had been made available for non-office-hour parking of private cars; and

(b) ***Medium to long-term measures.*** Various medium to long-term measures are also implemented to increase the supply of parking spaces, as follows:

(i) ***Gross floor area (GFA) concessions***. Public car parks provided in private development projects, whether above-ground or underground, used to be accounted for in the calculation of the GFA of these projects. To provide incentives to encourage developers to provide underground public parking spaces, the Buildings

Department revised its guidelines in March 2017 to specify that underground public car parks in private developments might be granted 100% GFA concessions in the statutory building plan approval process, subject to the compliance with certain criteria (e.g. the parking spaces are electric vehicle (EV) charging-enabling);

(ii) ***Provision of public car parks in G/IC facilities and underneath public open space (POS) projects.*** In the 2018 Policy Address, the Government announced that, subject to technical feasibility, at least 1,500 car parking spaces were expected to be provided in G/IC facilities and POS projects in the next five years, following the "single site, multiple uses" principle; and

(iii) ***Construction of a new multi-storey car park.*** The Government is planning to construct an underground multi-storey car park beneath the public transport terminus at Stanley, which will provide about 140 parking spaces for private cars and 10 parking spaces for motorcycles.

1.11 ***Other facilitating measures.*** Other than increasing the number of parking spaces, TAC also recommended the following facilitating measures:

(a) ***Increasing meter parking fees.*** TAC noted that metered parking was more convenient and in most cases much cheaper than commercial car parks. TAC considered that there was a case to raise on-street metered parking fees, in order to discourage motorists from circulating/double parking on roads waiting for metered parking spaces. In response to TAC's recommendation, THB and TD submitted a paper to LegCo Panel on Transport proposing to raise the maximum fee for metered parking in conjunction with the installation of a new generation of parking meter system starting from 2019-20 (see para. 1.12(b)). However, the Panel Members opposed to the Government's proposal to increase the maximum fee for metered parking. In the event, THB in May 2018 said that the proposed fee would be the maximum fee which could be set for parking meters and it did not mean that all parking meters across the territory would be set at such a level. TD would set the on-street metered parking fee at an appropriate level having regard to the traffic conditions and parking

demands in the areas. Up to 31 December 2018, the maximum meter parking fee had remained at the same level of $2 for each 15 minutes;

(b) ***Reviewing parking policy and disseminating real-time information on parking vacancies.*** TAC recommended that the Government should conduct a detailed review of the parking policy, in which various stakeholders and the general public should be fully engaged. To reduce the need for motorists to circulate on roads looking for available parking spaces and causing more congestion, TAC considered that the Government should examine ways to provide motorists with real-time information on the vacancies in off-street car parks in nearby areas. In response to the recommendation for a parking policy review, TD commenced a consultancy study on commercial vehicle parking in December 2017 for completion in 2019. As regards disseminating real-time information on parking vacancies, TD has been providing real-time vacancy information of car parks via its mobile application (i.e. "Hong Kong eRouting") since July 2016. In July 2018, TD launched a new mobile application, namely the "HKeMobility" to integrate three transport-related mobile applications, including the "Hong Kong eRouting". Up to 31 December 2018, parking vacancy information of 263 car parks had been made available in the "HKeMobility" mobile application (see para. 1.12(a)); and

(c) ***Providing more park-and-ride facilities.*** TAC noted that park-and-ride car parks allowed motorists to drop off their cars at transport hubs to switch to public transport (Note 12), thus reducing the amount of traffic going into the central business districts. In response to TAC's recommendation on providing more park-and-ride facilities, THB stated in its May 2015 paper (see para. 1.10(a)) that:

(i) the Government would explore the possibility of putting in place more park-and-ride facilities; and

(ii) it had requested the MTR Corporation Limited to examine the feasibility of promoting wider use of its existing park-and-ride

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Note 12: *Under the park-and-ride scheme, motorists who park their cars at the designated car parks and switch to railway are offered concessionary parking rates at the car parks concerned.*

facilities and providing more park-and-ride facilities with parking fee concessions at car parks near railway stations.

Up to 31 December 2018, there were 25 park-and-ride car parks providing about 10,000 parking spaces.

1.12 ***Smart City Blueprint for Hong Kong (Blueprint).*** In December 2017, the Government released the Blueprint (Note 13), outlining the vision and mission to build Hong Kong into a world-class smart city. Smart mobility is one of the areas covered in the Blueprint, which includes the following smart parking initiatives:

(a) encouraging owners or operators of existing public car parks to provide real-time parking vacancy information using technology solutions to facilitate drivers to find parking spaces and examining practicable measures to require new public car parks to provide real-time parking vacancy information; and

(b) installing new on-street parking meters to support multiple payment systems starting from 2019-20 with provision of real-time parking vacancy information.

Audit review

1.13 In 1999, the Audit Commission (Audit) completed a review of "Management of on-street parking spaces and parking facilities", the results of which were reported in Chapter 6 of the Director of Audit's Report No. 33 of October 1999. In October 2018, Audit commenced a review to examine the Government's work in planning, provision and management of public parking spaces, focusing on:

(a) planning and provision of public parking spaces (PART 2);

Note 13: *The Blueprint is based on the recommendations of the Report of Consultancy Study on Smart City Blueprint for Hong Kong completed in June 2017, after making reference to and consolidating views from the Steering Committee on Innovation and Technology chaired by the Chief Executive of the Hong Kong Special Administrative Region.*

(b) management of government multi-storey car parks (PART 3);

(c) management of on-street parking spaces (PART 4); and

(d) implementation of parking-related technology initiatives (PART 5).

Apart from THB and TD, the planning, provision and management of parking facilities also involve the work of the Development Bureau (DEVB), LandsD, the Leisure and Cultural Services Department (LCSD), the Planning Department (PlanD), the Hong Kong Police Force (HKPF) and the Environmental Protection Department (EPD). Audit has found room for improvement in the above areas and has made a number of recommendations to address the issues.

General response from the Government

1.14 The Government generally agrees with the audit recommendations.

Acknowledgement

1.15 Audit would like to acknowledge with gratitude the full cooperation of the staff of THB, DEVB, TD, LandsD, LCSD, PlanD, HKPF and EPD during the course of the audit review.

PART 2: PLANNING AND PROVISION OF PUBLIC PARKING SPACES

2.1 The provision of parking spaces is an integral part of a road transport network. While ancillary parking spaces associated with a development are provided to meet the parking needs arising from the development per se, public parking spaces are required to meet the demand from different districts and localities (i.e. not ancillary to the development). This PART examines the planning and provision of public parking spaces, focusing on:

(a) demand and supply of parking spaces (paras. 2.2 to 2.7);

(b) planning and provision of long-term public parking spaces (paras. 2.8 to 2.13); and

(c) planning and provision of temporary public parking spaces (paras. 2.14 to 2.16).

Demand and supply of parking spaces

2.2 ***Parking policy.*** As mentioned in paragraph 1.3, the Government's policy in the provision of parking spaces is to accord priority to considering and meeting the parking demand of commercial vehicles. Regarding parking for private cars, given the scarce land resources in Hong Kong, the Government provides an appropriate number of parking spaces for them if the overall development permits, but at the same time not to attract passengers to opt for private cars instead, thereby aggravating road traffic congestion.

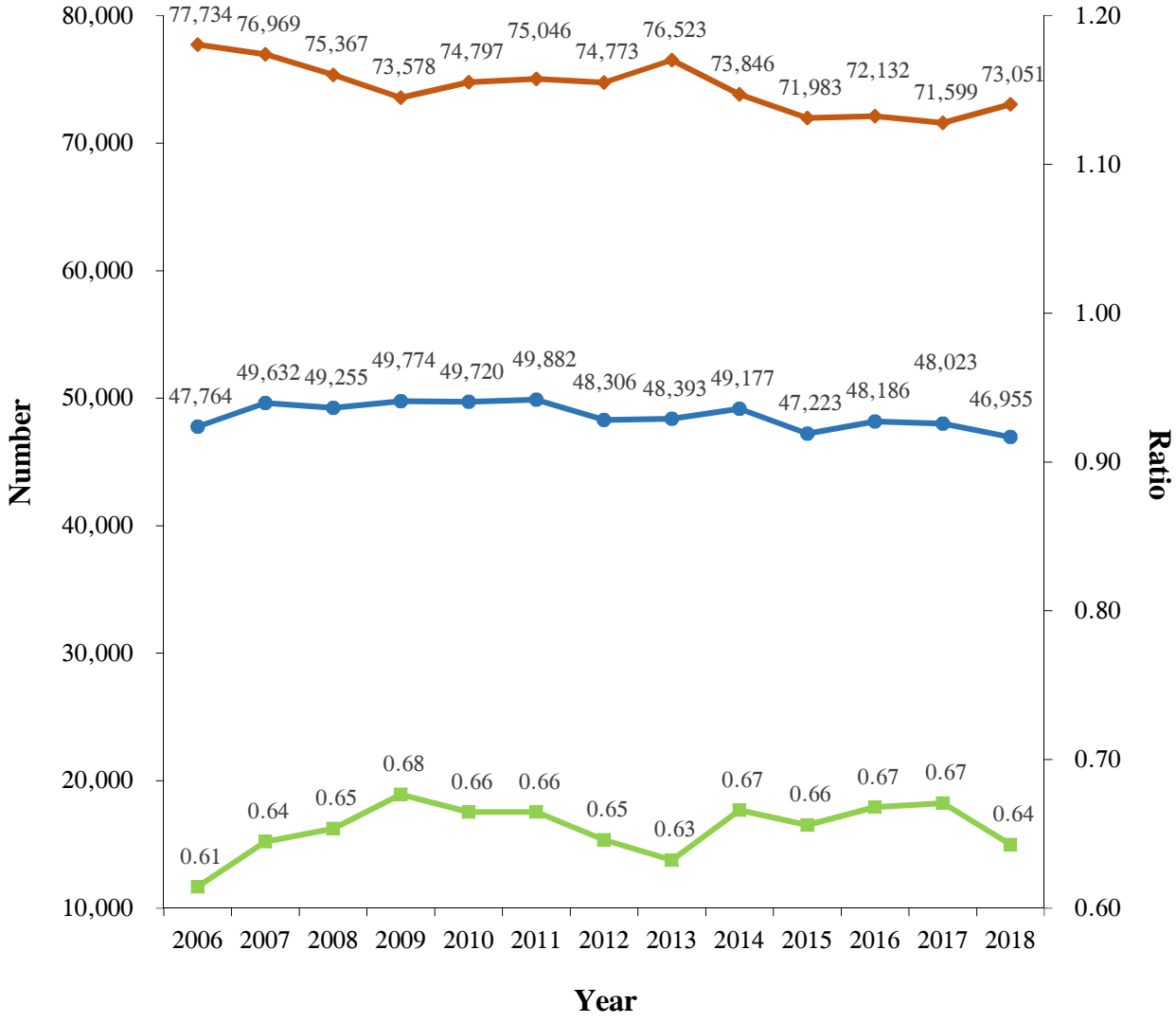
2.3 ***Significant increase in the number of private cars.*** As mentioned in paragraph 1.6, from 2006 to 2016, the number of parking spaces to vehicles (parking space ratio) decreased from 1.32 to 1.05. As at 31 December 2018, the ratio further decreased to 1.02 mainly because of the continuous increase in the number of private cars. TD projected that, based on the present trend, the parking space ratio would further drop to less than 1 in the coming years (i.e. theoretically, there would not be adequate parking spaces to accommodate all the vehicles). Audit analysis on the breakdown of licensed vehicles and parking spaces (see Appendix C) showed that:

(a) ***Commercial vehicles.*** From 2006 to 2018, the number of licensed commercial vehicles decreased by 6% from 77,734 to 73,051 while the number of parking spaces decreased by 1.7% from 47,764 to 46,955 (see Figure 1). During the period, the parking space ratio increased by 4.9% from 0.61 to 0.64. The ratio improvement was attributable to the reduced number of goods vehicles due to the shrinkage of transboundary goods movement. According to TD, since some of the commercial vehicles operated during night time, operated and parked on the Mainland, or parked at non-designated parking spaces (including brownfield sites in the New Territories), the actual shortage of parking spaces was not serious as depicted by the low parking space ratio; and

(b) ***Private cars.*** From 2006 to 2018, the number of licensed private cars increased significantly by 53.4% from 401,692 to 616,220 while the number of parking spaces increased by only 11.2% from 607,411 to 675,264 (see Figure 2). During the period, the parking space ratio dropped significantly by 27.2% from 1.51 to 1.10 due to the substantial growth in the number of private cars. There was a significant increase in the demand for parking spaces. According to TD, the parking space ratio was not meant to be a target (see paras. 1.3(b) and 2.2).

Figure 1

Licensed commercial vehicles and parking spaces (2006 to 2018)

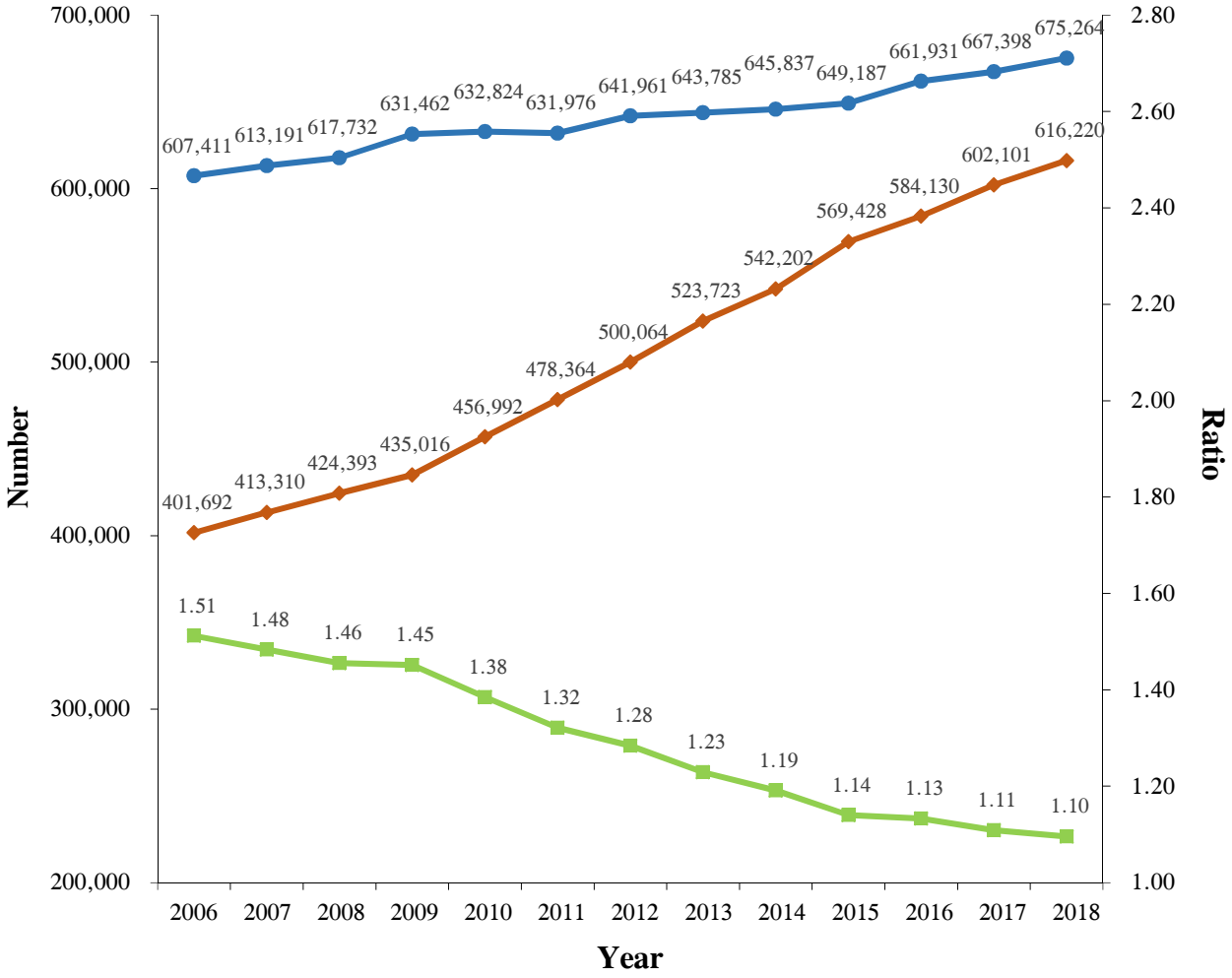


Source: *TD records*

Remarks: *Commercial vehicles included LGVs, medium goods vehicles, heavy goods vehicles, coaches and non-franchised public buses but excluded van-type LGVs.*

Figure 2

Licensed private cars and parking spaces (2006 to 2018)



Legend: Number of licensed private cars
Number of parking spaces
Parking space ratio (Note)

Source: *TD records*

Note: *According to TD, in determining the parking space ratio, some types of vehicles (e.g. franchised buses and taxis) were excluded from TD's calculation on the grounds that they operated round-the-clock or had specific depots or termini (see Note 1 to para. 1.3). However, some of these vehicles, in particular taxis, had occupied the parking spaces for other commercial vehicles and private cars. For example, as at 31 December 2018, of the 5,547 parking spaces in the government multi-storey car parks managed by TD (see para. 1.8(c)), 340 (6%) parking spaces were reserved for taxis (see para. 3.8).*

Remarks: *Van-type LGVs might also park at private car parking spaces. Therefore, the number of private cars included van-type LGVs.*

Planning and provision of public parking spaces

2.4 ***Types of parking spaces.*** According to TD, as shown in Table 2, there were two types of parking spaces, namely restricted parking spaces (for owners or authorised users including bona-fide visitors) and public parking spaces (open for public use). Audit analysis of the provision of parking spaces for commercial vehicles and private cars as at 31 December 2018 (see Table 2) showed that:

(a) ***Commercial vehicles.*** Of the 46,955 parking spaces for commercial vehicles, 27,306 (58%) were public parking spaces; and

(b) ***Private cars.*** Of the 675,264 parking spaces for private cars, 196,399 (29%) were public parking spaces.

According to LandsD, some of the public parking spaces in private developments as shown in Table 2 were not specified as requirements under lease (see Note 16 to para. 2.10).

Table 2

Number of various types of parking spaces
(31 December 2018)

Type of parking spaces	Number of parking spaces			
	Commercial vehicles		Private cars	
Restricted parking spaces for owners or authorised users (i.e. not open for public use) (Note 1)				
G/IC developments and public housing developments	5,020		70,229	
Private developments	14,011		408,512	
STT car parks	618	19,649	124	478,865
Public parking spaces (open for public use)				
G/IC developments and public housing developments (Note 2)	1,493	12,819	14,956	151,423
Private developments (Note 2)	11,326		136,467	
Government multi-storey car park	–		4,823	
On-street parking spaces	4,996		18,848	
STT car parks	9,491	27,306	21,305	196,399
Total		46,955		675,264

Source: Audit analysis of TD records

Note 1: These were: (a) parking spaces owned by tenants of the buildings reserved for their own use; and (b) monthly charged parking spaces reserved for the use of particular users. They included ancillary parking spaces provided by the Government and private developers (see para. 1.7).

Note 2: These were: (a) hourly charged parking spaces; and (b) monthly charged parking spaces in which any motorists could park their vehicles. The figure represented the number of parking spaces which had been reported by the operators to be open for public use, irrespective of whether or not: (a) the individual leases required the provision of public parking spaces; and (b) they were ancillary parking spaces required under lease (see para. 2.10).

2.5 ***TAC's recommendations.*** The 2014 TAC Report (see para. 1.10(a)) recommended a number of short, medium and long-term measures to tackle road traffic congestion. Among these measures, TAC recommended that the Government should conduct a detailed review of the parking policy. According to the 2017 Policy Address, the Government was adopting a multi-pronged approach, and had been taking forward progressively the measures recommended by TAC. In December 2017, TD commenced a consultancy study on parking for commercial vehicles for completion in 2019 at an estimated cost of $4 million. The study included an assessment of the parking demand of commercial vehicles by district and formulation of short to long-term measures to address the parking demand.

Need to closely monitor parking space ratio for private cars

2.6 In November 2002, TD issued the Second Parking Demand Study Final Report (2002 Study Report). According to the Report:

(a) there were surplus parking facilities for private cars in general for 2000, 2006 and 2011, but shortfalls for goods vehicles, coaches and motorcycles; and

(b) remedial measures were proposed to address the surplus in private car parking spaces, including the recommendation of a revision in HKPSG for housing developments.

In 2003 and 2014, the parking space standards of HKPSG for private housing developments were substantially revised.

2.7 After the 2003 revision of HKPSG, from 2006 to 2014, adopting a conservative basis that one parking space was required for one vehicle, the surplus of private car parking spaces had been reduced by 102,084 (49.6%) from 205,719 (607,411 less 401,692) to 103,635 (645,837 less 542,202). The revision of HKPSG in 2014 had further reduced the provision of parking spaces. In May 2017, THB informed the LegCo Panel on Transport that:

(a) the number of licensed private cars and the corresponding parking spaces were 584,000 and 662,000 respectively (with a surplus of 78,000); and

(b) since a private car required parking spaces at both the home-end and destination-end, a private car needed more than one parking space on average. The decrease in the ratio of private car parking spaces to such vehicles thus indicated an aggravating shortage of parking spaces for private cars.

