

**For discussion  
on 24 May 2002**

**FCR(2002-03)18**

## **ITEM FOR FINANCE COMMITTEE**

### **CAPITAL WORKS RESERVE FUND HEAD 708 - CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT**

**Transport Department**

**New Subhead "Parking Meter System Replacement Programme"**

Members are invited to approve a new commitment of \$90 million for replacing the existing parking meter system with a reloadable card operated parking meter system.

#### **PROBLEM**

The electronic parking meters that accept Transport Department (TD)'s disposable e-Park card are now reaching the end of their useful life. The current e-Park cards are non-reloadable and considered not cost effective.

#### **PROPOSAL**

2. The Commissioner for Transport (C for T) proposes to create a new commitment of \$90 million for replacing the existing parking meter system with a reloadable card operated parking meter system that accepts Octopus at the initial stage, with sufficient capability to be upgraded to also accept other reloadable cards, including credit cards, in future.

**/JUSTIFICATION .....**

## JUSTIFICATION

### Current Problems

3. There are some 17 000 electronic parking meters across the territory. A parking meter has two main components, meter casings and meter mechanism. When the old coin-operated mechanical parking meters were replaced by the electronic ones in 1998, the old meter casings were retained and have now been in use for over 15 years. With the normal life span of a meter casing being 10 to 14 years, all the existing meter casings are due for replacement. To cater for the new method of payment on parking meters, the new meter casing should also be designed in a way to accept reloadable cards.

4. The existing electronic parking meter mechanisms that accept TD's disposable e-Park card were installed between April 1998 and October 1999. The meter mechanisms are found to be generally robust and reliable in terms of security and revenue collection, but are approaching the end of their useful life estimated to be about five years. As the current e-Park cards are non-reloadable and entail significant recurrent cost annually in terms of card procurement and handling, we need to look for more cost-effective and environmentally friendly payment alternatives. In view of the rapid development of reloadable cards in recent years, and the potential savings that can be achieved in card production cost with migration to reloadable cards, we have conducted trials on three reloadable cards.

### Trials with Reloadable Cards

5. From March 2000 to September 2001, we conducted trials on all three multi-purpose stored-value cards approved by the Hong Kong Monetary Authority. The details are as follows -

- a) **Electronic purse cards** - Two electronic purse cards, namely Mondex and Visa Cash, were under trial between March 2000 and March 2001. To test public acceptance of the cards and the technical feasibility of adopting such a card system in an open-air environment, 1 400 parking meters in Wan Chai and Tsim Sha Tsui were converted to dual-card meters that accepted one purse card in addition to the e-Park card.
- b) **Octopus card** - We conducted a trial on Octopus operated meters between November 2000 and September 2001. During the trial, meters developed by five different suppliers were installed at 200 parking spaces in Causeway Bay and Mongkok. The meters tried included single-bay, dual-bay and multi-bay meters.

6. Overall speaking, all three cards were found to be technically feasible and performing well on parking meters in an outdoor, off-line and unattended environment. However, the utilisation of purse cards on dual-card meters was very low, accounting for only 2% of the total number of transactions on the meters on trial. This is mainly attributed to the low circulation of the purse cards (only around 200 000 cards in use in Hong Kong for each of the two purse cards during the trial period). For the Octopus operated meters, they were generally well accepted with a high utilisation rate (82%) similar to that of the e-Park card operated meters at the same locations before the trial.

7. After completion of the trials, we invited the card service providers to submit an expression of interest on the provision of clearing house and associated services if their cards were accepted on future parking meters. By the closing date of 15 October 2001, only Octopus Cards Ltd. made a positive response. Neither of the two purse card service providers indicated any interest. In fact, some of the service providers for the purse cards have announced their plan to discontinue the cards in view of lacklustre market response to the use of purse cards.

### **The Proposed System**

8. Having reviewed the trial results and the findings of the customer surveys conducted during the trial period, we propose to replace the existing e-Park card operated parking meter system with the Octopus card operated parking meter system. Purse cards are not proposed to be incorporated into the new meter design in view of the absence of interest of the card service providers and the likelihood of gradual cessation of the service.