Upon enquiry, in March 2019, TD informed Audit that a review on parking standard for provision of private car parking spaces in HKPSG was commissioned in August 2018 under the consultancy study on parking for commercial vehicles (see para. 2.5) to reflect the parking need in new development and redevelopment proposals. Prior to promulgation of the revised HKPSG standards, as an interim arrangement, TD had adopted higher ends of HKPSG in recommending the ancillary private car and commercial vehicle parking requirements in both private and government projects. Overall, since 2006, there have been changing circumstances on the demand and supply of private car parking spaces (i.e. a significant increase in the number of private cars resulting in the parking space ratio decreasing to 1.10 in 2018 and further to a projected ratio of less than 1 in the coming years — see para. 2.3). In Audit's view, the decreasing parking space ratio is a cause for concern. TD needs to closely monitor the parking space ratio for private cars and take appropriate measures to address the issue where necessary.

Planning and provision of long-term public parking spaces

2.8 ***Ancillary parking spaces.*** On a district level, if ancillary parking spaces are not sufficient to meet the demand, the shortfall will have to be met by the provision of public parking spaces (such as multi-storey car parks and on-street parking spaces). Audit examination of the revisions of HKPSG revealed that:

(a) the 2002 Study Report recommended major revisions for private car parking provision in subsidised and private housing developments. The revised parking provision was based on a global parking standard (GPS) applicable to both private and subsidised housing with built-in adjustment factors, in which the application of the new standards would provide more flexibility in setting parking requirements. In the case of private housing, adjustment factors on the demand indicator and accessibility would be applied to the GPS (see Appendix B). The demand indicator factor largely reflected the propensity to own a car and varied in accordance with the average flat size. The accessibility factor acknowledged that fewer parking spaces would be needed for developments located near railway stations by

applying a 15% discount to parking rates for development within a 500-metre (m) catchment area. This was in line with the transport policy of using railways as the backbone. In the case of subsidised housing, the accessibility factor was similar to that for private housing. From 2002 to 2018, HKPSG planning standards of ancillary parking spaces for private cars in housing developments were revised seven times (see Appendix D for details), in particular:

(i) in March 2003, the relevant standards and guidelines for parking facilities in various types of development projects (including private housing, subsidised housing, community facilities, commercial facilities, and industrial and business developments) were revised;

(ii) parking standards for subsidised housing were revised in May 2009 based on findings of the Housing Department (HD)'s "Study on Parking for Public Housing Developments" which was commissioned in 2006 and completed in 2008; and

(iii) parking standards for private housing were revised in February 2014 based on findings of TD's "Review of Parking Standards for Private Housing Developments in the HKPSG" which was commissioned in 2008 and completed in 2011 (Note 14);

(b) the 2002 Study Report forecasted that the parking supply for private cars would be able to meet the demand whilst the overall surplus supply margin would drop. From 2006 to 2018, although there was an increase of 11.2% in the overall provision of parking spaces (ancillary and public), it fell short of the increase of 53.4% in the number of private cars during the period; and

(c) in 2015 and 2017, Members of LegCo Panel on Transport expressed concerns about the mismatch of the demand and supply of parking spaces

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Note 14: *In response to the revision, an organisation considered that the revised standards would result in a drastic reduction in the number of parking spaces for developments with smaller flats while the increase in the provision of parking spaces in developments with larger flats would not be enough.*

in some districts (Note 15) and urged the Government to review the standards of provision of parking spaces.

Need to review planning standards of parking spaces in housing developments

2.9 As mentioned in the 2002 Study Report, the revision in HKPSG for housing developments aimed at addressing the surplus in private car parking spaces (see para. 2.6). As regards the last major revision in HKPSG on the provision of ancillary parking spaces in private housing developments in 2014, it was based on the findings of the consultancy study involving extensive field surveys at various locations in the territory between 2008 and 2011 (see para. 2.8(a)(iii)). However, Audit noted that the demand for parking spaces did not diminish as predicted with more production of small flats since 2011 (see Figure 2 in para. 2.3(b)). In January 2018, LegCo Panel on Transport passed a motion requesting the Government to expeditiously implement a parking policy of according priority to meeting the parking needs of commercial vehicles and at the same time ease the shortage of parking spaces for private cars and commercial vehicles in various aspects, including, among others, requesting developers to provide parking spaces in accordance with HKPSG in the conditions of land sale and updating the proportions of parking spaces for various types of developments in HKPSG to cater for the changes in population and economy of Hong Kong as well as the living habits of Hong Kong. According to TD, the Government would review from time to time the parking space standards and guidelines set out in HKPSG in relation to the provision of parking spaces and make revision as appropriate. In view of the changing circumstances, TD should examine the need for refining the planning standards of parking spaces in housing developments promulgated in HKPSG in light of the increasing demand for private cars parking spaces in recent years.

Note 15: *At a LegCo Panel on Transport meeting held in December 2015, a Member expressed concern about the mismatch of car parks in various districts, such as Tung Chung, and that due to land resumption for increasing the supply of residential units, the number of sites which were being used as temporary car parks were dwindling. At another meeting held in May 2017, another Member expressed concern over the mismatch between the demand and supply of parking spaces for coaches and non-franchised buses.*

Need to consider promulgating new guidelines on provision of public parking spaces in G/IC and private developments

2.10 There are at present no specific standards or guidelines promulgated for provision of public parking spaces, apart from ancillary parking spaces. According to LandsD's list of public facilities required under lease for use by the public within private developments mainly completed in or after 1980, 20,629 public parking spaces (comprising 17,800 for private cars, 2,663 for commercial vehicles and 166 for motorcycles) have been provided in private developments (Note 16). Taking into account the public parking spaces provided in G/IC and public housing developments (see Table 1 in para. 1.9), the total number of public parking spaces was 37,575 only (Note 17). According to TD, incorporation of public parking spaces in G/IC and private developments should be decided on a case-by-case basis. In determining the criteria for incorporating public parking spaces, TD will take into account the demand and supply of car parking spaces and the illegal parking situation in the locality. For specific sites, it will also take into account the specific site configuration/area in arriving at the requirements on public car parking spaces. Since the incorporation of public car parks in private developments, public housing developments and G/IC developments may help increase the number of parking spaces, there is merit in exploring the need for promulgating appropriate guidelines on the provision of public parking spaces (in addition to the provision of ancillary parking spaces). In this connection, TD needs to consider issuing internal guidelines for establishing the requirements for public parking spaces in new development and redevelopment proposals.

Note 16: *According to LandsD, the list did not contain all public parking spaces provided in private developments. The list excluded: (a) cases of public facilities required under lease in developments completed before 1980; (b) cases where private developers provided public car parking spaces on their own accord; (c) cases where public parking spaces were not specified as requirements under lease; and (d) cases where ancillary parking spaces in private developments such as commercial complexes were provided for public use. As regards the 136,467 public parking spaces in private developments as shown in Table 2 in paragraph 2.4, the bulk was probably ancillary in nature (see para. 1.7(a)) or not specified as requirements under lease.*

Note 17: *This referred to "additional parking spaces for public use" required under lease to be provided in private developments, which was substantially less than the figure of 12,819 (for commercial vehicle parking spaces) and 151,423 (for private car parking spaces) as shown in Table 2 in paragraph 2.4. Some of those parking spaces open for public use were de facto ancillary in nature (see para. 1.7(a)) and might not serve the purpose of meeting the demand from different districts.*

Planning and provision of public parking spaces in G/IC developments

2.11 According to the 2018 Policy Address:

(a) the shortage of parking spaces is a concern of many car owners. The Government would follow the principle of "single site, multiple uses" to provide public car parking spaces in suitable G/IC facilities and POS projects; and

(b) for example, the Government planned to provide public car parking spaces beneath the POS at Sze Mei Street, San Po Kong and at the Joint User Government Office Building in Area 67, Tseung Kwan O (TKO) (Note 18). Subject to technical feasibility, it was expected that at least 1,500 public car parking spaces would be provided in suitable government facilities and POS over the next five years (see para. 1.10(b)(ii)).

2.12 To better meet the demand for parking spaces in different districts, the Government incorporates public parking spaces into G/IC facilities (e.g. recreational facilities). With the support of DEVB, TD will identify suitable sites for G/IC facilities and liaise with relevant departments to incorporate public parking spaces into such facilities at the planning stage. In this connection, POS under planning provides an opportunity for incorporating public parking spaces, especially in areas with serious parking shortage and illegal parking problems. A case in point is the proposed project "Town Park in Area 66 and 68, TKO" (see Case 1 and chronology of key events in Appendix E), which was one of the potential sites identified in connection with the provision of 1,500 public car parking spaces in the next five years (see para. 2.11(b)). Since the provision of public parking spaces in G/IC development (and open space project as illustrated in Case 1) may involve different departments which may have conflicting interests, as advised by DEVB, there is a need to set out the criteria for consideration in planning and provision of public parking spaces in these sites:

Note 18: *According to the Architectural Services Department, a client-initiated change was made in December 2018 to provide additional 285 public parking spaces in the Joint User Government Office Building project in Area 67, TKO, comprising 250 parking spaces for private cars, 25 parking spaces for motorcycles and 10 parking spaces for light buses. As at March 2019, re-assessment of the technical feasibility on the proposed changes was in progress.*

(a) ***Identification of the leading project proponent.*** This refers to the need to delineate the responsibilities as to which party should lead the relevant part of the project, manage and maintain the parking spaces so provided and enforce against non-compliant uses, to ensure that any decision to incorporate public parking spaces into G/IC facilities (including POS) is made at the early planning stage and has gone through the due process, bearing in mind other uses on the G/IC sites. The leading project proponent should then include such parking space requirements in the project definition statement (specifying the project scope) where practicable;

(b) ***Implementation strategy.*** This includes whether the provision should at least reach a certain scale to be cost-effective and whether the provision would be at the expense of other competitive uses or generate adverse traffic impact; and

(c) ***Resolving conflicts.*** This involves devising a robust mechanism in resolving possible disputes among government bureaux/departments (e.g. on the timeframe and phasing of projects).

Audit considers that THB should, in consultation with relevant bureaux and departments, promulgate a circular setting out the criteria for considering whether and how public parking spaces should be provided under individual G/IC developments and open space projects.

Case 1

Implementation of a POS project with an underground car park in TKO

1. In March 2011, the Sai Kung District Council (SKDC) supported LCSD's proposed project scope for "Town Park in Area 66 and 68, TKO". Pending project planning and funding approval, since February 2013, a portion (with a site area of about 16,600 square metres (m^2)) of the proposed Town Park in Area 66 has been used as a temporary car park for motor vehicles under an STT. According to the Policy Address of January 2017, the project was included in the Five-Year Plan for Sports and Recreation Facilities.

2. In July 2017, SKDC endorsed a motion to explore the feasibility of providing parking facilities beneath the Town Park. After conducting local consultation in April 2018 to collect residents' views on the proposed underground carpark, SKDC considered at a special meeting in the same month that LCSD should proceed with the project without public car park. After consultation with SKDC and internal discussions among LCSD, TD, PlanD and the Architectural Services Department (ArchSD), in November 2018, TD proposed to SKDC splitting the Town Park project into two separate projects: (a) Town Park project in Area 68 by LCSD as project proponent; and (b) Town Park with an underground car park project in Area 66 by TD as project proponent, providing 395 parking spaces and compressing the project for completion in 2025 under a fast-tracking programme (i.e. two years after completion of the Town Park in Area 68). There were divided views among members at SKDC meetings in 2018 and 2019 (see Items 14 and 16 in Appendix E). As both SKDC and local residents urged for early implementation of the Town Park, in January 2019, SKDC supported LCSD's proposal to implement the Town Park project in Area 68 first. According to TD, it would step up efforts in district management to take forward the project in Area 66.

Audit comments

3. According to the latest submission to SKDC in March 2019: (a) the existing STT car park had about 800 parking spaces with a utilisation rate of approximately 85% (about 700 parking spaces were occupied); and (b) taking into account the 200 roadside illegal parking in the adjacent areas, there was a high demand for public parking spaces in Areas 66 and 68. TD needs to draw lessons from this case to assess the parking demand and improve planning in future projects:

Case 1 (Cont'd)

(a)	TD had not taken early actions to plan for parking facilities concerning the termination of the STT car park in Area 66, including exploring the feasibility of providing the parking spaces in-situ; and
(b)	based on the latest parking requirement as stated in the submission to SKDC in March 2019, TD estimated that the number of parking spaces required was about 880 (i.e. 700 STT parking spaces plus 240 parking spaces for illegal parked-vehicles, and minus 60 surplus parking spaces in the vicinity). Taking into account the proposed 395 parking spaces to be provided in-situ (see para. 2) and 105 parking spaces to be provided in a Joint User Government Office Building in Area 67 (see Note 18 to para. 2.11(b)), there would still be a shortfall of about 380 (880 – 395 – 105) parking spaces.

Source: Audit analysis of LCSD and TD records

Planning and provision of public parking spaces in private developments

2.13 Apart from providing parking spaces in G/IC developments and open space projects, the Government might require developers to provide parking spaces for public use in suitable projects. However, there were media reports and complaints on the denial of access to public car parks in private developments. There were various reasons for doing so. According to DEVB, some developers might deliberately leave the public parking spaces for goods vehicles and coaches idle to avoid possible nuisances, or turn them into parking spaces for private cars. Follow-up actions were taken by TD and LandsD in two cases (see Cases 2 and 3). Audit examination has revealed that TD needs to draw lessons from the two cases to improve its planning in the provision of public parking spaces in private developments.

Case 2

Access to LGV parking spaces at Development A

1. In November 1998, TD advised LandsD to include a public lorry park consisting of 155 LGV parking spaces in the site of Development A, according to a parking demand study. In December 1999, LandsD approved the inclusion of a public lorry park comprising 155 LGV parking spaces as a special condition in the land lease.

2. In October 2016, LandsD conducted an inspection to check the owner's compliance with land lease on provision of the public car park, and found that the ingress and egress points were blocked by movable railings, many lights were turned off and no lorry was parked therein. In November 2016, LandsD issued a warning letter requesting rectification. In December 2016, the car park operator assured that the car park was open for public use.

3. In October 2017, LandsD noted similar non-compliance issue during an inspection. In mid-May 2018, in processing a planning application of a new development nearby, PlanD sought advice from LandsD on the provision of the public lorry park in Development A from land administration aspect. LandsD found similar non-compliance and issued warning letters to the owner. LandsD conducted a follow-up inspection in late May 2018 and was satisfied with the rectification.

4. In response to some complaints/media enquiries about the availability of public parking spaces, LandsD inspected Development A in July 2018 twice and found that the stop bar at entrance was out of order and no lorry was parked inside the car park. During the inspection, LandsD staff also observed that a lorry stopped at the entrance of the car park and the car park attendants lifted the stop bar to allow the lorry to gain access. After issuing a letter requesting remedial actions, in August 2018, LandsD conducted a follow-up inspection and found that the stop bar remained not functioning and no parked lorries were found. According to LandsD: (a) the parking fee of Development A was broadly at market level; and (b) despite the mal-functioning of the stop bar, the car park attendants would assist public lorry park users to gain access to the car park. Thus, the car park was open for public use and there was no breach of lease condition. In response to LandsD's enquiry on the utilisation of the car park, the operator said that the utilisation was very low due to the low demand for LGV parking spaces. However, TD's survey in 2017 on illegal parking in

Case 2 (Cont'd)

the area (88 LGVs) suggested that there was a demand for LGV parking spaces. LandsD planned to carry out another inspection in September 2019.

Audit comments

5. Audit's site visit in January 2019 found that the utilisation of the parking spaces for LGVs was very low. In this connection, Audit noted that at the planning stage, TD and PlanD had different views on whether a public lorry park (for 155 LGVs) or a public car park (for 300 motor vehicles) should be provided in Development A (Note). According to TD, if the public lorry park was included in the development site for LGV parking, it could be converted into public car park if necessary. According to the land lease, the owner shall operate, conduct and manage the public car park at all times and in all respects in accordance with all Ordinances, bye-laws and regulations relating to public car parks which are or may at any time be in force in Hong Kong. Audit considers that TD should ascertain the reasons for the under-utilisation of the LGV parking spaces in Development A and draw lessons for future planning of incorporating public car parks in private developments.

Source: Audit analysis of LandsD and TD records

Note: TD and PlanD exchanged views on the issue in December 1999:

(a) on 6 December 1999, PlanD informed LandsD that it had reservations on the provision of the LGV parking spaces because the consultant of the "Review of Land Use in the Northern Part of the West Kowloon Reclamation" had proposed to include public parking spaces (for private cars), instead of LGV parking spaces; and

(b) on 8 December 1999, TD informed PlanD that public lorry (i.e. LGV) park consisting of 155 parking spaces should be provided instead of public car park with 300 private car parking spaces at the site because according to the latest Parking Demand Study, there would be a shortfall of goods vehicle parking spaces in northern part of West Kowloon Reclamation in 2006.

Case 3

Access to LGV parking spaces at Development B

1. According to a parking demand study conducted in 1995-96, TD discussed with LandsD to include a public lorry park in the site of Development B. In February 1999, LandsD included the provision of not less than 378 public parking spaces (i.e. not less than 200 for LGVs and not less than 178 for private cars) as a special condition in the land lease.

2. In August 2018, in response to media enquiries about the availability of goods vehicle parking spaces to the public, LandsD carried out an inspection and found that some of the LGV parking spaces were fenced off by chain-links or wooden boards, and some were occupied by private cars. LandsD issued a warning letter to the owner. In October 2018, LandsD conducted a follow-up inspection and found that the obstruction was removed but some LGV parking spaces were occupied by private cars. In December 2018, LandsD issued a letter to the owner requiring rectification. In response, in late December 2018, the car park operator informed LandsD that: (a) many users parked their private cars in LGV parking spaces for convenience sake, ease of parking and avoidance of possible damage during manoeuvring; and (b) since cordoning-off of LGV parking spaces was not permitted, all LGV parking spaces were open to use by private cars which made it difficult to manage.

Audit comments

3. Audit's site visit in January 2019 found that a number of LGV parking spaces were occupied by private cars. LandsD, in collaboration with TD, should carry out inspections and take actions to rectify the irregularities. TD should also draw lessons for future planning of car parks which provide both private car and LGV parking spaces at the same locality.

Source: Audit analysis of LandsD and TD records

Planning and provision of temporary public parking spaces

2.14 ***Decrease in number of STT parking spaces.*** LandsD is responsible for the management of developable government land not yet leased or allocated for long-term development uses. To put land resources into gainful use, LandsD will,

where practicable, put such government sites to appropriate temporary uses by suitable means, including leasing the land by way of STTs granted through open tenders for various commercial purposes (including fee-paying public car parks). The Traffic Survey and Support Division of TD conducts half-yearly parking surveys for STT sites in order to collect information on inventories and utilisation rates for different types of vehicle parking. As shown in Table 3, from 2011 to 2018, the number of STT car parks decreased by 4% from 213 to 205 and the number of parking spaces in STT car parks decreased by 13% from 36,631 to 31,763.

Table 3

Decrease in number of parking spaces in STT car parks (2011 to 2018)

Year	Number of STT car parks	Number of parking spaces in STT car parks			
		Private car (a)	Commercial vehicle (b)	Motorcycle (c)	Overall (d) = (a) + (b) + (c)
2011	213	23,055	13,344	232	36,631
2012	218	22,630	13,173	195	35,998
2013	211	20,509	12,531	318	33,358
2014	211	20,372	12,633	306	33,311
2015	207	20,133	11,109	217	31,459
2016	202	20,871	10,560	215	31,646
2017	209	20,421	10,296	219	30,936
2018	205	21,429	10,109	225	31,763
Percentage decrease from 2011 to 2018	4%	7%	24%	3%	13%

Source: TD records

2.15 ***Termination of STT car parks.*** As shown in Table 3, the number of STT parking spaces for commercial vehicles decreased by 3,235 (24%) from 13,344 to 10,109 and that for private cars by 1,626 (7%) from 23,055 to 21,429. In this connection, Audit has noted that:

(a) unlike covered car parks with headroom restriction and structural elements, STT car parks are open-air sites which can accommodate larger vehicles. According to the 2002 Study Report, the use of STT car parks was effective in providing parking spaces for goods vehicles. Therefore, the substantial reduction in the number of STT spaces has an impact on meeting the parking need for medium and large-size commercial vehicles;

(b) according to TD, there had been mounting pressure on the development of many STT sites in recent years because of a general shortage of land suitable for various development needs. According to TD, as at 30 September 2018, 41 STT car parks (providing 6,187 parking spaces for private cars and 2,115 for commercial vehicles) would be terminated for long-term developments in the coming years; and

(c) there was a consensus at the Harbourfront Commission (Note 19) that STTs along the harbourfront (mainly in Victoria Harbour) should eventually be phased out, on the grounds that the land use of STT car parks was not compatible with the harbourfront, unless the STTs were meant to facilitate users of the harbourfront. As at 31 December 2018, 62 STT car parks (providing 5,096 parking spaces for private cars and 5,314 for commercial vehicles) were located in the harbourfront areas.

2.16 ***Need to provide more long-term public parking spaces to meet the shortfall arising from termination of STT car parks.*** Audit noted that, as at 30 June 2018, 12 (5.3%) STT car parks (involving 830 parking spaces for private cars and 1,570 for commercial vehicles) had operated for over 10 years. According to DEVB, by nature, STT car parks are only stop-gap measures and cannot replace efforts to

Note 19: *The Harbourfront Commission was established in 2010 to advise the Government on harbourfront planning, design, management and other related matters with the objective of fostering and facilitating the development of the Victoria harbourfront. It comprises non-official members (including 12 representatives nominated by professional institutes, civic and environmental groups and the business sector, and 12 individual members including the Chairman), and the Secretary for Development as the Vice-Chairman and another 7 ex-officio members.*

identify and implement long-term solutions. Moreover, LandsD informed Audit in March 2019 that STT sites could not be maintained perpetually as they were allocated for implementing planned permanent developments which prevailed over temporary/short term uses and in addition, there was tremendous pressure in the supply of fresh STT sites for competing bidding such as social housing, works areas for public works, recycling industry, etc, all of which were pertinent to the functioning of this city, in one way or the other. Hence, the pool of STT sites available for car parks would continue to diminish as they were taken up for permanent developments, or deployed for other more pressing competing uses. In view of the fact that many STT car parks are planned to be taken back for other uses in the years ahead (see para. 2.15(b)), TD, in liaison with the relevant departments such as LandsD, needs to step up efforts to identify suitable reprovisioning sites in a timely manner. As there are always difficulties in identifying suitable reprovisioning sites because of other competing demands, Audit considers that TD needs to formulate a strategy for providing more long-term public parking spaces, especially for commercial vehicles, to meet the shortfall arising from termination of STT car parks. TD needs to consider reducing the reliance on STT car parks in meeting public parking space demand.

Audit recommendations

2.17 **Audit has *recommended* that the Commissioner for Transport should:**

Demand and supply of parking spaces

(a) **closely monitor the parking space ratio for private cars and take appropriate measures to address the issue of decreasing ratio where necessary;**

Planning and provision of long-term public parking spaces

(b) **review the planning standards of parking spaces for private cars in the housing developments promulgated in HKPSG;**

(c) **consider issuing internal guidelines for establishing the requirements for public parking spaces in new development and redevelopment proposals;**

(d) **in consultation with SKDC, endeavour to work out a reprovisioning plan for the STT car park in TKO Area 66 (see Case 1);**

(e) **drawing lessons from Case 1, critically review the demand for parking spaces in planning the reprovisioning of car parks in future;**

(f) **ascertain the reasons for the under-utilisation of LGV parking spaces in Case 2 and draw lessons to improve the planning and provision of public car parks in private developments;**

(g) **drawing lessons from Case 3, improve the future planning of car parks which provide both private car and LGV parking spaces at the same locality;**

Planning and provision of temporary public parking spaces

(h) **in liaison with the Director of Lands, step up efforts to identify suitable reprovisioning sites in a timely manner if it is considered necessary to reprovision STT car parks that will be terminated for long-term developments, taking into account LandsD's specific views in paragraph 2.16; and**

(i) **formulate a strategy for providing more long-term public parking spaces, especially for commercial vehicles, to meet the shortfall arising from termination of STT car parks in the near future, taking into account LandsD's specific views in paragraph 2.16.**

2.18 **Audit has *recommended* that the Director of Lands should, in collaboration with the Commissioner for Transport, carry out inspections and take actions to rectify the irregularities identified in Case 3.**

2.19 **Audit has also *recommended* that the Secretary for Transport and Housing should, in consultation with relevant government bureaux and departments, promulgate a circular setting out the criteria for considering whether and how public parking spaces should be provided under individual G/IC developments and open space projects.**

Response from the Government

2.20 The Commissioner for Transport agrees with the audit recommendations in paragraphs 2.17 and 2.18. She has said that:

(a) TD will continue to closely monitor the parking space ratio for private cars and actively pursue short and medium to long term measures to address the parking space demand appropriately;

(b) TD commissioned a review in August 2018 on the parking standard for provision of private car parking spaces in HKPSG with a view to updating the requirement for parking spaces in housing developments. The review is targeted for completion in 2020;

(c) TD will draw up guidelines for establishing the requirements for public parking spaces in new development and redevelopment proposals for internal reference;

(d) TD consulted SKDC on 5 March 2019 on the reprovisioning plan for the STT car park in TKO Area 66, which included construction of a town park with underground public vehicle park in the area. TD is considering views of SKDC members;

(e) TD will critically review the demand for parking spaces in planning the reprovisioning of car parks in future, taking into account the local traffic conditions, land availability, utilisation of car parks nearby, illegal parking in the vicinity and views of stakeholders;

(f) TD will ascertain the reasons for the under-utilisation of LGV parking spaces in Case 2 with a view to formulating measures to improve the planning and provision of public car parks in private developments in future;

(g) TD will review Case 3 with a view to formulating measures to improve the future planning of car parks which provide both private car and LGV parking spaces at the same locality;

(h) notwithstanding that land is a scarce resource in Hong Kong and that any temporarily vacant piece of land could be competed for various uses (e.g. transitional housing), TD will continue to liaise with LandsD to make every effort to identify suitable reprovisioning sites for those STT car parks to be terminated for long-term developments;

(i) the strategy for providing more long-term public parking spaces has been established on two fronts. Firstly, the Government will, in line with the principle of "single site, multiple uses", provide public car parking spaces in suitable G/IC facilities and POS projects so as to make full use of the sites. Secondly, through wider application of automated parking system, the Government will target to provide more parking spaces in future government car parks. In this regard, TD has commissioned a pilot study on automated parking systems and has identified six pilot sites for detailed technical assessment with a view to commencing construction in batches starting from 2021; and

(j) as regards the audit recommendation in paragraph 2.18, TD will provide assistance to LandsD to carry out inspection, and take actions to rectify the irregularities identified in Case 3.

2.21 The Director of Lands generally agrees with the audit recommendations in paragraphs 2.17(h) and (i), and 2.18. He has said that the reprovisioning of temporary public parking spaces currently provided under STT car parks by long-term and permanent ones require long-term planning of suitable sites which is outside the remit of LandsD and involve other relevant department.

2.22 The Secretary for Transport and Housing agrees with the audit recommendation in paragraph 2.19. He has said that:

(a) as announced in the 2018 Policy Address, the Government will follow the principle of "single site, multiple uses" to provide public car parking spaces in suitable G/IC facilities and POS projects; and

(b) to facilitate implementation, THB has already promulgated to relevant bureaux and departments a host of measures to suitably make available more car parking spaces. In particular, THB/TD has initiated the process of revising, in consultation with relevant bureaux and departments, an

internal circular so that the requirements to incorporate public parking spaces in various government projects in line with the principle of "single site, multiple uses" will be set out by the project proponents and works agents, in consultation with TD, as part of the project scope under Project Definition Statements.

2.23 The Secretary for Development agrees with the audit recommendation in paragraph 2.19. He has said that the planning of public car parking facilities in new G/IC projects should take into account the potential competing uses and other value-for-money considerations (see para. 2.12(b)).

PART 3: MANAGEMENT OF GOVERNMENT MULTI-STOREY CAR PARKS

3.1 This PART examines TD's management of government multi-storey car parks, focusing on:

(a) review of parking fees and sale of parking tickets (paras. 3.5 to 3.13);

(b) non-availability of parking spaces for public use (paras. 3.14 to 3.24); and

(c) facilities management (paras. 3.25 to 3.30).

Government multi-storey car parks

3.2 ***Policy objectives.*** According to TD, the Government's policy objectives in managing government multi-storey car parks are to:

(a) maintain the availability rate of parking spaces at 15% during peak hours (i.e. a utilisation rate of 85%); and

(b) maximise government revenue.

3.3 ***Car park management.*** The Transport Facilities Management Section (TFMS — Note 20) under the Management Services Division of TD's Management and Paratransit Branch (see Appendix A) is responsible for the management of various transport facilities including the government multi-storey car parks and on-street metered parking spaces (see para. 4.4). As at 31 December 2018, TFMS managed 11 government multi-storey car parks (Note 21) providing a total of 5,547 parking

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Note 20: *TFMS, headed by a Chief Transport Officer, comprises 12 staff.*

Note 21: *From 2013 to 2018, three government multi-storey car parks and an open-air car park ceased operation, namely Tsuen Wan Transport Complex Car Park in February 2013, Middle Road Car Park in July 2014, Murray Road Car Park in May 2017 and Sheung Shui Park-and-Ride Car Park (an open-air car park) in August 2018. The Park-and-Ride scheme was provided on the same date in Po Shek Wu Estate Public Car Park under the Hong Kong Housing Authority's management.*

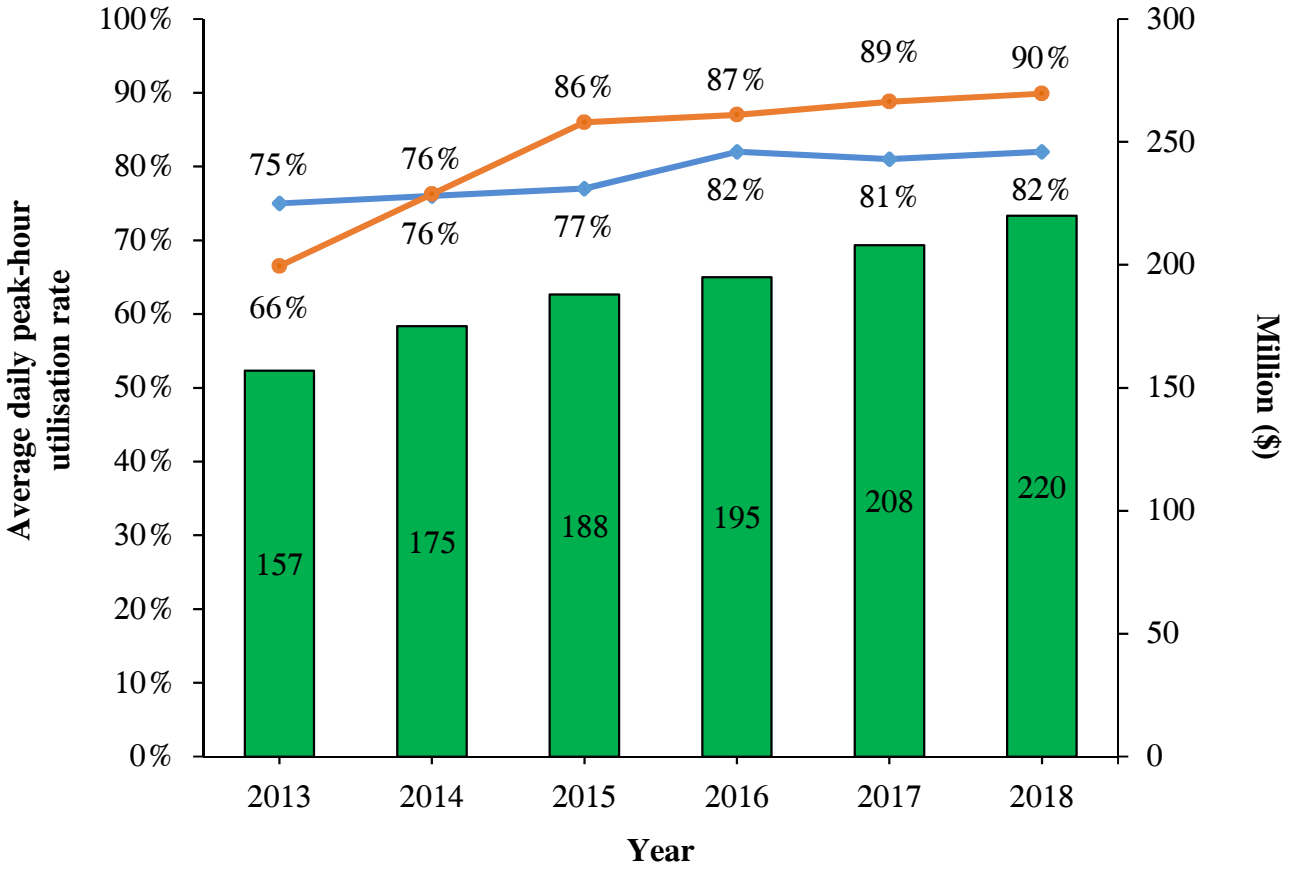
spaces, including 4,823 for private cars, van-type LGVs and taxis, and 724 for motorcycles (see Appendix F). Two contractors are responsible for the day-to-day management, operation and maintenance of all 11 government multi-storey car parks under two 3-year contracts with effect from 1 May 2017. Under the contracts, the contractors shall collect, for and on behalf of the Government, the parking receipts from car park users. The revenue collected shall be shared by the Government and contractors at pre-determined percentages.

3.4 ***Utilisation and revenue.*** According to TD, the average daily peak-hour utilisation rate of parking spaces (Note 22) for private cars, van-type LGVs and taxis increased from 66% in 2013 to 90% in 2018 and that for motorcycles also increased from 75% in 2013 to 82% in 2018. The total revenue from the 11 car parks increased by 40% from $157 million in 2013 to $220 million in 2018 (see Figure 3).

Note 22: *According to TD, the peak-hour utilisation rate was the ratio between the space-hours taken up by vehicles in a car park during peak hours with the highest demand and the total space-hours available in that car park during the same period.*

Figure 3

Average daily peak-hour utilisation rates and total revenue from 11 government multi-storey car parks (2013 to 2018)



Legend:

- Average daily peak-hour utilisation rate of parking spaces for private cars, van-type LGVs and taxis
- Average daily peak-hour utilisation rate of parking spaces for motorcycles
- Total revenue from the 11 government multi-storey car parks

Source: *Audit analysis of TD records*

Review of parking fees and sale of parking tickets

3.5 ***Parking fee adjustment.*** To cater for different parking demands in different districts, parking fees of the 11 government multi-storey car parks are charged at different rates based on the parking duration (i.e. hourly, half-daily, monthly and quarterly). TD sells monthly/quarterly parking tickets to motorists in respect of three vehicle types (i.e. (i) private cars and van-type LGVs; (ii) taxis; and (iii) motorcycles). According to TD, parking fees of the government multi-storey car parks should be reviewed every year taking into account the following factors:

(a) maintaining the parking space utilisation rate at 85% during peak hours (see para. 3.2(a));

(b) parking fees of the government multi-storey car parks to be comparable with fees charged by nearby public car parks;

(c) impact of fee revision on utilisation and the objective of maximising government revenue (see para. 3.2(b)); and

(d) public acceptability.

From 1998 to 2018, TD adjusted the parking fees of the government multi-storey car parks five times (i.e. in 1998, 2007, 2013, 2017 and 2018). For example, the parking fees were adjusted upward by 2% to 13% in 2017 and by 2% to 11% in 2018. In this regard, Audit examination of the average daily peak-hour utilisation rates of parking spaces in the car parks and the parking fee levels has revealed that there is a need to take into consideration the audit observations in paragraphs 3.6 to 3.8 in future parking fee review exercises.

3.6 ***Parking space average daily peak-hour utilisation rates exceeding 85%.*** As shown in Figure 3 in paragraph 3.4, the average daily peak-hour utilisation rates of parking spaces for private cars, van-type LGVs and taxis had exceeded TD's target utilisation rate of 85% since 2015 (see para. 3.2(a)) and reached 90% in 2018. An analysis of average daily peak-hour utilisation rates in 11 government multi-storey car parks in 2018 is shown in Table 4. It can be seen that in 2018, the average daily peak-hour utilisation rates in 10 of the 11 car parks ranged from 89% to 95%.

Table 4

Analysis of average daily peak-hour utilisation rates of parking spaces for private cars, van-type LGVs and taxis in 11 government multi-storey car parks (2018)

Government multi-storey car park	Average daily peak-hour utilisation rate
Yau Ma Tei	91%
Star Ferry	90%
City Hall	80%
Rumsey Street	89%
Aberdeen	93%
Kwai Fong	90%
Tsuen Wan	95%
Shau Kei Wan	93%
Tin Hau	92%
Sheung Fung Street	95%
Kennedy Town	90%
Overall	90%

Source: Audit analysis of TD records

3.7 ***Parking fees below average market rate.*** According to a market research conducted by TD in July 2018, except for the reserved parking spaces at Star Ferry Car Park, the monthly parking fees of non-reserved parking spaces for private cars and van-type LGVs in all the government multi-storey car parks were the lowest as compared with nearby public car parks (i.e. within 15 minutes walking distance from respective multi-storey car parks). In general, the monthly parking fees for private cars and van-type LGVs in government multi-storey car parks were 15% to 34% lower than the average market rates of nearby public car parks (see Table 5).

Table 5

Comparison of monthly parking fees with average market rates for private cars and van-type LGVs in 11 government multi-storey car parks (July 2018)

Government multi-storey car park	Monthly parking fee (Note 1) (a) ($)	Average market rate (b) ($)	Percentage of monthly parking fees below average market rate (c) = [(b)−(a)] ÷ (b) × 100%
Yau Ma Tei	2,800	3,275	15%
Star Ferry	4,300 (Note 2)	5,113	16%
City Hall	4,300	5,113	16%
Rumsey Street	3,950	4,767	17%
Aberdeen	1,800	2,355	24%
Kwai Fong	2,000	2,593	23%
Tsuen Wan	2,000	2,925	32%
Shau Kei Wan	2,000	2,682	25%
Tin Hau	2,800	3,671	24%
Sheung Fung Street	1,900	2,647	28%
Kennedy Town	2,200	3,327	34%

Source: TD records

Note 1: As at July 2018, quarterly parking tickets were only sold in Kennedy Town Car Park. The monthly parking fee was calculated by dividing the quarterly parking fee by three (i.e. $6,600 ÷ 3 months = $2,200/month).

Note 2: This referred to the monthly parking fee for non-reserved parking spaces. Monthly parking fee for reserved parking spaces was $5,900.

3.8 ***Concessionary parking fees for taxis.*** According to TD, as a helping measure to the taxi trade at that time, in 1999, TD launched a scheme to sell monthly parking tickets for taxis at a concessionary rate of $500. As at 31 December 2018,

monthly/quarterly parking tickets for 340 parking spaces for taxis were available for sale in 10 government multi-storey car parks (except Star Ferry Car Park). The monthly parking fees for taxis had increased by 16% from $500 in 1999 to $580 in 2018. Audit's research of the parking fees in other public car parks revealed that the granting of concessionary rate for monthly parking for taxis was not common (e.g. in the Hong Kong Housing Authority's car parks, the monthly parking fees for taxis and private cars were the same). In Audit's view, TD needs to take into due consideration in its future parking fee review exercises the concessionary parking fees granted for taxis, and consider whether the justification in 1999 for so doing is still valid in the present circumstances.

Sale arrangements of parking tickets

3.9 ***Monthly and quarterly parking tickets***. As at 31 December 2018, there were 3,811 (69% of 5,547 parking spaces) monthly and quarterly parking tickets made available for sale in the 11 government multi-storey car parks (see para. 3.5). Issued parking tickets are non-transferrable, except for vehicles under the same owners. TD adopts the following sale arrangements for monthly and quarterly parking tickets in the government multi-storey car parks:

(a) ***Monthly parking tickets.*** Monthly parking tickets are sold on a first-come-first-served basis. The monthly parking tickets for the succeeding month are put on sale starting at 7:30 a.m. on the 23rd of each month. Applicants must purchase monthly parking tickets at the shroff of the respective car parks; and

(b) ***Quarterly parking tickets.*** Quarterly parking tickets are sold by balloting. Application forms are available for collection at the shroff of the respective car parks from 23rd of January, April, July and October for parking in the forthcoming quarter starting from March, June, September and December in the year. For example, the January applications are for parking period from March to May of the year. An applicant must submit a completed application form together with the required supporting documents (i.e. a valid vehicle registration document and a valid vehicle licence) at the shroff of a car park on or before the deadline (usually about 2 weeks after the application forms are available for collection e.g. the first week of February for January applications). A computer-generated acknowledgement slip in respect of the application will be issued to the applicant. The ballot, which is open to the public, usually takes place a few days after the deadline. The

successful applicants can purchase the parking tickets at the shroff upon presenting the acknowledgement slips. A waiting list mechanism is also maintained in case there are unsold tickets.

3.10 ***Overnight queuing for purchase of monthly parking tickets.*** Probably due to the growth in fleet size of private cars (see para. 1.6) and the relatively lower parking fees in government multi-storey car parks (see para. 3.7), competition for monthly/quarterly parking tickets among applicants was keen in recent years. There were media reports about overnight queues for the purchase of monthly parking tickets. For example, according to TD's records, a queue was formed at around 11:00 a.m. on 22 November 2018 (i.e. more than 20 hours before the monthly parking tickets were put on sale at 7:30 a.m. on 23 November 2018) in one of the car parks. Audit examined TD's records on sale of monthly parking tickets from July to December 2018 and found that monthly parking tickets for private cars and van-type LGVs had been sold out on the first day in 4 car parks (i.e. Tin Hau, Shau Kei Wan, Aberdeen and Kwai Fong Car Parks) for 5 to 6 consecutive months. Audit's site visits in the evenings of 22 November 2018 and 22 January 2019 revealed that overnight queues existed in the 4 car parks (see Photographs 1(a) to (d) for the queuing situation on 22 January 2019).