9. In the meantime, we note that a few credit card issuers are developing facilities for off-line retail payment (with each transaction limited to around \$200). Preliminary findings show that there is a potential for credit cards to be adopted as a payment card for the new generation of parking meters because -

- (a) they are, same as purse cards, capable of operating in an off-line environment without the need for input of a personal identification number or signature authorisation;
- (b) they are technically feasible for use on parking meters;
- (c) they are of high circulation;

/(d) .....

- (d) there is no card development cost for the Government;
- (e) there is proven efficiency on payment settlement; and
- (f) there is proven security in revenue collection.

10. A comparison of the capital and recurrent costs for the existing e-Park card and the proposed one-card (Octopus only) and two-card (Octopus and Credit Card) parking meter systems is set out below -

	<b>e-Park card</b>	<b>Octopus Only</b>	<b>Octopus + Credit Card</b>
Capital Cost	\$75m	\$90m	\$114m
Annual Operating Cost	\$61.2m	\$52.8m	\$53.4m
Annual Net Savings (as compared with the present e-Park card operation)	--	\$8.4m	\$7.8m

11. In terms of capital cost, we find that a two-card system is the most expensive option. More importantly, an off-line payment service is now implemented on one credit card (i.e., the Visa Express Payment) and is accepted by three merchants only (i.e., two fast food chain restaurants and a cinema group). The long term success and popularity of this service is not clear enough for us to make a firm recommendation to incorporate credit cards into the new parking meter at this stage.

12. In view of the fact that our parking meters are coming to the end of their economic life, the environmental desirability to replace the existing disposable card with a reloadable card and the net savings after the conversion to reloadable card meters, we propose to replace our meters with new ones that are able to accept Octopus cards at the initial stage but with sufficient capability to be upgraded to also accept other reloadable cards including credit cards in future. Whether the credit card option should be pursued would be reviewed at a later stage taking into account the future availability and utilisation of off-line credit card payment.

13. To achieve cost-effectiveness and to reduce street furniture, it is proposed that the new parking meters should be dual-bay meters capable of controlling two parking spaces. Dual-bay meters are preferred to multi-bay meters as they offer a better performance in terms of the size of the meter, public acceptance, enforcement and security in revenue collection, as reflected in the trial. The key design features of the proposed meter are shown at Enclosure 1. The mechanism and the casing of the new Octopus operated parking meters are expected to have a serviceable life of seven and 14 years respectively.

Encl. 1

14. The actual meter design will be subject to tender results. The additional card slot is reserved for the use of credit card or other magnetic strip type or chip-type smart card. We would require that the basic design of the new meter be upgradable to accept additional contact cards using the common card slot with necessary modification to the hardware and software.

### Cost Savings

15. As shown in paragraph 10 above, the proposed Octopus card operated parking meter system will incur an estimated annual recurrent cost of \$52.8 million. It is estimated that a recurrent annual net savings of around \$8.4 million will be realised after full conversion to Octopus card operated parking meters due largely to savings in e-Park card production. A breakdown of the recurrent annual operating costs and net savings are shown below -

<b>Recurrent Annual Operating Costs</b>	<b>e-Park Card Meters (A)</b>	<b>Octopus Only Meters (B)</b>	<b>Recurrent Annual Net Savings (A)-(B)</b>
TD's contract administration cost	\$1.8m	\$1.8m	0
Meter contractor's management fees	\$47.4m	\$47.4m	0
Card production cost	\$12m	--	\$12m
Uploading commission *	--	\$ 3.6m	-\$3.6m
<b>Total</b>	<b>\$61.2m</b>	<b>\$52.8m</b>	<b>\$8.4m</b>

\*A fee payable to the card service provider for its provision of transaction clearance and settlement service.

/Cost-benefit .....