Photographs 1(a) to (d)

Overnight queues waiting for purchase of monthly parking tickets

(a) Tin Hau Car Park

(b) Shau Kei Wan Car Park

(c) Aberdeen Car Park

(d) Kwai Fong Car Park

Source: Photographs taken by Audit staff from 10:00 p.m. to 11:30 p.m. on 22 January 2019

3.11 ***Need to take further actions to improve the sale arrangements.*** In light of the media reports and similar public complaints, TD conducted a review in October 2018 on the sale arrangements of parking tickets. According to TD, a number of factors including the demand and utilisation (by reviewing the number of days required for the monthly parking tickets to be sold out (e.g. on the first day of sale for three consecutive months)), safety and order of queuing arrangements as well as users' opinions (by questionnaire surveys) were taken into account. In view of the high utilisation rates of the car parks and safety concern about the queuing public, TD has changed the sale arrangement of parking tickets in Sheung Fung Street Car Park

from a first-come-first-served basis to a balloting arrangement (Note 23) since December 2018. Upon enquiry, TD informed Audit in March 2019 that it would review the sale arrangements and consider implementing balloting arrangement in other individual car parks if appropriate, and the balloting arrangement would also be extended to Rumsey Street and Yau Ma Tei Car Parks in March 2019 (covering the parking period from April to June 2019). In Audit's view, apart from considering the extension of balloting arrangement to other car parks, TD also needs to explore the use of information technology (e.g. online application) to streamline the application process.

Audit recommendations

3.12 **Audit has *recommended* that the Commissioner for Transport should:**

(a) **take into due consideration the high utilisation rates of parking spaces, the lower-than-market parking fees for private cars and van-type LGVs, and the concessionary parking fees for taxis in TD's future parking fee review exercises; and**

(b) **take further actions to improve the sale arrangements of monthly/quarterly parking tickets in the government multi-storey car parks.**

Response from the Government

3.13 The Commissioner for Transport agrees with the audit recommendations. She has said that TD will continue to:

(a) review the parking fees of the car parks (including the concessionary parking fees for taxis) under TD's management annually, taking into account the utilisation rates of the car parks and the parking fees of the nearby car parks; and

Note 23: *TD has implemented balloting arrangement for sale of quarterly parking tickets in Kennedy Town Car Park for more than five years.*

(b) review the sale arrangements for monthly parking tickets taking into account the demand and utilisation, safety and order of queuing arrangements, and explore the use of information technology to streamline the application process. As there are different views on adopting balloting arrangement for monthly/quarterly parking tickets, due regard should be given to users' opinions and acceptability in considering any extension of the balloting arrangement to other car parks.

Non-availability of parking spaces for public use

3.14 Given the high demand for the parking spaces in the government multi-storey car parks, as reflected by the high utilisation rates during peak hours in recent years (see Figure 3 in para. 3.4), it is important that all parking spaces are open to the public as far as practicable. From November 2018 to January 2019, Audit conducted site visits to all the 11 car parks and identified room for improvement in the following two cases, as illustrated in paragraphs 3.15 to 3.22.

Unused parking spaces at Kwai Fong Car Park

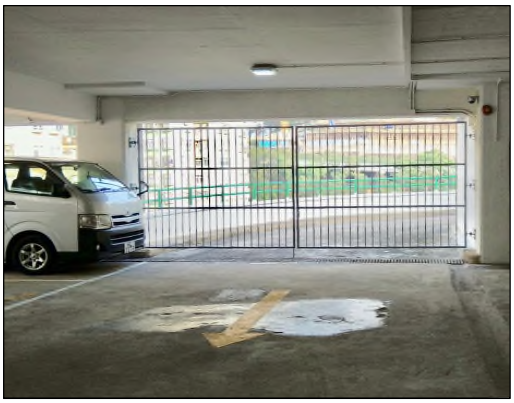
3.15 ***Rooftop parking spaces.*** Kwai Fong Car Park is a 7-storey car park providing 645 parking spaces, including 552 parking spaces for private cars, van-type LGVs and taxis, and 93 parking spaces for motorcycles. According to the floor plans of Kwai Fong Car Park, 477 parking spaces for private cars, van-type LGVs and taxis are located on 1st to 7th floors of the Car Park and the remaining 75 parking spaces for private cars, van-type LGVs and taxis are located on the rooftop of the Car Park.

3.16 ***Audit's site visits.*** Audit conducted site visits to Kwai Fong Car Park from November 2018 to January 2019 and found that the vehicular access between the 7th floor and the rooftop of the Car Park had been closed (see Photographs 2(a) and (b)). According to TD's records, the rooftop of the Car Park had been closed since October 2013 and since then all the 75 parking spaces on the rooftop had not been open for public use.

Photographs 2(a) and (b)

Vehicular access between 7th floor and rooftop of Kwai Fong Car Park

(a) Entrance **(b) Exit**



Source: Photographs taken by Audit staff on 17 January 2019

3.17 ***Incident leading to the closure of the rooftop parking spaces.*** According to TD's records, six theft cases of copper plates (i.e. lightning protection strips) were reported on the 1st floor, 7th floor and rooftop of the Kwai Fong Car Park from September 2012 to May 2013. To enhance security of the Car Park, TD implemented several security measures, including the installation of: (a) nine additional closed-circuit television (CCTV) cameras on the 7th floor and the rooftop; and (b) two gates with close-shackle padlocks at ramps located on the 7th floor (see Photographs 2(a) and (b) in para. 3.16). The installation works were completed in October 2013. However, no record was available showing the justifications for not re-opening the rooftop parking spaces for public use after the completion of the installation works.

3.18 ***Need to put the rooftop parking spaces into effective use expeditiously.*** In response to Audit's enquiry about the reasons for prolonged closure of the rooftop parking spaces at Kwai Fong Car Park, TD and ArchSD informed Audit in March 2019 that:

(a) ***TD.*** The surface of the rooftop was subsequently found not suitable for parking. Upon liaising with ArchSD, the repair works were completed in October 2018. TD planned to re-open the rooftop parking spaces for temporary use as a temporary vehicle detention centre for impounding

vehicles used for illegal carriage of passengers for hire or reward, and afterwards for general parking purpose; and

(b) ***ArchSD.*** There was no delay in completing the repair works for the rooftop parking spaces of the Kwai Fong Car Park. In April 2018, ArchSD received the request for the repair works (without any specific requirements for phasing or target completion date) and immediately arranged the minor repair works in May 2018. In August 2018, the works were substantially completed with subsequent defect rectification and outstanding works fully completed in October 2018. The minor repair works included patch repair of floor finishes, repainting of parapet walls and line markings, which would not jeopardise the opening of the car park.

In Audit's view, the prolonged closure of rooftop parking spaces at Kwai Fong Car Park was unsatisfactory because there was a great demand for parking spaces in Kwai Fong, as evidenced by the high demand for monthly parking tickets of Kwai Fong Car Park (see para. 3.10). Audit analysis also revealed that the average daily peak-hour utilisation rates of parking spaces for private cars, van-type LGVs and taxis of Kwai Fong Car Park had consistently exceeded 85% since 2015 (i.e. ranging from 88% to 90% from 2015 to 2018). TD needs to put the 75 rooftop parking spaces into effective use as soon as practicable.

Parking spaces occupied by abandoned vehicles

3.19 ***Impounding and disposal of abandoned vehicles.*** According to TD, a vehicle is considered abandoned if it is not having a valid monthly or quarterly parking ticket and has been stationary at a parking space for a continuous period of more than 30 days. Such abandoned vehicle may be impounded, detained and disposed of in accordance with the Road Traffic (Parking on Private Roads) Regulations (Cap. 374O). According to the Regulations, if a detained vehicle is not removed within 25 days after serving a notice to the vehicle owner within 3 days after its detention and the publication of the notice on newspapers within 14 days of the notice, the detained vehicle shall become a government property and may be disposed of by the Commissioner of Police. Therefore, the time taken from detention to removal of an abandoned vehicle from the parking space should be around one month. TD's contractors are required under the contracts to handle abandoned vehicles in accordance with the laid-down procedures.

3.20 ***Prolonged occupation of parking spaces by abandoned vehicles.*** According to TD's records, as at 12 November 2018, there were 13 abandoned vehicles (i.e. 9 private cars and 4 motorcycles) with expired vehicle licences or without any vehicle licence in 5 government multi-storey car parks. Audit's site visits in December 2018 revealed that all the 13 abandoned vehicles had not been removed. An analysis of the parking duration (i.e. from entry date to 31 December 2018) of the 13 vehicles showed that 10 had been abandoned for one year or more (see Table 6). Upon enquiry, in January 2019, TD informed Audit that 6 of the 13 abandoned vehicles had been removed and handed over to HKPF for disposal. According to TD, the actual loss of parking fees in respect of the 13 abandoned vehicles (i.e. calculated from their entry dates to the dates of becoming government properties) amounted to about $210,000. However, Audit estimated that the parking fees forgone in respect of the prolonged occupation of the parking spaces by the 13 vehicles after becoming government properties amounted to $3.4 million up to 31 December 2018.

Table 6

Aging analysis of occupation of parking spaces by 13 abandoned vehicles in 5 government multi-storey car parks (31 December 2018)

Parking duration	Number of vehicles
< 1 year	3
1 to < 3 years	5 (Note 1)
3 to < 5 years	3 (Note 1)
5 to < 7 years	1
≥ 7 years	1 (Note 2)

Source: *Audit analysis of TD records*

Note 1: *Two abandoned vehicles had been parked in Murray Road Car Park since 1 January 2014 and 1 January 2016 respectively and were relocated to Aberdeen Car Park after cessation of operation of Murray Road Car Park in May 2017. The parking duration of the two abandoned vehicles was counted from the entry dates at Murray Road Car Park. According to TD, one of the abandoned vehicles was removed and handed over to HKPF in January 2019.*

Note 2: *The parking duration of the abandoned vehicle (a motorcycle) was about 11 years. According to TD, the vehicle was removed and handed over to HKPF in January 2019.*

3.21 ***Areas for improvement.*** Audit examination of the records of follow-up actions taken by TD's contractors in respect of the abandoned vehicles revealed that there were inadequacies in such follow-up actions, resulting in prolonged occupation of parking spaces. Case 4 is an example.

Case 4

Prolonged occupation of parking space by an abandoned vehicle

1. A vehicle had been found parked at Rumsey Street Car Park since 6 March 2015. The contractor served a first notice on 10 April 2015 reminding the registered vehicle owner to pay the accrued parking fees and that the contractor was entitled to sell the vehicle and to recover from the proceeds the accrued parking fees together with any other costs. No record was available showing that follow-up actions had been taken on the first notice.

2. After 20 months, on 2 December 2016, the contractor served a second notice to the registered vehicle owner. The notice was published in newspapers on 15 December 2016. On 18 December 2016, the contractor issued a letter informing HKPF that the vehicle could be handed over to HKPF for disposal. On 26 January 2017, the contractor served a final notice to the owner. On 3 February 2017, the contractor issued a second letter to HKPF. No record was available showing that handover arrangement had been made afterwards.

3. On 16 June 2017 and 16 March 2018, the contractor served another two notices to the owner and the latter was published in newspapers on 23 March 2018. On 22 November 2018, 8 months after the previous notice, the contractor issued the third letter informing HKPF that the vehicle could be handed over to HKPF for disposal. On 17 January 2019, HKPF replied that the vehicle could be delivered to HKPF's detention pound for disposal. Audit's site visit on 22 January 2019 found that the vehicle had been removed.

Audit comments

4. It took 45 months from the serving of the first notice to the removal of the abandoned vehicle from the parking space at Rumsey Street Car Park. In Audit's view, the repeated issue of notices and delays in taking follow-up actions led to prolonged occupation of the parking space. The case also highlighted the need to improve TD's monitoring of the contractor's performance because TD had not required the contractors to regularly report progress of follow-up actions on the abandoned vehicles.

Source: Audit analysis of TD records

3.22 In February 2019, in response to Audit's enquiry, HKPF said that:

(a) the Road Traffic (Parking on Private Roads) Regulations empowered the Commissioner of Police to dispose of a vehicle that had been parked on a restricted parking area on a private road and had been impounded and removed by the owner of that road. This power was limited to vehicles parked in restricted parking areas, but not designated parking places; and

(b) in normal circumstances, HKPF would only remove any vehicles or other obstructions on the road if they caused serious obstructions or posed imminent danger to other road users. However, each request for disposal was considered on a case-by-case basis having regard to circumstances including availability of space in HKPF's vehicle pounds. In Case 4 in paragraph 3.21, the subject vehicle was accepted by HKPF for disposal based on such considerations.

TD's contractors are required under the contracts to deal with abandoned vehicles in accordance with the Road Traffic (Parking on Private Roads) Regulations. However, the removal and disposal of abandoned vehicles in the government multi-storey car parks may not be effectively dealt with if the vehicles are not parked in restricted parking areas as defined in the Regulations. In Audit's view, TD needs to explore feasible ways to remove abandoned vehicles with a view to releasing the occupied parking spaces in the government multi-storey car parks expeditiously, including ascertaining the applicability of the Regulations.

Audit recommendations

3.23 **Audit has *recommended* that the Commissioner for Transport should:**

(a) **put the 75 rooftop parking spaces at Kwai Fong Car Park into effective use as soon as practicable;**

(b) **explore feasible ways to remove abandoned vehicles with a view to releasing the occupied parking spaces in the government multi-storey car parks expeditiously, including ascertaining the applicability of the Road Traffic (Parking on Private Roads) Regulations; and**

(c) **improve the monitoring of the contractors' performance in taking follow-up actions in respect of abandoned vehicles.**

Response from the Government

3.24 The Commissioner for Transport agrees with the audit recommendations. She has said that:

(a) TD has decided to convert the rooftop of Kwai Fong Car Park into a temporary detention centre for impounding vehicles and afterwards for general parking purposes. TD is going through the necessary procedures. TD will enhance liaison with the works departments in future for early completion of works in the car parks with a view to re-opening the affected parking spaces as soon as possible;

(b) TD is devising a set of procedures to enable expeditious handling of abandoned vehicles; and

(c) with effect from February 2019, TD's contractors for car parks have been submitting monthly returns on the numbers and details of abandoned vehicles in TD's car parks for TD's monitoring of their performance.

Facilities management

Inadequacies in provision of CCTV security systems

3.25 ***Lack of CCTV footage to facilitate incident investigation***. The contractors are required under the contracts to submit written reports to TD for all incidents (e.g. vehicle theft and loss of properties), accidents or criminal activities in any car park involving any damage to any government property or vehicle, or injury or death to any person. Audit examination of all 37 incident reports submitted by the contractors in 2018 revealed that: (a) 18 incidents were related to car crash; (b) 3 incidents were related to loss of properties; (c) 9 incidents were related to death or injury; and (d) 7 incidents were related to damage of vehicles and others. All the incidents had been reported to HKPF. However, Audit noted that in 30 of the 37 incidents, no image was captured by the CCTV footage or the scene was not under the coverage of CCTV security systems during the occurrence of the incidents and

thus no record could be provided to HKPF for investigation. For example, in September 2018, a monthly patron lodged a complaint to TD that his vehicle had been seriously damaged by a "hit-and-run" driver. However, no video image could be provided to assist in the incident investigation.

3.26 ***Need to review the adequacy of CCTV security systems.*** Inadequacies in CCTV security systems may create security loopholes and pose risk to theft of properties (see para. 3.17). Audit examined the car park equipment lists as at 31 December 2018 and found that the number of CCTV cameras varied from 4 to 43 in each of the 11 government multi-storey car parks. There were areas not covered by CCTV cameras. In Audit's view, there is a need to review the adequacy of CCTV security systems, especially for those car parks with only a small number of CCTV cameras, and take necessary measures to enhance the security of the car parks.

Delays in replacement of car park management system (CPMS)

3.27 ***CPMS.*** CPMS (comprising two linked-in operating systems, namely access control system and licence plate recognition system) was installed in each government multi-storey car park to control and monitor the entry and exit of vehicles. CPMS is a critical car park system owned by the Government for: (a) calculation of parking fees payable by car park users; and (b) maintenance of all revenue data generated by the car parks. CPMS was supplied and maintained by two system suppliers through sub-contract agreements signed with the car park contractors. According to TD's records, up to early 2016, CPMS had been in use for more than 10 years. It had already reached the end of its planned serviceable life and would be beyond economical repair. Up to January 2019, CPMS was still in use.

3.28 ***Need to expedite the replacement work of CPMS.*** Notwithstanding that TD had replaced obsolete parts of the access control systems in some car parks (Note 24) in December 2016 upon the advice of the system supplier, Audit found that the number of breakdowns had significantly increased by 110% from 197 in 2016 to 414 in 2018. In particular, CPMS became unserviceable and the control of entry and

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Note 24: *The car parks were Star Ferry, City Hall, Aberdeen, Kwai Fong, Kennedy Town, Murray Road and Sheung Shui Park-and-Ride Car Parks. Murray Road and Sheung Shui Park-and-Ride Car Parks ceased operation in May 2017 and August 2018 respectively.*

exit of vehicles was switched to manual mode in 106 breakdowns in 2018. This suggests a pressing need to replace CPMS. According to TD, the contracts for the replacement of CPMS in 10 government multi-storey car parks (Note 25) had been awarded and the replacement work was planned to be completed by mid-2019. As CPMS is a critical car park system and there is a pressing need to replace CPMS, TD needs to expedite the replacement work of CPMS and draw lessons from this incident (such as formulating a replacement plan before the end of serviceable life of the new CPMS) to avoid recurrence of similar problem in future.

Audit recommendations

3.29 **Audit has *recommended* that the Commissioner for Transport should:**

(a) **review the adequacy of CCTV security systems installed in government multi-storey car parks, especially for those with only a small number of CCTV cameras, and take necessary measures to enhance the security of the car parks; and**

(b) **expedite the replacement work of CPMS and draw lessons from the problem of slow progress of CPMS replacement to avoid recurrence of similar problem in future.**

Response from the Government

3.30 The Commissioner for Transport agrees with the audit recommendations. She has said that TD will:

(a) review the provision of CCTV security systems in TD's car parks in collaboration with ArchSD and the Electrical and Mechanical Services Department; and

(b) closely monitor the conditions of the new CPMS to be installed in mid-2019 and take actions to replace the systems in a timely manner in future.

Note 25: *The replacement of CPMS would be carried out in 10 government multi-storey car parks only in view of the plan to demolish Yau Ma Tei Car Park in 2020 for the construction of the Central Kowloon Route.*

PART 4: MANAGEMENT OF ON-STREET PARKING SPACES

4.1 This PART examines TD's management of:

(a) on-street metered parking spaces (paras. 4.4 to 4.20); and

(b) on-street non-metered parking spaces (paras. 4.21 to 4.31).

Government's policy on provision of on-street parking spaces

4.2 Under the existing Government's policy, users are encouraged to make use of off-street parking facilities (e.g. government multi-storey car parks) for longer-term parking. On-street parking spaces are provided to meet drivers' short-term parking needs (see para. 1.8(d)). They are provided in designated locations where traffic flow, road safety and the loading/unloading activities of other road users are not affected. These parking spaces are normally metered to discourage prolonged parking and to facilitate turnover for use by more motorists (Note 26). The principles of on-street parking spaces can be summarised as follows:

(a) in a TAC's submission accepted by the Executive Council in 1967, it was stated that:

(i) on-street parking should be metered and prices set to ensure that about 15% of the spaces were maintained empty;

(ii) this basic principle should apply to all areas and all types of vehicles; and

(iii) the times of day and days of week that charges should be made should be those times and days when demand for free parking was in excess of supply;

Note 26: *Pursuant to section 8 of the Road Traffic (Parking) Regulations (Cap. 374C), any person who parks a vehicle in a parking place for a continuous period of more than 24 hours commits an offence and is liable to a fine of $2,000. This provision is intended to make on-street parking spaces available to more motorists.*

(b) in 1972, the Executive Council accepted the Government's proposal that the period of charging for metered spaces should be extended to include Sundays and Public Holidays (i.e. general holidays). This policy was later re-affirmed in the White Paper on Transport Policy (1990) which stated that "to ensure efficient use of parking spaces in Government car parks and on-street metered parking spaces, the Government intends to continue the present policy of revising parking charges regularly to maintain a 15% availability rate";

(c) in 1981, the Government said that the eventual aim was to extend metering to all parts of the urban areas and new towns where on-street parking could be permitted, and to charge the appropriate rate in each area according to demand; and

(d) in 2000, the then Transport Bureau (currently THB) reiterated the policy in (c) and said that TD had extended meter operations for parking spaces with a high utilisation rate (i.e. 85% or above).

4.3 ***Provision of on-street parking spaces.*** As at 31 December 2018, some 9,700 electronic parking meters which accepted only Octopus card for payment of parking fees were installed across the territory to control on-street parking spaces (Note 27). The numbers of metered and non-metered parking spaces from 2014 to 2018 are shown in Table 7.

Note 27: *In general, one electronic parking meter controls two parking spaces.*

Table 7

Number of on-street parking spaces
(2014 to 2018)

Type of parking spaces	2014	2015	2016	2017	2018
Metered					
Unclassified (Note)	15,032	15,056	15,086	15,100	15,137
Goods vehicles	2,276	2,205	2,182	2,177	2,095
Buses/coaches	603	651	652	654	666
Sub-total	17,911	17,912	17,920	17,931	17,898
Non-metered					
Motorcycles	9,437	9,627	9,901	10,172	10,404
Private cars, goods vehicles, coaches/buses and others	5,898	5,873	6,011	6,238	6,263
Sub-total	15,335	15,500	15,912	16,410	16,667
Total	33,246	33,412	33,832	34,341	34,565

Source: *TD records*

Note: *It referred to parking spaces for vehicles other than medium and heavy goods vehicles, buses and motorcycles.*

Management of on-street metered parking spaces

4.4 ***Roles of TD and contractor on management of metered parking spaces.*** The overall planning, monitoring and regulating of day-to-day traffic management matters are under the purview of the Regional Offices of TD. TFMS (see Appendix A) is responsible for the management of on-street metered parking spaces. TD has engaged a contractor through a public tender for the management, operation and maintenance of the parking meter system. The annual management fee for 2018 was $41.4 million. The contractor's responsibilities include the following:

(a) ***Collection of revenue and monitoring of utilisation.*** The contractor is responsible for the retrieval, handling, storage and uploading of all transaction data, management and maintenance information. It is required to retrieve data from all on-street parking meters at least once every 4 days by portable data retrievers, and upload all data to the central computer system. It helps TD monitor the utilisation of metered parking spaces by inspecting all on-street metered parking spaces through this 4-day collection cycle. Biannual surveys are also conducted to provide TD with actual utilisation (i.e. survey-based utilisation) of parking spaces; and

(b) ***Assistance in enforcement.*** The contractor is required under the contract to identify, record and report to HKPF in writing on: (i) obstruction at a metered parking space; (ii) a metered parking space occupied by a vehicle which appears to be abandoned or a vehicle with extensive defective bodywork; and (iii) meters installed in areas of high parking demand but collecting extraordinarily low amount of parking meter revenue. If a metered parking space is occupied by any object other than a vehicle, the contractor is required to report to LandsD. If rubbish is identified at a parking space, the contractor is required to report to the Food and Environmental Hygiene Department (FEHD).

4.5 ***Parking fee charging arrangements of metered parking spaces.*** One of the principles of on-street parking spaces is that they should be metered and prices set to ensure that about 15% of the spaces are maintained empty (see para. 4.2(a)(i)). In practice, having regard to the traffic situation and parking demand in the area where the parking spaces are located, parking fees, types of "longest parking period" for each transaction and operating periods vary among different districts:

(a) ***Parking fees.*** According to the Road Traffic (Parking) Regulations (Cap. 374C), the maximum parking fee is $2 per 15 minutes (Note 28). Currently, there are two parking fees, i.e. $2 per 15 minutes and $2 per 30 minutes (hereinafter referred to as the high rate and the low rate respectively). As at 31 October 2018, 15,136 (85%) of the 17,869 on-street metered parking spaces charged the high rate, and the remaining 2,733 (15%) metered parking spaces charged the low rate;

(b) ***Types of "longest parking period" for each transaction.*** To discourage prolonged parking at on-street metered parking spaces, a "longest parking period" for each transaction has been provided in the parking meters. As specified in Schedule 2 of the Road Traffic (Parking) Regulations, it is currently fixed at 30 minutes, 1 hour or 2 hours. As at 31 October 2018, the "longest parking periods" of 15,327 (86%) of the 17,869 metered parking spaces were 2 hours, 1,562 (9%) were 1 hour and 980 (5%) were 30 minutes; and

(c) ***Operating periods.*** Most parking meters operate between 8:00 a.m. and midnight on weekdays, and between 10:00 a.m. and 10:00 p.m. on general holidays. Appendix G shows details of 10 types of operating periods for parking meters.

4.6 ***Revenue and utilisation.*** TD, through the contractor, collects information on parking meter revenue and monitors the utilisation of metered parking spaces by compiling an average revenue-based utilisation rate (Note 29). In 2018, the revenue from metered parking spaces was $287 million and the average revenue-based utilisation rate was 41%.

Note 28: *The maximum fee has been set at $2 per 15 minutes since 1994. The Government proposed to increase the maximum fee to $4 per 15 minutes in 1999, which was rejected by LegCo. In 2017, THB proposed again to raise the maximum fee to $4 or $5 per 15 minutes (see para. 1.11(a)), but it was opposed by LegCo. According to THB, TD would look into the feasibility of setting up an objective parking fee adjustment mechanism, under which the level of parking fee for a particular area would be set having regard to the utilisation rate of parking spaces over a period of time. This aimed to achieve the policy intent of short-term parking needs.*

Note 29: *The average revenue-based utilisation rate is calculated as: Total meter revenue collected ÷ Maximum revenue (assuming full utilisation during the same period, excluding period of meter suspension) × 100%.*

4.7 ***New generation of parking meter system.*** In January 2018, the Government announced its plan to install a new generation of parking meter system starting from 2019-20 (see para. 1.12(b)). The estimated cost was $304 million for procuring 12,300 new meters for full replacement of the existing meters (Note 30) and provision of additional meters at more suitable locations. According to TD, the existing meters would be replaced by new ones by phases starting from early 2020 for completion by early 2022. The major functions and features of the new generation of parking meter system are shown in Appendix H.

Parking space availability objective not always met

4.8 Information on usage of on-street metered parking spaces is essential to THB and TD for planning and policy formulation. As there are motorists occupying parking spaces without paying parking fees, the revenue-based utilisation rate (see Note 29 to para. 4.6) does not reflect the actual usage. In this connection, TD has included a contract requirement for the contractor to conduct utilisation surveys on all metered parking spaces twice every year (see para. 4.4(a)). The contractor's staff visit all metered parking spaces every 2 hours during the scheduled dates to collect data such as: (a) survey-based utilisation (i.e. whether the space was occupied); (b) turnover (i.e. whether the space was occupied by the same vehicle); and (c) fee evasion (i.e. whether the parking fee was paid if the space was occupied). Table 8 shows the survey results from 2015 to 2018, indicating an increase in the overall utilisation rate from 73% to 81% (i.e. parking space availability rate, which is equal to 100% minus utilisation rate, decreasing from 27% to 19%) and turnover rate from 14% to 17%. On the other hand, the evasion rate had remained stable at around 30%.

Note 30: *The existing parking meters were installed in 2003-04 and would approach the end of their serviceable life and need to be replaced. There were about 10,250 meters in total. Normally, only around 95% (i.e. some 9,700) could be put into operation because the remaining ones were under maintenance. This led to undesirable situations that no meters were immediately available for installation at locations with high parking demand.*

Table 8

Results of biannual surveys on on-street metered parking spaces (2015 to 2018)

Region	2015	2016	2017	2018	Change from 2015 to 2018 (Percentage point)
Survey-based utilisation rate					
Hong Kong Island	78%	76%	80%	79%	+1
Kowloon	85%	89%	91%	93%	+8
New Territories	60%	64%	70%	72%	+12
Overall	73%	75%	79%	81%	+8
Evasion rate					
Hong Kong Island	18%	17%	17%	20%	+2
Kowloon	36%	39%	33%	33%	−3
New Territories	25%	34%	29%	25%	No change
Overall	29%	34%	29%	28%	−1
Turnover rate (Note)					
Hong Kong Island	21%	24%	26%	29%	+8
Kowloon	18%	18%	20%	19%	+1
New Territories	8%	10%	11%	12%	+4
Overall	14%	15%	17%	17%	+3

Source: *Audit analysis of TD records*

Note: *The turnover rate was calculated as: Number of vehicles parked in parking spaces ÷ Number of parking spaces ÷ Average operating hours of meters × 100%.*

Remarks: *The contractor conducted surveys on weekdays and general holidays. The above analysis was based on consolidated data on weekdays and general holidays.*

4.9 ***District-based parking space availability rates.*** While the territory-wide parking space availability rate was around 20%, Audit analysis of the availability rates on a district basis revealed that in 2018, the district-based availability rates ranged from 1% (Wong Tai Sin) to 83% (Sha Tau Kok). Table 9 summarises the number of districts that did not meet the "15% availability rate" objective (see para. 4.2(a)(i)).

Table 9

Number of districts with parking space availability rate below 15%
(2015 to 2018)

Region	Number of districts in the region	2015	2016	2017	2018
Hong Kong Island	8	4	1	3	2
Kowloon	15	10	11	12	13
New Territories	14	0	0	1	1
Total	37	14	12	16	16
		Average: 15			

Source: Audit analysis of TD records

As shown in Table 9, from 2015 to 2018, on average, the objective of maintaining the 15% parking space availability rate was not met in 15 (40%) of the 37 districts. In particular, this objective had not been met in many of the districts in Kowloon (i.e. increased from 10 districts in 2015 to 13 districts in 2018). As the above figures represented the daily average availability rate of the parking spaces, the situation could have been more serious during peak hours. TD needs to formulate measures to achieve the "15% availability rate" objective, taking into account the audit observations in paragraphs 4.10 to 4.18.

Need to review parking fees of metered parking spaces

4.10 ***Meters charging the low rate.*** The Government's policy is to revise parking fees regularly to maintain a "15% availability rate" (see para. 4.2(a)(i) and (b)). In other words, parking fees should be adjusted upward if the parking space

availability rate is lower than 15%. To ascertain whether TD had adjusted the meter charges accordingly, Audit analysed the proportion of metered parking spaces charging the low rate (see para. 4.5(a)) in the 10 districts which had availability rates of lower than 15% persistently since 2015 based on TD's surveys (see Table 9 in para. 4.9). The result is shown in Table 10.

Table 10

Proportion of metered parking spaces charging the low rate in the 10 districts with parking space availability rate lower than 15% (31 October 2018)

District	Availability rate in 2018 surveys	Number of metered parking spaces	Number of metered parking spaces charging the low rate
Wong Tai Sin	1%	161	75 (47%)
Mong Kok	3%	568	50 (9%)
Kowloon City	3%	651	189 (29%)
Tsz Wan Shan	3%	207	47 (23%)
Yau Ma Tei	3%	716	67 (9%)
Tsim Sha Tsui	4%	226	0 (0%)
Sau Mau Ping	4%	125	10 (8%)
Tai Kok Tsui	4%	371	177 (48%)
To Kwa Wan	5%	735	56 (8%)
Hung Hom	6%	447	30 (7%)

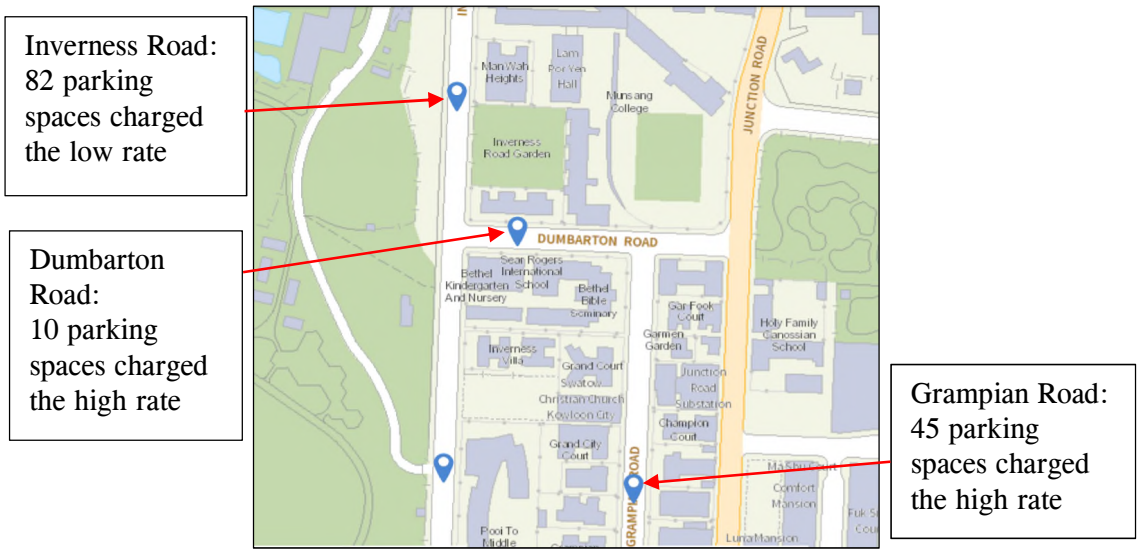
Source: Audit analysis of TD records

4.11 ***Different parking fees in close meter locations.*** Based on the result in Table 10, it appears that adjusting meter charges as one of the means to maintain a parking space availability rate of 15% was not always followed. For example, while all the metered parking spaces in Tsim Sha Tsui charged the high rate, 48% of those in Tai Kok Tsui and 29% of those in Kowloon City charged the low rate. In this connection, Audit noted that the parking fees at some meter locations were different from those at very close meter locations (e.g. in Kowloon City — see Figure 4). In terms of utilisation rate, the results of the 2018 surveys conducted by TD's contractor

showed that in 9 districts (Note 31), most of the parking spaces which charged the low rate recorded parking space availability rates of lower than 15%.

Figure 4

Example of meter locations with different parking fees in Kowloon City



Source: Audit analysis of TD records and LandsD's Geoinfo map

4.12 ***TD's review on meters charging the low rate.*** In 2012, TD's Regional Offices conducted a review on parking fees and concluded that:

(a) in general, the metered parking spaces charging the low rate and those charging the high rate did not have significant differences in terms of utilisation. It was necessary to consider, in the long term, adjusting the ceiling charges of parking meters. In the short term, it was obvious that meters currently charging the low rate should be standardised to charge the high rate;

(b) two charging rates for parking spaces along the same streets were observed. There were 73 streets that had both types of metered parking spaces and

Note 31: *Tsim Sha Tsui was excluded as there was no meter charging the low rate.*

the average utilisation rates were over 85%. Another 58 streets were with average utilisation rates of over 85% but were installed with parking meters charging the low rate only. Within the same districts, it was also not difficult to find some of the parking spaces charging the low rate were with higher utilisation rates than the ones charging the high rate; and

(c) with the maximum parking fee stipulated in the Road Traffic (Parking) Regulations of $2 per 15 minutes, the allowable parking fees could not be used to regulate the utilisation rate. As a result, without significant increase of the parking fee, the present policy of "revising parking charges regularly to maintain a 15% availability rate" could not be achieved.

In a paper submitted to LegCo in December 2017, THB proposed to raise the fee stipulated in the Road Traffic (Parking) Regulations from $2 per 15 minutes to $4 or $5 per 15 minutes (see para. 1.11(a) and Note 28 to para. 4.5(a)). Against this background, it appears that charging a rate lower than the current maximum rate (i.e. $2 per 15 minutes) was not conducive to improving the parking space availability rate. Upon enquiry, TD informed Audit in March 2019 that in setting the fee level, it had to take into account a number of factors, such as the fees of public car parks operated by the private sector and other public bodies (e.g. the Hong Kong Housing Authority), the utilisation of on-street metered parking spaces, affordability and public acceptance. In Audit's view, TD needs to review the parking fees for meters charging the low rate, in particular those installed at streets charging both the high and the low rates. This is in line with TD's 2012 review conclusion mentioned in (a).

Need to review "longest parking period" for each transaction of metered parking spaces

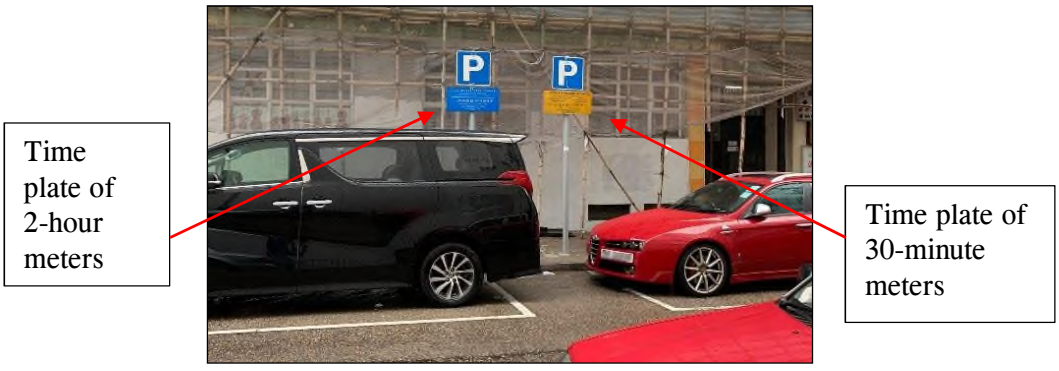
4.13 ***Guidelines on setting "longest parking period" for each transaction.*** To achieve the objective of encouraging vehicle turnover and enabling more motorists to use on-street parking spaces, TD fixes the "longest parking period" for each transaction allowed for metered parking spaces to either 30 minutes, 1 hour or 2 hours depending on circumstances of the road sections concerned. As such, TD has set out in its internal guidelines that parking meters for vehicles other than motorcycles, goods vehicles and buses (i.e. private cars and van-type LGVs) should be of 30-minute duration in core commercial areas, and 2-hour duration at the outskirts. For goods vehicles, the parking meters should be of 1-hour duration (in areas where demand for collection/delivery of goods is high, and off-street loading/unloading facilities are

inadequate to meet demand) or 2-hour duration (at popular goods vehicles hire locations).

4.14 ***Allocation of parking meters with different types of "longest parking period" for each transaction.*** TD's internal guidelines specify that a "longest parking period" for each transaction of 30 minutes should be set for meters installed at parking spaces for private cars and van-type LGVs in core commercial areas. However, TD had not defined the term "core commercial areas" nor identified where these areas were. Audit noted that: (a) for many parking meters which might be located in core commercial areas, the "longest parking period" for each transaction was set at 2 hours. For example, of the parking spaces for private cars and van-type LGVs in Causeway Bay, Tsim Sha Tsui and Mong Kok, the proportion of 2-hour meters were 81%, 67% and 58% respectively; (b) in 73 streets, parking meters with different types of "longest parking period" for each transaction were installed in the same street (see Photograph 3 as an example); and (c) for parking spaces in adjacent areas, the vehicle turnover rates tended to be higher for those spaces equipped with 30-minute meters. To follow the policy of encouraging vehicle turnover of on-street parking spaces, TD needs to review the "longest parking period" for each transaction of the 2-hour meters installed at parking spaces for private cars and van-type LGVs in core commercial areas, and adjust the "longest parking period" for each transaction to 30 minutes as appropriate.

Photograph 3

Location with parking meters set with different types of "longest parking period" for each transaction



Source: Photograph taken by Audit staff at Wood Road (Wan Chai) on 25 November 2018

Need to review operating periods of metered parking spaces

4.15 ***Types of operating periods.*** In 2001, TD completed a program to extend meter operations to general holidays for all parking spaces with high utilisation rate (i.e. 85% or above). As at 31 October 2018, there were 10 types of operating periods for on-street metered parking spaces. Most of them operated from 8:00 a.m. to midnight on weekdays, and from 10:00 a.m. to 10:00 p.m. on general holidays (see Appendix G). Audit analysis of the operating periods as at 31 October 2018 revealed the following issues:

(a) in some parking places, there were different meter operating periods, despite the fact that the parking spaces were provided for the same vehicle type and the demand for them should be the same (see Photograph 4 for an example); and

Photograph 4

Location with parking meters set with different operating periods

Source: Photograph taken by Audit staff at Kam Shan Country Park Car Park on 6 December 2018

(b) 8,634 parking spaces (Types B, F, H, P and Q in Appendix G) that were located in 393 parking places were free-of-charge after 8:00 p.m. or 9:00 p.m. on weekdays. Audit conducted site visits from December 2018 to January 2019 to 10 parking places (covering 274 metered parking spaces) between 8:00 p.m. and midnight and noted that most of the parking spaces were occupied.

As the contractor conducted biannual surveys only during the meter operating periods, occupancy situation of the parking spaces outside the operating periods was not surveyed regularly. With the installation of new parking meters (starting from 2020) that will be equipped with vehicle occupancy sensors (see Appendix H), TD will have regular information on the occupancy situation of metered parking spaces. This will facilitate TD to adjust the configurations (including parking fee, "longest parking period" for each transaction and operating period) for a particular area or road section accordingly, with a view to meeting local traffic management needs in a more effective manner. In the interim, TD needs to monitor the utilisation of parking spaces beyond the pre-set operating periods by conducting regular surveys, and consider extending the meter operating periods (e.g. until midnight) in case of high utilisation of parking spaces. To achieve the policy intent of short-term on-street parking, TD also needs to expedite the setting up of a parking fee adjustment mechanism before the territory-wide installation of the new generation of parking meter system, so as to establish an objective basis (e.g. based on utilisation rate over a period of time) on adjustment of the parking meter configurations (see Note 28 to para. 4.5(a)).