### Cost-benefit Analysis

Encl. 2

16. In addition to the recurrent annual net savings arising from the use of Octopus card operated meters, there will be a one-off cost avoidance totaling \$66 million which will otherwise be required to gradually replace the existing meter mechanisms and casings as they are coming to the end of their useful life from 2003-04 onwards. The cost and benefit for the project are shown at Enclosure\_2. The analysis shows that the project will break even in 2006-07, two years after the anticipated completion of the project.

### FINANCIAL IMPLICATIONS

#### Non-recurrent Expenditure

17. We estimate that the capital cost for implementation of the new Octopus card operated parking meter system amounts to \$90 million, made up as follows -

Parking Meters with Octopus only		Quantity	Total Cost (\$' 000)
(a)	Dual-bay meters: casing, meter mechanism and Octopus readers, including 10% spares	11,000	69,700
(b)	Portable data retrievers, including 10% spares	80	3,200
(c)	Backend computer system with software	3	6,000
(d)	Miscellaneous	---	600
(e)	Electrical and Mechanical Services Trading Fund (EMSTF)	---	6,500
(f)	Contingencies (5% of (a) to (d))	---	4,000
<b>Total</b>			<b>90,000</b>

18. As regards paragraph 17(a) above, the expenditure of \$69,700,000 is for the acquisition of meter mechanism, Octopus card readers and the meter casings including the operation system software and application development tools, etc.

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19. As regards paragraph 17(b) above, the expenditure of \$3,200,000 is for the acquisition of the data retrievers, which will be used for retrieving transaction and management data from the on-street parking meters and thereafter uploaded to the central computer for processing. These data retrievers are also used for calibrating the parking meters in respect of change in the meter's fee level and operating hours, etc.

20. As regards paragraph 17(c) above, the expenditure of \$6,000,000 is for the installation of a total of three computer systems at the two depots of the management contractor and TD Headquarters respectively.

21. As regards paragraph 17(d) above, the expenditure of \$600,000 is for conducting factory acceptance tests for the new meter system and equipment, staff training for system management and operation, etc.

22. As regards paragraph 17(e) above, the expenditure of \$6,500,000 is for paying the EMSTF engineering consultancy services.

23. EMSTF will oversee the above project which includes definition of hardware and software requirements for the new meters, preparation of project programme, tendering, supervision of type approval tests, testings and installations, as well as monitoring the performance of the meters and any maintenance problems after the initial installation until the end of 2005-06. In the light of the Enhanced Productivity Programme, the EMSTF has rationalised its costs and offered about 5% reduction on the charges. We consider the fees charged by EMSTF to be reasonable when compared to fees charged by consultancy firms in the private sector for projects of a similar nature.

24. The estimated cash flow for the project is set out below -

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	<b>\$' 000</b>
2002-03	9,000
2003-04	46,000
2004-05	30,000
<u>2005-06</u>	<u>5,000</u>
<b>Total</b>	<b>90,000</b>

**Recurrent Cost**

25. The estimated recurrent expenditure for administering and supporting the new parking meter system is as follows -

	<b>2002-03</b>	<b>2003-04</b>	<b>2004-05</b>	<b>2005-06 onwards</b>
	\$' 000	\$' 000	\$' 000	\$' 000
(a) TD' s contract administration cost	30	315	1,620	1,800
(b) Meter Contractor' s management fees	790	8,295	42,660	47,400
(c) Uploading commission	60	630	3,240	3,600
<b>Total</b>	<b>880</b>	<b>9,240</b>	47,520	<b>52,800</b>

26. As regards paragraph 25(a) above, the expenditure of \$1,800,000 is for the cost of TD staff to monitor the management contractor for parking meters and will be absorbed within the existing resources in TD.

27. As regards paragraph 25(b) above, the expenditure of \$47,400,000 is for the management fees for the contractor for parking meters. The contractor will be responsible for the management, operation and maintenance of the parking meter system, such as retrieval of utilisation and management information data

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from each individual on-street parking meter, carrying out the necessary civil works for the installation and suspension of parking meters, operation of the backend computer system, and routine inspection and maintenance and emergency repair of out-of-order meters. The fees will be absorbed from within the existing provision for the contractor's fees for the existing e-Park card operated parking meter system. Subject to the results of an open tender for the new management contract, no additional expenses are expected to be incurred.