Need to optimise deployment of parking meters

4.16 ***Delay in replacement of current parking meters.*** The electronic parking meters have been put in use since 2003-04 vis-à-vis an estimated useful life of 7 to 10 years. In July 2012, TD submitted a proposal to LegCo Panel on Transport to launch a trial scheme to examine the scope for introducing a new generation of parking meter system. At LegCo Panel on Transport meeting in January 2018, TD reported that the trial scheme was expected to complete in May 2018. The invitation to tender was closed in December 2018 and the new generation of parking meter system would be installed starting from early 2020 for completion by early 2022 (see para. 4.7). In other words, the current meters would need to operate for 2 to 3 more years, i.e. a total of about 17 years since 2003-04, which is much longer than their normal serviceable life.

4.17 ***Delay in redeployment of parking meters.*** Due to the fact that the production of current model of parking meters had ceased, there were only limited spare parking meters in stock for installation at new parking places. TFMS had solicited collaboration with the Regional Offices to redeploy (i.e. cancellation of) parking meters from low-utilised parking places to facilitate implementation of metering at other parking places. In this context, TFMS sent quarterly reports of low-utilised parking meters to the Regional Offices for considering redeployment. For example, from 1 October 2017 to 31 December 2017, 510 parking meters

(covering 943 parking spaces) were identified with revenue-based utilisation rates (see para. 4.6) under 4%. Audit analysis of the quarterly reports covering the period from 2016 to 2018 revealed that 212 parking meters covering 399 parking spaces with persistent low utilisation were not redeployed. On the other hand, some requests for installation of parking meters were not accepted due to insufficient spare parking meters.

4.18 From the traffic management perspective as well as for protecting government revenue, it is important that a sufficient number of parking meters is always available for metering parking spaces with high utilisation. In Audit's view, TD needs to formulate a meter replacement plan before the end of serviceable life of the new generation of parking meter system. In this connection, TD informed Audit in March 2019 that in the procurement, management, operation and maintenance contract of the new generation of parking meter system, there were provisions on the supply and installation of additional parking meters, which would help cater for any additional need for parking meters. Furthermore, the contractors were required to complete a mid-term review in respect of the vehicle sensing technologies and electronic payment means, the results of which would be examined by the Government for considering the way forward and taking timely replacement/enhancement of the new generation of parking meter system before the end of its serviceable life. While Audit noted TD's initiatives, in the interim, there is a need for TD to closely monitor the implementation of the parking meter redeployment plans (i.e. cancellation of parking meters from low-utilised parking places for metering at other parking places) so as to deploy the limited meter resources more effectively.

Audit recommendations

4.19 **Audit has *recommended* that the Commissioner for Transport should:**

(a) **review the fee charging arrangements of on-street metered parking spaces, with a view to improving implementation of the on-street parking policy (i.e. maintaining a parking space availability rate of 15%) and protecting government revenue, including:**

(i) **reviewing parking fees for meters charging the low rate (i.e. $2 per 30 minutes), in particular those installed at streets where there are both meters charging the high ($2 per 15 minutes) and the low rates;**

(ii) **reviewing the "longest parking period" for each transaction of the 2-hour parking meters installed at parking spaces for private cars and van-type LGVs in core commercial areas, and adjusting the "longest parking period" for each transaction to 30 minutes as appropriate; and**

(iii) **before the installation of the new generation of parking meter system, monitoring the utilisation of parking spaces beyond the pre-set operating periods by conducting regular surveys, and considering extending the meter operating periods for parking spaces with high utilisation;**

(b) **expedite the setting up of a parking fee adjustment mechanism to achieve the policy intent of short-term on-street parking;**

(c) **formulate a meter replacement plan before the end of serviceable life of the new generation of parking meter system; and**

(d) **before the installation of the new generation of parking meter system, closely monitor the implementation of the parking meter redeployment plans.**

Response from the Government

4.20 The Commissioner for Transport agrees with the audit recommendations. She has said that:

(a) it has always been difficult to increase parking fees due to opposition by the local community, particularly when there is no comprehensive and continuous data to illustrate the high utilisation of the parking spaces. Upon installation of a new generation of parking meter system, which is capable to record the utilisation of parking spaces automatically, TD will review the parking fees for meters charging the low rate, having regard to the utilisation of the concerned parking spaces;

(b) TD will review and adjust as appropriate the "longest parking period" for each transaction of existing 2-hour parking meters installed at parking

spaces for private cars and van-type LGVs in core commercial areas, having regard to the utilisation of the concerned parking spaces;

(c) TD will conduct regular surveys and consider extending the meter operating periods, beyond the pre-set operating periods, for parking spaces with high utilisation;

(d) TD targets to formulate and report to LegCo a parking fee adjustment mechanism for the new generation of parking meter system, the installation of which is expected to be completed by early 2022;

(e) the tender documents for the "Procurement cum Management, Operation and Maintenance of New Generation of Parking Meter System" have already included provisions requiring the contractors to complete a review by the end of the 6th contract year (i.e. in early 2025) on vehicle sensing technologies and electronic payment means. TD will examine the review reports with a view to considering the way forward regarding the future management of the metered parking spaces and taking timely action to replace or enhance the new generation of parking meter system; and

(f) TD will continue to monitor closely the implementation of the parking meter redeployment plans.

Management of on-street non-metered parking spaces

4.21 ***Provision of on-street non-metered parking spaces.*** Regarding non-metered parking spaces, TD's Regional Offices are responsible for their planning, management and monitoring. As at 31 December 2018, there were a total of 16,667 on-street non-metered parking spaces (see Table 11).

Table 11

Number of on-street non-metered parking spaces by vehicle types
(31 December 2018)

Region	Motorcycle	Private car/ van-type LGV	Goods vehicle, coach/ bus (Note 1)	Others (Note 2)	Total
Hong Kong Island	2,281	169	240	174	2,864
Kowloon	4,067	10	224	225	4,526
New Territories	4,056	3,112	1,771	338	9,277
Total	10,404	3,291	2,235	737	16,667
			6,263		

Source: *Audit analysis of TD records*

Note 1: *This included overnight parking for coaches/buses and goods vehicles.*

Note 2: *This included parking spaces for persons with disabilities and special-purpose vehicles.*

4.22 ***Public concerns.*** From time to time, there were public concerns over the shortage and usage of non-metered parking spaces. For example, at LegCo Panel on Transport meeting in October 2016, some Members urged the Government to review the policy on provision of parking spaces for motorcycles, which accounted for 62% of the non-metered parking spaces. From 2012 to 2018, the parking space ratio for motorcycles had decreased by 17% from 0.76 to 0.63.

4.23 ***TD's surveys on non-metered parking spaces.*** In 2000, TD said that it would continue to conduct periodic utilisation surveys of non-metered parking spaces. Upon enquiry, TD informed Audit in December 2018 that utilisation surveys for non-metered parking spaces would be carried out on an ad-hoc basis. In the past five years, TD only conducted a territory-wide survey on on-street motorcycle parking spaces in 2017.

Non-metered parking spaces for motorcycles

4.24 ***Previous reviews on motorcycle parking spaces.*** In the past 20 years, TD reviewed the management of on-street motorcycle parking spaces on several occasions:

(a) in 1999, TD considered that in principle, motorcycles should be charged for the use of on-street motorcycle parking spaces with a high utilisation rate, subject to technical and operational feasibility. However, the proposal was not pursued mainly due to technical, operational and enforcement problems;

(b) in February 2006, TD concluded that on-street parking spaces for all motor vehicles should be metered based on the principle of fairness and equality. In addition, it could help regulate and improve turnover of the existing heavily utilised on-street motorcycle parking spaces, reduce the parking fee differentials between on-street and fee-paying off-street parking spaces, and generate government revenue. However, after considering the technical and operational aspects as well as enforcement concerns, the charging proposal would not be actively pursued; and

(c) in looking into the feasibility of providing installations for securing a motorcycle at a designated parking space, TD noted in January 2012 that small-scale trials to install railings as a security measure were conducted in 2000, 2008 and 2010, but the usage rates were very low. As there was no imminent need to regulate on-street motorcycle parking by metering, coupled with the enforcement problems and the anticipated strong objection from the motorcyclists, the Government decided to maintain the status quo of not metering on-street motorcycle parking spaces.

4.25 ***TD's survey of on-street motorcycle parking spaces.*** In view of the public concerns over unauthorised occupation of on-street parking spaces by suspected abandoned motorcycles and miscellaneous objects, TD commissioned a contractor to conduct a survey on unauthorised use of on-street motorcycle parking spaces, with the objective of assessing the overall parking situation and the condition of the unauthorised occupation. The survey was conducted in July 2017, covering 10,138 on-street parking spaces for motorcycles in 590 parking places. The major findings were as follows:

(a) a total of 10,304 motorcycles were parked in these parking spaces, giving an overall utilisation rate of 102% (ranging from 0% to 193% among different parking places — Note 32). The utilisation rate was over 85% in 446 (76%) parking places; and

(b) 618 motorcycles (i.e. 6% of the 10,304 motorcycles parked) considered not roadworthy (Note 33) were found in 278 (47%) parking places surveyed.

4.26 ***Audit's survey of on-street motorcycle parking spaces.*** To ascertain the present situation, Audit surveyed 100 parking places (covering 1,644 parking spaces) from November 2018 to January 2019 and noted the following:

(a) ***High demand for on-street motorcycle parking spaces.*** Utilisation rate was over 85% for 92 (92%) parking places. Among these places, the utilisation rate of 88 was over 100%, indicating that the demand and actual usage of these parking spaces were very high;

(b) ***Abandoned vehicles.*** In 28 (28%) parking places, motorcycles considered not roadworthy were found. The abandoned vehicle problem might be attributable to the difficulties in taking enforcement actions on prolonged parking at these non-metered parking spaces (see Note 26 to para. 4.2); and

(c) ***Illegal parking jeopardising pedestrians' safety.*** There were cases that motorcycles were parked on pavements nearby, jeopardising pedestrians' safety.

4.27 ***Need to take improvement measures on on-street motorcycle parking spaces.*** Audit noted TD's concerns over the technical and operational difficulties of installing parking meters for on-street motorcycle parking spaces (see para. 4.24).

Note 32: *The survey also covered motorcycles parked within 20 m from the outer edge of the designated parking places. If these were taken into account, the overall utilisation rate became 115%.*

Note 33: *It referred to cases with one of these conditions: (a) missing licence plate; (b) missing motor vehicle licence; (c) expired licence; or (d) poor vehicle conditions such as flat tyre, heavily rusted or broken headlamp.*

However, Audit also noted that there were difficulties in taking enforcement actions against prolonged parking and abandoned vehicles if motorcycle parking spaces were non-metered (see para. 4.26(b)). As the high utilisation situation of such parking spaces has persisted, coupled with the issue of abandoned motorcycles and illegal parking, TD needs to take measures to ensure that on-street motorcycle parking spaces are utilised effectively with a view to improving the availability of parking spaces.

Non-metered parking spaces for other vehicle types

4.28 According to TD's inventory list of non-metered parking spaces, apart from the parking spaces for motorcycles, a total of 6,263 non-metered parking spaces were also provided for other vehicle types as at 31 December 2018 (see Table 11 in para. 4.21). From November 2018 to January 2019, Audit conducted site visits to 10 parking places where non-metered parking spaces for vehicles other than motorcycles were located and found areas which warranted TD's attention:

(a) ***High utilisation.*** Audit found that most of the non-metered parking spaces were occupied (see Photographs 5(a) and (b) for examples) and the target of maintaining 15% parking space availability rate (see para. 4.2(a)(i) and (ii)) was not achieved. TD needs to conduct regular surveys to assess the need to install meters with a view to encouraging vehicle turnover and improving parking space availability rate. In this connection, Audit has noted that parking spaces in some locations (such as those near beaches or country parks, usually in open space) were provided for meeting longer-term parking demand (e.g. for half-day or whole day). Given the limit of 2-hour "longest parking period" for each transaction as set out in the Road Traffic (Parking) Regulations (see para. 4.5(b)), TD has kept these parking spaces as non-metered despite the high demand in holiday seasons. Given that it is the Government's policy to provide on-street parking spaces for short-term parking and charges should be made when the demand for free parking is in excess of supply (see para. 4.2(a)(iii)), TD needs to review the justification for providing free on-street parking spaces to meet such longer-term parking needs;

Photographs 5(a) and (b)

High utilisation of non-metered parking spaces for private cars

(a) Yiu Wai Street (Sha Tin)

(b) Tai Mo Shan

Source: *Photographs taken by Audit staff at: (a) Yiu Wai Street (Sha Tin) on 7 January 2019; and (b) Tai Mo Shan on 18 November 2018*

(b) ***Metered and non-metered parking spaces in the same location.*** Audit noted cases where both metered and non-metered parking spaces were provided in the same location (e.g. Fuk Wang Street (Yuen Long)). To better manage parking demand, parking fees should be charged by installing parking meters for the non-metered parking spaces taking into account utilisation rates; and

(c) ***Occupation by abandoned vehicles and other objects.*** Similar to motorcycles (see para. 4.26(b)), Audit noted cases of non-metered parking spaces occupied by abandoned vehicles or other objects. In Audit's view, such cases of unlawful occupation of non-metered parking spaces can be detected during the regular surveys to assess the need to install meters (see (a)) for timely referral to relevant government department(s) for follow-up actions (see para. 4.4(b)).

Inventory list of non-metered parking spaces

4.29 ***Need to update information on non-metered parking spaces.*** A comparison of the results of Audit's site visits to the 110 non-metered parking places between November 2018 and January 2019 (see paras. 4.26 and 4.28) with TD's inventory list of on-street non-metered parking spaces as at 31 December 2018 revealed discrepancies as follows:

(a) according to TD's inventory list, there were 103 non-metered parking spaces for private cars/van-type LGVs, 10 for motorcycles, and 2 for persons with disabilities at Fo Chun Road (Tai Po). The information was also shown in TD's "HKeMobility" mobile application (see para. 5.2). However, Audit's site visit on 5 January 2019 revealed a residential development situated at the location. Based on Audit's Internet research, the parking place has been closed since 2015;

(b) according to TD's inventory list, there was a non-metered parking place providing 218 parking spaces and an LCSD-managed car park providing 190 parking spaces at Shek O Road (adjacent to the Shek O Beach). The non-metered parking place and the car park were also shown in the "HKeMobility" mobile application. However, Audit's site visit to Shek O Road on 13 December 2018 revealed that there were only about 200 parking spaces; and

(c) during the inspection of motorcycle parking spaces in Chai Wan on 30 November 2018, Audit found a place with six parking spaces, which was not on TD's inventory list nor the "HKeMobility" mobile application.

From the management point of view and also for providing accurate parking information to the public, TD needs to ensure the accuracy of the inventory list of on-street non-metered parking spaces and the information provided in the "HKeMobility" mobile application.

Audit recommendations

4.30 **Audit has *recommended* that the Commissioner for Transport should:**

(a) **take measures to ensure that on-street non-metered parking spaces are utilised effectively with a view to improving the parking space availability rate, including:**

(i) **conducting regular surveys to assess the need to install meters and/or to detect unlawful occupation of parking spaces;**

(ii) **reviewing the justification for providing free on-street parking spaces in some locations (see para. 4.28(a)) to meet longer-term parking needs; and**

(iii) **for parking places where both metered and non-metered parking spaces are provided (see para. 4.28(b)), considering installing parking meters for the non-metered parking spaces to better manage parking demand taking into account utilisation rates; and**

(b) **ensure the accuracy of the inventory list of on-street non-metered parking spaces and the information provided in the "HKeMobility" mobile application.**

Response from the Government

4.31 The Commissioner for Transport agrees with the audit recommendations. She has said that:

(a) TD will conduct regular surveys to assess the need to install meters and to detect unlawful occupation of parking spaces;

(b) TD will review the need and justification for providing free on-street parking spaces in certain locations (such as those near beaches and country parks), having regard to the installation of the new generation of parking meter system by early 2022, which will enable drivers to buy an extra parking session through remote payment so as to meet a longer-term parking need;

(c) concerning parking places with both metered and non-metered parking spaces, TD will consider installing parking meters for the non-metered parking spaces; and

(d) TD will take measures to ensure the accuracy of the inventory list of on-street non-metered parking spaces and the information provided in the "HKeMobility" mobile application. TD is arranging conversion of "on-street non-metered parking spaces" information to a geographic information system-enabled dataset suitable for dissemination to the public

via Public Sector Information (PSI) Portal (see para. 5.3). TD plans to upload the information to the "HKeMobility" mobile application and open to the PSI Portal upon completion of conversion of the data tentatively by mid-2019. To achieve continual update of such information, the on-street non-metered parking space information data can be automatically uploaded to the "HKeMobility" mobile application at regular intervals.

PART 5: IMPLEMENTATION OF PARKING-RELATED TECHNOLOGY INITIATIVES

5.1 This PART examines the implementation of parking-related technology initiatives, focusing on:

(a) dissemination of parking information (paras. 5.2 to 5.14);

(b) provision and management of EV charging facilities (paras. 5.15 to 5.19); and

(c) implementation of automated parking systems (paras. 5.20 to 5.24).

Dissemination of parking information

5.2 ***TD's website and mobile application.*** TD launched its "Hong Kong eRouting" mobile application and website (http://hkerouting.gov.hk) in 2013 at a total cost of $3.5 million to provide driving route, real-time traffic condition and parking information for motorists' pre-trip planning. According to the 2014 TAC Report, TAC recommended that the Government should examine ways to provide motorists with real-time information on the vacancies in off-street car parks to reduce the need for motorists to circulate on roads looking for available parking spaces and causing more traffic congestion (see para. 1.11(b)). In response, TD in July 2016 updated its "Hong Kong eRouting" mobile application and website to provide locations of on-street parking spaces, entrances and exits of off-street car parks, and real-time parking vacancies at some car parks. As one of the smart mobility initiatives of the Blueprint (see para. 1.12), TD in July 2018 launched a new mobile application, namely the "HKeMobility" at a cost of $2.3 million to integrate three transport-related mobile applications, including the "Hong Kong eRouting" mobile application (Note 34). After a transitional period of six months, the "Hong Kong eRouting" mobile application ceased operation in December 2018. Up to January 2019, the "Hong Kong eRouting" website was still in operation.

Note 34: *The other two transport-related mobile applications were "Hong Kong eTransport" and "eTraffic News". They provided one-stop service of point to point public transport route enquiry for pre-trip planning and latest traffic news and alerts on public transport service disruption.*

5.3 ***PSI Portal.*** Apart from disseminating real-time parking vacancy information through its website and mobile application, TD has uploaded parking vacancy data and car park information onto the one-stop PSI Portal (data.gov.hk — Note 35) in machine-readable formats since June 2017 for free use by the public and the industry (including start-ups) to make use of the open data to develop mobile applications. According to TD's annual open data plan for 2018, apart from uploading parking vacancy data and car park information of the 11 government multi-storey car parks (see para. 3.3) on an hourly basis since June 2017, TD would since March 2018 upload the distribution of metered parking spaces at different districts onto the PSI Portal on a half-yearly basis. TD further plans to improve the data quality by replacing the hourly dataset of parking vacancy information for 10 government multi-storey car parks (see Note 25 to para. 3.28) with real-time dataset starting from June 2019. In conjunction with the installation of the new generation of parking meter system in 2019-20 (see para. 1.12(b)), TD also plans to upload real-time parking vacancy data of on-street metered parking spaces onto the PSI Portal starting from March 2020.

Usage and user feedback

5.4 ***Usage.*** Audit analysis of the usage statistics of TD's "Hong Kong eRouting" website revealed that from 2014 to 2018, the average daily number of visitors to the website was generally on a decreasing trend from 1,277 in 2014 to 895 in 2018. For the "Hong Kong eRouting" mobile application, the average daily number of users also decreased after reaching its peak of 1,080 in 2016 (when the real-time parking vacancy information was first provided in the mobile application) to 752 in 2018. Regarding the "HKeMobility" mobile application which was launched in July 2018, the average daily number of users up to December 2018 was 29,171 (Note 36).

Note 35: *The PSI Portal was set up by the Office of the Government Chief Information Officer in 2011. Up to December 2018, over 3,300 datasets under 18 categories from 51 government bureaux and departments and 9 public and private organisations had been made available on the PSI Portal. The datasets cover various areas, including medical and health, traffic, education, commerce and economy, environment, leisure and culture, housing, land development and matters relating to people's livelihood.*

Note 36: *The integration of the three transport-related mobile applications into the "HKeMobility" mobile application (see para. 5.2) attracted more users as more services were provided by the mobile application. It was not appropriate to compare the usage statistics of the "HKeMobility" mobile application and that of the "Hong Kong eRouting" mobile application.*

5.5 ***User feedback.*** The "HKeMobility" mobile application is made available for download in the application stores of two major mobile operating systems. Users can give a rating (on a 5-point scale, with 5 being the highest) and comment on the mobile application in the application stores. Audit analysed all 374 user ratings received by TD from 24 July 2018 to 10 January 2019 and found that the average rating of the mobile application was 2.72 on a 5-point scale. There were also specific comments and suggestions on areas for improvement of the mobile application, including its user interface design, user-friendliness and stability. In light of these user feedbacks, TD issued several updates of the application during the period to address the issues. The monthly average user ratings increased by 1.3 (63%) from 2.08 in July 2018 to 3.38 in February 2019. However, in Audit's view, taking into account the audit observations on the car park information provided therein, as illustrated in paragraphs 5.6 to 5.12, there is room for TD to further improve the "HKeMobility" mobile application and the "Hong Kong eRouting" website.

Coverage of car park location information

5.6 ***Need to enhance the completeness and accuracy of the car park location information in mobile application.*** TD maintains information on car parks in the territory for planning purpose. To ascertain the completeness of car park location information in the "HKeMobility" mobile application and the "Hong Kong eRouting" website, Audit compared the list of car parks as at 31 December 2018 against the dataset of the "HKeMobility" mobile application (Note 37). Audit noted that according to the list of car parks as at 31 December 2018, there were 2,071 car parks providing public parking spaces. However, the "HKeMobility" mobile application only showed locations of 1,546 car parks, with information of 525 (25%) car parks missing. TD needs to take improvement measures to enhance the completeness and accuracy of the information provided by the "HKeMobility" mobile application. In this regard, TD needs to accord priority to including location information of the following two types of car parks with a high number of public parking spaces in the "HKeMobility" mobile application:

Note 37: *According to TD, the dataset of the "HKeMobility" mobile application and that of the "Hong Kong eRouting" website are identical. Hence, despite that only the dataset of the "HKeMobility" mobile application was used for audit analysis, all observations derived from the dataset were also applicable to the "Hong Kong eRouting" website.*

(a) ***STT car parks***. According to the list of car parks as at 31 December 2018, there were 193 STT car parks providing some 31,000 parking spaces for various types of vehicles (see para. 1.8(b)). However, information on the location of 176 (91%) STT car parks could not be found in the "HKeMobility" mobile application. Upon enquiry, TD informed Audit in March 2019 that only those STT car parks with real-time vacancy information were included in their current dataset of the mobile application; and

(b) ***Car parks in other government venues.*** According to the list of car parks as at 31 December 2018, apart from the 11 government multi-storey car parks, there were 118 car parks (Note 38) in other government venues (with at least 20 public parking spaces each) providing a total of some 8,300 public parking spaces. These 118 car parks were under the management of various government departments such as the Agriculture, Fisheries and Conservation Department, GPA, HD and LCSD. Audit's sample check of 30 car parks with the highest number of public parking spaces revealed that information on the location of only 19 (63%) car parks could be found in the "HKeMobility" mobile application. In other words, location information of the remaining 11 (37%) car parks (Note 39) could not be found in the mobile application.

Number of car parks providing parking vacancy information

5.7 From 2015 to 2018, TD made several attempts to encourage owners or operators of existing public car parks to provide parking vacancy information via its mobile application/website. Since July 2016, the number of car parks providing parking vacancy information had continually increased, i.e. from 50 in July 2016 (when the "Hong Kong eRouting" mobile application was updated to provide parking

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Note 38: *According to the list of car parks as at 31 December 2018, in addition to the 118 car parks, there was one more car park with at least 20 public parking spaces, namely the Cheung Sha Wan Abattoir under the management of FEHD providing 105 public parking spaces. However, according to FEHD, the Abattoir ceased operation in 1999 upon the commissioning of Sheung Shui Slaughterhouse and the buildings and structures therein were subsequently demolished for public housing development. Hence, there was no public car park in the location under the management of FEHD.*

Note 39: *Seven, three and one of the 11 car parks were under the management of GPA, HD and the Agriculture, Fisheries and Conservation Department respectively.*

vacancy information) to 220 in July 2018 (when the "HKeMobility" mobile application was launched), and further increased to 276 in February 2019. Audit analysed the dataset of "HKeMobility" mobile application as at 31 December 2018 and found that:

(a) of the 1,546 car parks (see para. 5.6) shown in the "HKeMobility" mobile application, only 263 (17%) provided parking vacancy information; and

(b) among the 263 car parks providing parking vacancy information, 104 (40%) provided the "number of parking vacancies". For the remaining 159 (60%) car parks, only "availability status" of parking spaces (i.e. "Yes" or "No") was provided.

5.8 ***Need to provide more parking vacancy information of government venues.*** While there may be difficulties for TD to seek cooperation of car park operators in private developments to release parking vacancy information voluntarily as they may consider such data as commercially sensitive, there is scope for improving the provision of parking vacancy information, especially for public car parks in government venues. Of the 19 government venues with location information in the "HKeMobility" mobile application (see para. 5.6(b)), Audit found that parking vacancy information of 7 (37%) car parks was made available in the mobile application as at 31 December 2018. In this connection, Audit noted that TD had approached three departments (i.e. GPA, HD and LCSD) in 2015 and 2016 to solicit their support in providing parking vacancy information but the outcome was not satisfactory. In this connection, not all the agreements with the car park operators contained a clause requiring the provision of parking vacancy information to TD. Given that encouraging owners or operators of existing public car parks to provide real-time parking vacancy information using technology solutions to facilitate motorists to find parking spaces is one of the smart mobility initiatives in the Blueprint (see para. 1.12(a)), TD needs to continue to make efforts to work closely with the relevant departments to provide parking vacancy information of government venues.

5.9 ***Need to provide more supplementary information of car parks.*** Whilst the current objective of "HKeMobility" mobile application is to provide the basic vacancy information for the private car drivers to locate vacant parking spaces, motorists may need other supplementary information of car parks, such as address and telephone number, operating hours, parking fees, payment methods and other facilities available (e.g. EV chargers, and loading and unloading). Supplementary information including

address, telephone number, headroom and website of car parks may be made available in the "HKeMobility" mobile application, if such information has been provided by the owners or operators of car parks. Audit conducted a sample check of the supplementary information of 30 car parks, including all the 11 government multi-storey car parks, provided in the "HKeMobility" mobile application in January and February 2019 and found that:

(a) payment information (i.e. parking fees and payment methods) was not available for all the 30 car parks;

(b) while information about EV charging services was made available in one car park in a private development, similar information was not available for all the eight government multi-storey car parks with EV chargers (see para. 5.15); and

(c) for two car parks in government venues under the management of GPA, the details of operating hours open to the public (i.e. non-office hours) were not provided. While the availability status of one car park was shown as "Closed" during office hours, no such information was made available for the other car park.

With a view to providing motorists with more useful and relevant parking information, there is a need to provide more supplementary information of car parks in the "HKeMobility" mobile application as far as practicable.

5.10 ***Need to facilitate motorists to search for on-street parking spaces.*** Besides parking information of off-street car parks, the "HKeMobility" mobile application also provides location information of on-street metered and non-metered parking spaces for various types of vehicle, which facilitates users to find on-street parking spaces. Currently, users need to manually search the streets on the map of the application and enlarge the images to find on-street parking spaces. As the mobile application does not support the searching of on-street parking spaces, there is no "search" function available for users to input the street names to help identify on-street parking spaces. In this connection, Audit noted that TD had planned to incorporate a searching function for vacant on-street metered parking spaces in the "HKeMobility" mobile application upon the installation of the new generation of parking meter system in 2019-20 (see para. 1.12(b)). While Audit appreciates TD's initiative to provide the searching function in the mobile application, there is also merit to consider

incorporating into the searching function for location of on-street non-metered parking spaces to provide more parking space information to users.

5.11 ***Need to further open up parking data in PSI Portal.*** According to the 2017 Policy Address, the Government would step up its efforts in opening up government data. To support this initiative, TD set out in its annual open data plan for 2018 the need for further opening up its parking-related data in 2019 and 2020 (see para. 5.3). In this connection, Audit noted the following areas for improvement:

(a) as at 31 December 2018, while parking vacancy information of 263 car parks was made available in the "HKeMobility" mobile application (see para. 5.7(a) and (b)), parking vacancy data of only 27 (10%) of these car parks were uploaded onto the PSI Portal; and

(b) while TD had uploaded the distribution information of on-street metered parking spaces onto the PSI Portal on a half-yearly basis (see para. 5.3), such distribution information of on-street non-metered parking spaces was not made available in the PSI Portal.

In Audit's view, TD needs to explore the feasibility of further opening up the parking data mentioned in (a) and (b). With regard to (a), TD may also need to consult the owners or operators of public car parks with parking vacancy information provided in the "HKeMobility" mobile application to seek their consents for opening up the data in the PSI Portal.

5.12 ***Need to review the way forward for the "Hong Kong eRouting" website.*** One of the initiatives in the Blueprint was to integrate the three transport-related mobile applications into a single mobile application (see para. 5.2). The integration work was completed with the launch of the "HKeMobility" mobile application in July 2018 and the decommissioning of the three previous mobile applications, namely "Hong Kong eRouting", "Hong Kong eTransport" and "eTraffic News" in December 2018. Audit, however, noted that:

(a) similar integration work was not done for the relevant websites;

(b) the "Hong Kong eRouting" website was still in use up to January 2019;

(c) the "Hong Kong eRouting" website had not been enhanced to improve its usability on mobile devices (e.g. adopting responsive web design that allows web pages to be automatically adjusted to fit the screen display of different types of computers and mobile devices); and

(d) while there was also a mobile version of the "Hong Kong eRouting" website, Audit's accessibility check of the mobile website from 16 to 25 January 2019 on a daily basis found that the mobile website was not accessible. Audit subsequently found that the mobile website resumed operation on 26 January 2019 but it did not support the provision of parking information to users.

According to the Office of the Communications Authority, there were about 18 million mobile broadband customers using mobile data services in June 2018. In light of the high usage of mobile devices in recent years, TD needs to review the way forward for the website (i.e. whether to continue the operation of the website and, if yes, how the website can be enhanced to remain useful and user-friendly), taking into account its usage statistics (see para. 5.4), maintenance and enhancement cost, and new development in information technology.

Audit recommendations

5.13 **Audit has *recommended* that the Commissioner for Transport should:**

(a) **take measures to improve the dissemination of parking information via the "HKeMobility" mobile application and the "Hong Kong eRouting" website, including:**

(i) **taking improvement measures to enhance the completeness and accuracy of the information provided by the "HKeMobility" mobile application;**

(ii) **continuing to make efforts to work closely with the relevant departments (e.g. GPA, HD and LCSD — see para. 5.8) to provide parking vacancy information of government venues;**

(iii) **providing more supplementary information of car parks in the "HKeMobility" mobile application as far as practicable; and**

(iv) **considering incorporating the searching function in the "HKeMobility" mobile application for locations of both on-street metered and non-metered parking spaces;**

(b) **explore the feasibility of further opening up the parking data in the PSI Portal, e.g. the available parking vacancy information in consultation with the owners or operators of public car parks where necessary and distribution information of on-street non-metered parking spaces; and**

(c) **review the way forward for the "Hong Kong eRouting" website, taking into account its usage statistics, maintenance and enhancement cost, and new development in information technology.**

Response from the Government

5.14 The Commissioner for Transport agrees with the audit recommendations. She has said that:

(a) upon enhancement of TD's internal data system (tentatively by March 2019), the updated public car park information, including STT car parks, car parks affiliated with government venues and public car parks in private developments will be disseminated to the public via "HKeMobility" mobile application. To achieve continual update of such information, car park information data stored in TD's internal data system can be uploaded to "HKeMobility" mobile application at regular intervals automatically;

(b) TD has approached various government departments and has been appealing to them for support to disseminate parking vacancy information to the public since 2015. TD has formulated a set of car park vacancy information documents which are suitable for both automatic and manual input requirements, and has been sharing these documents and experiences with relevant government departments to facilitate their formulation of similar requirements for imposing on their car park operators to increase participating government car parks in future. TD will continue to appeal to relevant departments' support to disseminate parking vacancy information of their respective car parks to the public;

(c) basic and essential car park information (e.g. location and number of parking spaces) is provided to motorists for reference, which reduces the need for them to circulate on roads to look for parking spaces, thereby relieving traffic congestion. Operators, at their discretion, could reveal other supplementary car park information on the car park information page, including hyperlinks to the car park operators' specific websites. As some information (such as parking fees) is subject to change frequently to suit operators' own business needs, it is more preferable for operators to disseminate such information to the public via the web address of the carpark, rather than direct display in "HKeMobility" mobile application;

(d) TD plans to digitise the geographic locations of the on-street parking spaces by mid-2019 after the completion of upgrading of TD's internal data system, and arrange subsequent enhancements on "HKeMobility" mobile application to incorporate searching function of on-street parking spaces;

(e) as at end February 2019, the number of car parks with vacancy information disseminated by TD to the PSI Portal has increased to about 170. TD is arranging opening "on-street non-metered parking spaces" dataset suitable for dissemination to the public via the PSI Portal tentatively by mid-2019; and

(f) TD plans to review the need for keeping the website version of "Hong Kong eRouting", taking into account such factors as the need of the users, usage statistics and cost for maintenance/upgrading.

Provision and management of electric vehicle charging facilities

5.15 ***Government's initiative to promote wider use of EVs.*** The Government has been promoting EVs which have no tailpipe emissions. The use of EVs helps improve roadside air quality and reduces greenhouse gas emissions, and supports the development of a low-carbon, green economy. The availability of charging facilities is critical to the promotion of wider adoption of EVs. Regarding the charging arrangements for EVs, the Government's policy is that EV owners should perform daily charging of their EVs by using charging facilities at their homes, workplaces or other suitable places. Public charging facilities are supplementary in nature for EVs to top up their batteries to complete their journeys at times of occasional needs. Since 2012, EPD has been responsible for the installation, operation, maintenance and

removal of EV charging facilities in some of the existing government car parks, including those managed by TD which are open to the public. Of the 2,024 public EV chargers provided in Hong Kong as at 30 September 2018, 321 (16%) in 275 parking spaces were provided by EPD in 8 of the 11 government multi-storey car parks (see para. 3.3) (except for Aberdeen, Kennedy Town and Kwai Fong Car Parks). The number of parking spaces equipped with EV chargers in each car park ranged from 30 to 40. According to the estimated utilisation rates of EV chargers based on the total monthly electricity consumption since 2016 provided by EPD, the average monthly utilisation rate per EV charger installed at the car parks increased by 56% from 16 times in 2016 to 25 times in 2018 (up to November), suggesting a growing demand for EV charging facilities.

Areas for improvement

5.16 Audit examination of the provision and management of EV charging facilities in the government multi-storey car parks revealed the following areas for improvement:

(a) ***Need to explore the need and feasibility of installing EV chargers in car parks without EV chargers.*** According to the installation proposal, EV chargers were not provided in Aberdeen, Kennedy Town and Kwai Fong Car Parks due to various reasons. For example, there was strong objection from residents living above a car park as the cables would pass through their premises. In view of the significant increase in the number of licensed electric private cars in recent years, i.e. from 314 in December 2013 to 10,660 in September 2018, there is merit for EPD, in collaboration with TD, to explore the need and feasibility of installing EV chargers in the 3 government multi-storey car parks; and

(b) ***Parking spaces with EV chargers occupied by non-EVs.*** According to the installation proposal, it was not the Government's intention for parking spaces equipped with EV chargers in the government multi-storey car parks to be exclusively used by EVs. Therefore, TD would only place traffic cones with reminder notices at the relevant parking spaces concerned indicating that EVs would be given priority in using the parking spaces with EV chargers. Audit conducted site visits to the 8 car parks equipped with EV chargers in five days in November and December 2018 and found that 168 (69%) of 242 parking spaces equipped with EV chargers were occupied by non-EVs (the remaining 33 (275 minus 242) parking spaces were

vacant). In this connection, Audit noted that TFMS had received 66 complaints from EV owners/drivers from March 2017 to October 2018 on the occupation of parking spaces equipped with EV chargers by non-EVs, making them unable to charge their vehicles' batteries to complete their journeys. Audit's site visits revealed that EV chargers were mainly located on lower floors and near the entrance of the car parks. Coupled with the lack of a parking bay display and guidance system (Note 40) to show the availability of parking spaces on higher floors, non-EV drivers might prefer to park their vehicles at parking spaces with EV chargers on the lower floors for convenience sake. In Audit's view, there is merit to consider introducing administrative measures to ensure that parking spaces equipped with EV chargers are available for use by EVs (e.g. installing a parking bay display and guidance system to show vacancy of parking spaces at higher floors). In planning suitable locations for the installation of EV chargers at car parks in future, EPD, in collaboration with TD, needs to take into account the occupation problem of parking spaces equipped with EV chargers by non-EVs and explore measures to discourage non-EV drivers to park their cars at such spaces (e.g. installing EV chargers at parking spaces on higher floors of car parks).

Audit recommendations

5.17 **Audit has *recommended* that the Director of Environmental Protection should, in collaboration with the Commissioner for Transport:**

(a) **explore the need and feasibility of installing EV chargers in the three government multi-storey car parks without EV chargers, i.e. Aberdeen, Kennedy Town and Kwai Fong Car Parks;**

(b) **consider introducing administrative measures to facilitate both EV and non-EV drivers with an aim to ensure that parking spaces equipped with EV chargers are available for use by EVs; and**

Note 40: *Parking bay display and guidance system provides guidance to motorists through installation of vehicle sensors to collect occupancy information. Motorists may use displays at appropriate locations and indicators at parking bays to find vacant parking bays. Installation of parking bay display and guidance system in government multi-storey car parks managed by TD is one of the recommendations in the Report of Consultancy Study on Smart City Blueprint for Hong Kong issued in June 2017 (see Note 13 to para. 1.12).*

(c) **take into account the occupation problem of parking spaces equipped with EV chargers by non-EVs and explore measures to discourage non-EV drivers to park their cars at such spaces in planning suitable locations for the installation of EV chargers at car parks in future.**

Response from the Government

5.18 The Director of Environmental Protection generally agrees with the audit recommendations. He has said that:

(a) the audit recommendation in paragraph 5.17(a) is in line with the Government's plan to introduce stepped-up measures to promote the use of EVs, including the installation of additional EV chargers in government car parks. As the Financial Secretary has announced in the 2019-20 Budget, the Government will allocate $120 million to extend the public EV charging networks in government car parks, including those under TD (covering Aberdeen, Kennedy Town and Kwai Fong Car Parks and other TD's car parks), GPA and LCSD. Over 1,000 additional public chargers are expected to be installed by 2022, bringing the total number of chargers to around 1,700;

(b) as a longer-term measure, the Government plans to set up a smart system for the Government's public EV charging network. The intention is that the features will include, but not limited to, instant electronic information on the status of chargers, payment system and management facilities for parking spaces equipped with chargers, etc. EPD will, in consultation with TD and other relevant departments as appropriate, explore the feasibility of enabling reservation of parking spaces equipped with chargers; and

(c) in deciding the locations of the additional public EV chargers in government car parks as mentioned above, EPD will consider other appropriate means to increase the availability of these EV chargers for use by EVs, for instance identifying suitable locations at higher floors of the car parks subject to site specific constraints.

5.19 The Commissioner for Transport agrees with the audit recommendations. She has said that:

(a) TD and its car park contractors will continue to provide assistance to EPD in installing more EV chargers in TD's car parks, including Aberdeen, Kennedy Town and Kwai Fong Car Parks which have not been equipped with EV chargers currently;

(b) TD will provide assistance to EPD in examining measures to cater for the need for EV chargers, including installation of more EV chargers in TD's car parks. Nevertheless, as only about 2% of private cars at present are EVs, reserving some parking spaces with EV chargers for the exclusive use by EVs will affect the availability of parking spaces available for conventional vehicles. TD will take into account the parking demand in specific car parks when providing assistance to EPD in examining the measures; and

(c) TD will provide assistance to EPD in examining measures to discourage non-EV drivers to park their vehicles at parking spaces equipped with EV chargers, e.g. installation of EV chargers on higher floors of TD's car parks.

Implementation of automated parking systems

5.20 According to the 2002 Study Report (see para. 2.6), one of the remedial measures formulated to address the parking problems in the long-term was the use of automated parking systems (also known as intelligent or mechanical parking systems). According to the Report, automated parking systems could be used to increase spatial efficiency (Note 41) and it was particularly relevant in densely built-up commercial districts where parking shortage currently existed. Such systems could be easily constructed with simple steelwork and hoisting equipment that could be very cost-effective. Photograph 6 shows a simple automated parking system used in Beijing as shown in the 2002 Study Report.

Note 41: *Automated parking systems can increase the number of vehicles to be parked in a given footprint through stacking up vehicles in a compact manner by mechanical lifting/sliding or autonomous manoeuvring devices.*

Photograph 6

A simple automated parking system in Beijing

Source: TD's 2002 Study Report

Progress of implementing automated parking systems in government car parks

5.21 Automated parking systems are not common in Hong Kong. No major application has taken place due to huge land costs, considerable upfront capital investment, uncertain business model and substantial technical uncertainties with regard to site constraints. In fact, automated parking systems are not in use in all the 11 government multi-storey car parks (see para. 3.3). According to TD, although the adoption of automated parking systems could improve the land use efficiency by providing more parking spaces in a given footprint and with reduced headroom, such systems normally take some time to park or retrieve a car. As a result, large queuing areas would be required so that cars waiting to be parked would not tail back onto public roads. Furthermore, a comprehensive protocol must be established to handle promptly cases of machine failures in retrieval of vehicles. However, Audit has noted that such systems have been used in some overseas countries (e.g. Japan and Denmark) as they not only improve space utilisation, but are also environmental-friendly as there is virtually no vehicle emission inside the car park.