28. As regards paragraph 25(c) above, the expenditure of \$3,600,000 is for the fee payable to the card service provider for its provision of transaction clearance and settlement service. Octopus Cards Ltd. is now charging a 1% standard rate for all transport-related services. The fee of \$3,600,000 per annum is largely based on this standard rate of 1% of the annual meter revenue (i.e. around \$300 million per year plus some allowance for meter expansion).

#### **IMPLEMENTATION PLAN**

29. We plan to install the first batch of the new generation of parking meters in late 2002 or early 2003 and to complete the replacement programme by 2004-05. The feasibility of implementing credit cards on the new meters will be reviewed in late 2003 or early 2004. If justified and subject to further funding approval (about \$24 million), additional cards could be incorporated into the new meters from 2004-05.

#### **BACKGROUND INFORMATION**

30. In 1996, we initiated a study on electronic parking meters with a view to replacing the obsolete mechanical parking meters which accepted coins only. After examining different options, we decided to start with a dedicated disposable card parking meter system as a first step because at that time a secure and reliable multi-purpose stored-value card system was still in the development stage and there were no established specifications. Our master plan was to open up the parking system to accept reloadable cards at a later stage when such cards have been tried out. We therefore conducted a trial between March 2000 and March 2001 on the performance of the two electronic purse cards.

31. The Octopus card system did not emerge until late 1997 but had quickly developed into a popular payment card on public transport since 1998-99. To ensure that all reloadable smart cards available in the market would be covered in our feasibility exercise, we conducted a trial between November 2000 and September 2001 on Octopus card operated parking meters to test the technical feasibility of this contactless stored value card for payment of parking meter fees.

32. The Administration's proposal to replace the existing parking meter system with a reloadable card operated parking meter system was discussed by the Transport Advisory Committee on 26 February 2002. Members generally supported the proposal.

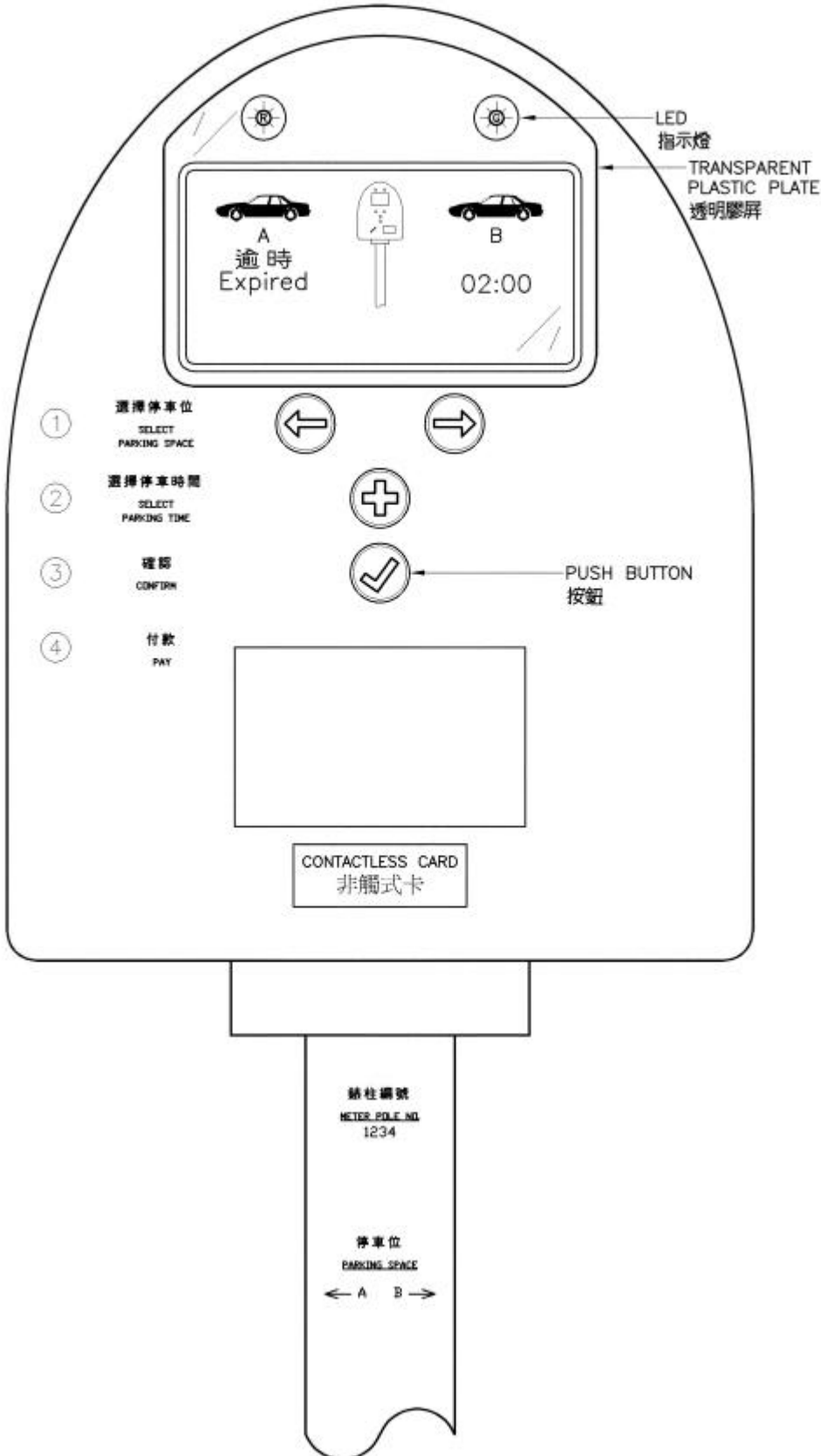
33. We submitted a paper on the proposal to replace the parking meter system to the Legislative Council Panel on Transport on 26 April 2002. The proposal was subsequently discussed at a special Panel meeting on 6 May 2002. Members generally supported the proposal but requested supplementary information on the services to be covered by the annual fee payable to the management contractor and the uploading commission payable to Octopus. We issued a supplementary note on 15 May 2002 providing the above information (Enclosure 3).