5.22 ***Need to step up efforts in implementing automated parking systems in government car parks.*** In view of the challenges in implementing automated parking systems, a feasibility study should be conducted before taking forward the initiative. However, Audit noted that since the release of the 2002 Study Report, no record was available showing that TD had commenced the relevant study until in 2018 (i.e. some

16 years later) when a consultant was commissioned to conduct a pilot study with a view to establishing the technical and financial feasibility on developing public car parks at six sites with automated parking systems and recommending the way forward for implementation. The pilot study was originally planned to be completed by the end of 2018 but the completion date was re-scheduled to early 2019. With the completion of the pilot study, another few years would be required to proceed with the design and construction of new public car parks with automated parking systems. There is a need to step up efforts on the related work based on the recommendations of the pilot study.

Audit recommendation

5.23 **Audit has *recommended* that the Commissioner for Transport should step up efforts in implementing automated parking systems in government car parks based on the recommendations of the related pilot study.**

Response from the Government

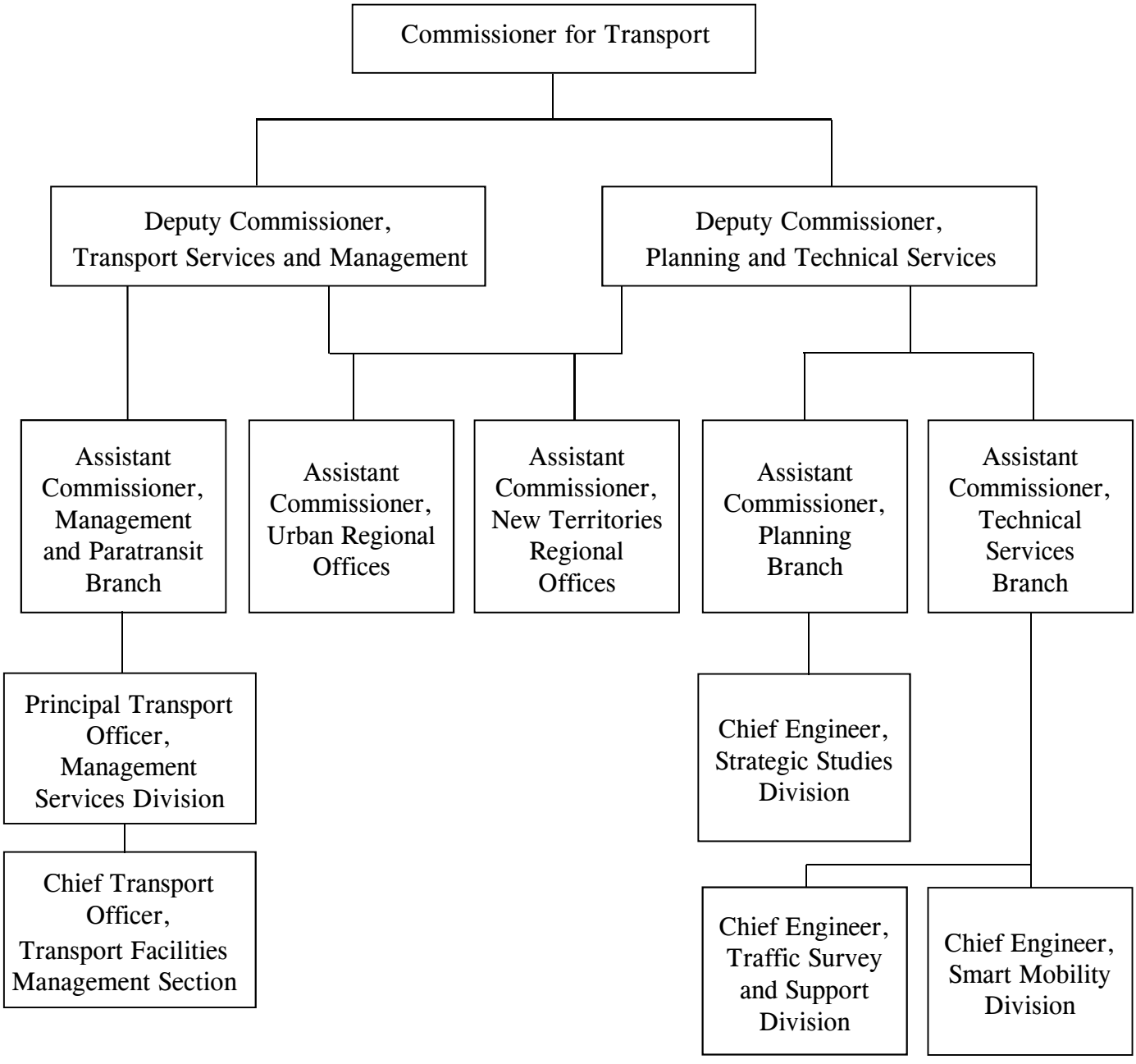
5.24 The Commissioner for Transport agrees with the audit recommendation. She has said that:

(a) TD has deployed a dedicated team to oversee the planning and implementation of automated parking systems in government car parks. Under the pilot study, TD has identified six pilot sites for adopting automated parking systems and is conducting pre-construction planning; and

(b) subject to technical feasibility and public acceptance, TD aims to have the construction commenced in batches starting from 2021. TD will consider wider application of automated parking systems in government car parks having regard to the outcome of these pilot projects.

Appendix A
(paras. 1.4, 3.3,
and 4.4 refer)

Transport Department: Organisation chart (extract) (31 December 2018)



Source: TD records

Appendix B
(paras. 1.7 and 2.8(a) refer)

Parking standards on various development types in Hong Kong Planning Standards and Guidelines

<table>
<tr><th>Type of development</th><th>Parking standards</th></tr>
<tr><td>1. Subsidised housing</td><td>
Provision ratio of private car parking spaces:
Private car parking requirement = GPS × R1 × R2
<table>
<tr><td colspan="3">GPS</td><td>1 car space per 6 – 9 flats</td></tr>
<tr><td>Demand Adjustment Ratio (R1)</td><td colspan="2">All subsidised housing</td><td>0.23</td></tr>
<tr><td rowspan="2">Accessibility Adjustment Ratio (R2)</td><td colspan="2">Within a 500 m-radius of rail station</td><td>0.85</td></tr>
<tr><td colspan="2">Outside a 500 m-radius of rail station</td><td>1</td></tr>
</table>
Provision ratio of LGV parking spaces:
1 LGV parking space per 200 – 600 flats

Provision ratio of medium goods vehicle parking spaces:
No fixed standard. To utilise estate commercial centre loading/unloading bays for overnight parking in estates

Provision ratio of motorcycle parking spaces:
1 motorcycle parking space per 110 – 250 flats excluding one person/two persons flats as well as non-residential elements
</td></tr>
<tr><td>2. Private housing</td><td>
Provision ratio of private car parking spaces:
Private car parking requirement = GPS × R1 × R2 × R3
<table>
<tr><td colspan="3">GPS</td><td>1 car space per 6 – 9 flats</td></tr>
<tr><td rowspan="6">Demand Adjustment Ratio (R1)</td><td rowspan="6">Flat Size (FS) (m^2)</td><td>FS ≤ 40</td><td>0.4</td></tr>
<tr><td>40 < FS ≤ 70</td><td>0.7</td></tr>
<tr><td>70 < FS ≤ 100</td><td>2.1</td></tr>
<tr><td>100 < FS ≤ 130</td><td>5.5</td></tr>
<tr><td>130 < FS ≤ 160</td><td>7.5</td></tr>
<tr><td>FS > 160</td><td>9.5</td></tr>
<tr><td rowspan="2">Accessibility Adjustment Ratio (R2)</td><td colspan="2">Within a 500 m-radius of rail station</td><td>0.75</td></tr>
<tr><td colspan="2">Outside a 500 m-radius of rail station</td><td>1</td></tr>
<tr><td rowspan="5">Development Intensity Adjustment Ratio (R3)</td><td rowspan="5">Plot Ratio (PR)</td><td>0.00 < PR ≤ 1.00</td><td>1.30</td></tr>
<tr><td>1.00 < PR ≤ 2.00</td><td>1.10</td></tr>
<tr><td>2.00 < PR ≤ 5.00</td><td>1.00</td></tr>
<tr><td>5.00 < PR ≤ 8.00</td><td>0.90</td></tr>
<tr><td>PR > 8.00</td><td>0.75</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Type of development</th><th>Parking standards</th></tr>
<tr><td></td><td>Provision ratio of visitor parking spaces:
For a block with more than 75 units, 1 – 5 additional visitor spaces per block, or as determined by the Authority

Provision ratio of motorcycle parking spaces:
1 motorcycle parking space per 100 – 150 flats excluding non-residential elements</td></tr>
<tr><td>3. Retail areas</td><td>Provision ratio of private car parking spaces:
<table><tr><td colspan="2">Zone 1 areas (Note 1):</td></tr><tr><td colspan="2">1 car space per 200 – 300 m^2 GFA</td></tr><tr><td colspan="2">Zones 2 and 3 areas (Note 2):</td></tr><tr><td>For the first 2,000 m^2 GFA</td><td>1 car space per 40 – 50 m^2 GFA</td></tr><tr><td>For the remaining GFA</td><td>1 car space per 150 – 200 m^2 GFA</td></tr></table>
Provision ratio of motorcycle parking spaces:
5 to 10% of the total provision for private cars</td></tr>
<tr><td>4. Offices</td><td>Provision ratio of private car parking spaces:
<table><tr><th>GFA</th><th>Provision ratio of parking spaces</th></tr><tr><td>For the first 15,000 m^2 GFA</td><td>1 car space per 150 – 200 m^2 GFA</td></tr><tr><td>For the remaining GFA</td><td>1 car space per 200 – 300 m^2 GFA</td></tr></table>
Provision ratio of motorcycle parking spaces:
5 to 10% of the total provision for private cars</td></tr>
</table>

Legend: GFA – Gross floor area
GPS – Global parking standard
LGV – Light goods vehicles

Source: *Chapter 8, HKPSG (Edited version by THB)*

Note 1: *Zone 1 areas cover residential developments at the highest density and apply to districts well served by high capacity public transport systems such as rail stations or other major transport interchanges. The buildings often incorporate a significant component of commercial floor space on the lower one to three floors.*

Note 2: *Zone 2 areas cover developments at a medium density and apply in locations less well served by high capacity public transport systems. There is usually no commercial floor space component. Zone 3 areas cover residential developments at the lowest density and apply to districts with very limited public transport capacity or subject to special constraints for urban design, traffic or environmental reasons.*

Appendix C
(para. 2.3 refers)

Analysis of numbers of licensed vehicles and parking spaces by major vehicle types (December 2006, December 2016 and December 2018)

	Dec 2006	Dec 2016	Dec 2018	Increase/(Decrease)	
				Dec 2016 vs Dec 2006	Dec 2018 vs Dec 2006
(A) Number of licensed vehicles					
Private car (Note 1)	401,692	584,130	616,220	45.4%	53.4%
Commercial vehicle (Note 2)	77,734	72,132	73,051	(7.2%)	(6.0%)
Motorcycle	35,915	49,864	54,920	38.8%	52.9%
Overall (Note 2)	515,341	706,126	744,191	37.0%	44.4%
(B) Number of parking spaces					
Private car (Note 1)	607,411	661,931	675,264	9.0%	11.2%
Commercial vehicle (Note 2)	47,764	48,186	46,955	0.9%	(1.7%)
Motorcycle	23,055	32,821	34,690	42.4%	50.5%
Overall (Note 2)	678,230	742,938	756,909	9.5%	11.6%
(C) Parking space ratio [(B)/(A)]					
Private car (Note 1)	1.51	1.13	1.10	(25.2%)	(27.2%)
Commercial vehicle (Note 2)	0.61	0.67	0.64	9.8%	4.9%
Motorcycle	0.64	0.66	0.63	3.1%	(1.6%)
Overall (Note 2)	1.32	1.05	1.02	(20.5%)	(22.7%)

Source: *Audit analysis of TD records*

Note 1: *Van-type LGVs were counted as private cars (see Note 1 to para. 1.3).*

Note 2: *Commercial vehicles only included non-van-type LGVs, medium and heavy goods vehicles, and non-franchised public buses. Other types of commercial vehicles (i.e. taxis, franchised buses, light buses and special purpose vehicles) and government vehicles were excluded from the above analysis because most of them should be parked at depots, bus stops within public transport termini as well as stands. As regards taxis, they generally operated on the road round the clock and their parking demand was mainly for short duration stay.*

Appendix D
(para. 2.8(a) refers)

Revisions of parking-related standards in Hong Kong Planning Standards and Guidelines

Date	Scope of revisions
March 2003	Revised standards and guidelines for parking facilities in various types of development projects (including private housing, subsidised housing, community facilities, commercial facilities, and industrial and business developments)
December 2006	Minor technical amendments to the parking standards for cars and bicycles in residential developments
May 2009	Revised parking standards for subsidised housing based on findings of the HD's "Study on Parking for Public Housing Developments"
May 2011	Provided guidelines for EV charging facilities
August 2011	Provided planning standards for cross-boundary coach termini/stops and to update parking standards for persons with disabilities
February 2014	Revised parking standards for private housing based on findings of TD's "Review of Parking Standards for Private Housing Developments in the HKPSG"
May 2016	Inserted a footnote on parking requirements for subsidised saleable housing developments

Source: PlanD records

Appendix E
(para. 2.12 refers)

Chronology of key events for the project "Town Park in Area 66 and 68, Tseung Kwan O"

Item	Date	Event
1	March 2011	LCSD obtained the support of SKDC on the scope of the Town Park project in Areas 66 and 68 to meet recreational need of local residents.
2	June 2013	DEVB approved the Technical Feasibility Statement.
3	January 2017	The 2017 Policy Address announced that $20 billion would be spent in the coming five years to launch 26 projects to develop new or improve existing sports and recreation facilities. The Town Park project was one of the 26 projects to be launched in the coming five years.
4	June 2017	TD found that the STT in Area 66 provided 298 parking spaces with utilisation rate of 87% (258 spaces) and there would be a shortfall of 472 parking spaces upon the resumption of the STT site.
5	July 2017	SKDC passed the motion of requesting the Government to study the feasibility of providing parking facilities underneath the Town Park. In the same month, LCSD consulted SKDC on the revised project scope (without car park).
6	September 2017	TD informed LCSD that the existing temporary car park provided over 700 parking spaces.
7	January 2018	SKDC accepted the revised project scope in principle (without car park) but requested LCSD to study the technical feasibility of including an underground car park in Area 66.
8	February 2018	LCSD, TD, PlanD and ArchSD convened a meeting to review the project scope and discuss TD's proposal of providing an underground public car park (Note).
9	March 2018	LCSD put up two proposals to SKDC for consideration: (a) Areas 66 and 68 would be developed without underground car park; and (b) the works in Areas 66 and 68 would be implemented in phases, with an underground car park (with 260 and 90 parking spaces for private cars and goods vehicles respectively) in Area 66. The time for completing both phases under proposal (b) would be substantially increased by years under a very rough estimation.

Item	Date	Event
10	April 2018	SKDC held a local consultation to seek views from TKO (South) Area Committee and nearby residential estates on whether the Town Park project should include an underground car park. SKDC considered that LCSD should proceed with the project (without public car park) for an early implementation of the Town Park.
11	July 2018	TD proposed a provision of in-situ 395 parking spaces (300 for private cars, 65 for commercial vehicles and 30 for motorcycles) in Area 66, taking into account the planned parking spaces (105 for commercial vehicles) proposed in a Joint User Government Office Building in Area 67.
12	August 2018	DEVB approved the revised Technical Feasibility Statement (without underground car park).
13	September 2018	THB decided that the Town Park with an underground car park in Area 66 would be proceeded as a separate project with TD taking up the role of project proponent.
14	November 2018	TD consulted SKDC on the parking demand in TKO and proposed taking lead to implement the Town Park project in Area 66 with an underground public car park.
15	8 January 2019	SKDC supported LCSD's proposal to implement the Town Park project in Area 68 first.
16	24 January and 5 March 2019	TD consulted SKDC on the proposed Town Park with an underground car park project in Area 66.

Source: TD, THB, LandsD and LCSD records

Note: According to PlanD, the proposed town park in Areas 66 and 68 fell within an area zoned "Open Space" under the TKO Outline Zoning Plan, and planning permission from the Town Planning Board was required for "Public Vehicle Park (excluding container vehicle)".

Appendix F
(para. 3.3 refers)

11 government multi-storey car parks (31 December 2018)

Government multi-storey car park	Year of opening	Number of parking spaces		
		Private car, van-type LGV and taxi (a)	Motorcycle (b)	Total (c) = (a) + (b)
Yau Ma Tei	1957	770	76	846
Star Ferry	1957	380	37	417
City Hall	1959	170	27	197
Rumsey Street	1970	835	148	983
Aberdeen	1981	293	51	344
Kwai Fong	1983	552	93	645
Tsuen Wan	1983	545	34	579
Shau Kei Wan	1988	386	72	458
Tin Hau	1989	429	75	504
Sheung Fung Street	1989	268	74	342
Kennedy Town	2007	195	37	232
	Total	4,823	724	5,547

Source: TD records

Appendix G
(paras. 4.5(c) and 4.15 refer)

Types of operating periods for on-street metered parking spaces (31 October 2018)

Type of operating periods	Weekdays (Mondays to Saturdays, except general holidays)	General holidays	Number of parking spaces
A	8:00 a.m. – midnight	Not charged	183
B	8:00 a.m. – 8:00 p.m.	Not charged	348
D	8:00 a.m. – midnight	10:00 a.m. – 10:00 p.m.	8,905
F	8:00 a.m. – 9:00 p.m.	8:00 a.m. – 9:00 p.m.	23
H	8:00 a.m. – 8:00 p.m.	8:00 a.m. – 8:00 p.m.	1,904
J	8:00 a.m. – midnight	8:00 a.m. – midnight	98
N	7:00 p.m. – midnight	7:00 p.m. – midnight	9
P	8:00 a.m. – 8:00 p.m.	8:00 a.m. – 8:00 p.m. (No parking on Sundays)	6
Q	8:00 a.m. – 8:00 p.m.	10:00 a.m. – 10:00 p.m.	6,353
S	5:00 p.m. – midnight (Mondays to Fridays) 8:00 a.m. – midnight (Saturdays)	10:00 a.m. – 10:00 p.m.	40
		Total	17,869

Source: TD records

Appendix H
(paras. 4.7 and 4.15 refer)

New functions of the new generation of parking meter system

Function	Feature
Payment of parking fees through multiple means	Equipped with a card reader to provide several choices of physical payment methods, such as contactless stored valued cards, contactless credit cards and mobile electronic wallet.
Remote payment through mobile application	Support remote payment of parking fees through mobile applications. To align with the policy intent of providing on-street parking spaces to cater for short-term parking needs and preventing motorists or other persons from prolonged occupation of parking spaces through repeated payment of parking fees, if a motorist would like to use the mobile application to buy additional parking time, he/she can only purchase up to a total of two sessions of the "longest parking period" for each transaction.
Vehicle sensors	Equipped with vehicle sensors to detect whether a parking space is occupied, and provide real-time information to assist motorists in finding vacant parking spaces through TD's mobile application and website. However, vehicle information will not be collected.
Connection to backend central computer	Configurations for the parking meters such as the "longest parking period" for each transaction and operating period can be adjusted through the central computer. This will help TD monitor the utilisation rate of parking meters at different locations and adjust the configurations having regard to the data collected.
Consolidation of utilisation situation and payment information	The backend computer will consolidate the utilisation situation and payment information collected by vehicle sensors, and compile information on parking spaces occupied but not paid. This will facilitate and enhance efficiency of enforcement actions by HKPF.

Source: TD records

Appendix I

Acronyms and abbreviations

ArchSD	Architectural Services Department
Audit	Audit Commission
CCTV	Closed-circuit television
CPMS	Car park management system
DEVB	Development Bureau
EPD	Environmental Protection Department
EV	Electric vehicle
FEHD	Food and Environmental Hygiene Department
FS	Flat size
GFA	Gross floor area
G/IC	Government, Institution or Community
GPA	Government Property Agency
GPS	Global parking standard
HD	Housing Department
HKPF	Hong Kong Police Force
HKPSG	Hong Kong Planning Standards and Guidelines
LandsD	Lands Department
LCSD	Leisure and Cultural Services Department
LegCo	Legislative Council
LGV	Light goods vehicle
m	Metres
m^2	Square metres
PlanD	Planning Department
POS	Public open space
PR	Plot ratio
PSI	Public Sector Information
SKDC	Sai Kung District Council
STT	Short-term tenancy
TAC	Transport Advisory Committee
TD	Transport Department
TFMS	Transport Facilities Management Section
THB	Transport and Housing Bureau
TKO	Tseung Kwan O