Encl. 3

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Transport Bureau  
May 2002

Key Features of Proposed Parking Meter  
擬議停車收費錶的主要特點



**Cost-Benefit Analysis of the Parking Meter System Replacement Programme**

**Enclosure 2 to FCR(2002-03)18**

**Octopus card operated parking meter System (at 2001-02 price level)**

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total	
	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	
<b>Costs</b>												
Non-recurrent												
- expenditure	9,000	46,000	30,000	5,000	0	0	0	0	0	0	90,000	
<b>sub-total</b>	9,000	46,000	30,000	5,000	0	0	0	0	0	0	90,000	
Recurrent												
- contract administration	30	315	1,620	1,800	1,800	1,800	1,800	1,800	1,800	1,800	14,565	
- contractor's fee	790	8,295	42,660	47,400	47,400	47,400	47,400	47,400	47,400	47,400	383,545	
- uploading commission	60	630	3,240	3,600	3,600	3,600	3,600	3,600	3,600	3,600	29,130	
<b>sub-total</b>	880	9,240	47,520	52,800	52,800	52,800	52,800	52,800	52,800	52,800	427,240	
<b>Total costs</b>	9,880	55,240	77,520	57,800	52,800	52,800	52,800	52,800	52,800	52,800	517,240	
<b>Benefits (Savings)</b>												
One-off												
- cost avoidance	0	11,912	33,522	7,657	12,899	0	0	0	0	0	65,990	
<b>sub-total</b>	0	11,912	33,522	7,657	12,899	0	0	0	0	0	65,990	
Annual												
- contract administration	30	315	1,620	1,800	1,800	1,800	1,800	1,800	1,800	1,800	14,565	
- contractor's fee	790	8,295	42,660	47,400	47,400	47,400	47,400	47,400	47,400	47,400	383,545	
- e-Park card	200	2,100	10,800	12,000	12,000	12,000	12,000	12,000	12,000	12,000	97,100	
<b>sub-total</b>	1,020	10,710	55,080	61,200	61,200	61,200	61,200	61,200	61,200	61,200	495,210	
<b>Total benefits</b>	1,020	22,622	88,602	68,857	74,099	61,200	61,200	61,200	61,200	61,200	561,200	
<b>Net Benefits</b>	(8,860)	(32,618)	11,082	11,057	21,299	8,400	8,400	8,400	8,400	8,400	43,960	
<b>Cumulative Benefits</b>		(41,478)	(30,396)	(19,339)	1,960	10,360	18,760	27,160	35,560	43,960		
<b>Assumptions:</b>												
1	1,000 new dual-bay Octopus card operated meters will be installed by Feb 2003;											
2	3,000 new dual-bay Octopus card operated meters will be installed by Jan 2004; and											
3	6,000 new dual-bay Octopus card operated meters will be installed by 2004-05.											

**LegCo Panel on Transport  
Parking Meter System Replacement Programme**

**Supplementary Information**

**Purpose**

At the Panel meeting held on 6 May 2002, Members were briefed on the proposal to replace the existing e-Park card operated parking meter system with a reloadable smart card system. At the meeting, Members requested for supplementary information on the fees payable to the management contractor and the uploading commission payable to Octopus Cards Limited.

2. This paper provides Members with the supplementary information.

**Fees for the Management Contractor**

3. Under the current contract, the parking meter management contractor has overall responsibility for the management, operation and maintenance of all 17,000 parking meters installed in about 750 streets throughout the territory. Its major contractual duties are summarised below:

- a) **Management:** to manage the parking meter system, including operation of a customer service hotline to handle complaints and enquiries; conducting regular surveys on parking demand and utilisation; setting up a distribution network for sale of e-Park cards and payment of the expenditure; storage and safekeeping of e-Park cards; procurement of the necessary signs and poles for parking meter operations; assistance to Government in exploring new parking meter technology;
- b) **Operation:** to operate the parking meter system, including retrieval of utilisation and management information data from each individual on-street parking meter; carrying out the necessary civil works for the installation/suspension of parking meters; operation of the backend computer system; investigation of complaints received; implementation of Transport Department's parking meter expansion programme; replenishment of all consumables; and

/c) .....

- c) **Maintenance:** to maintain the parking meter system, including routine inspection and maintenance; emergency repair of out-of-order meters within a performance pledge of 45 minutes for all meters in the urban and New Town areas and 90 minutes for those on Lantau Island; repair and maintenance of the backend computer hardware and software; procurement and maintenance of a stock of 10% spares.

4. Overall, the contractor needs to engage more than 110 staff for performing the duties under the management contract. The contractor is also responsible for all costs arising from its contractual responsibilities. Prior to the privatisation of the management of parking meters, the daily operation and maintenance of these transport facilities were undertaken by three government departments, namely the Transport Department, the Electrical and Mechanical Services Department and the Highways Department at an annual cost of about \$72m in 1994.

5. Upon conversion to the new generation Octopus operated system, the contractor's obligations will remain largely the same. The only difference is that the contractor will no longer have to perform duties related to the distribution and handling of e-Park cards. However, the contractor has to engage additional staff to perform more frequent data retrieval and uploading of meter revenue data to ensure prompt settlement of the revenue collected by Octopus on Government's behalf.

6. During the transition period from 2002/03 and 2004/05, the management contractor will have to manage two parking meter systems (e-Park card operated meters and Octopus operated meters) at the same time. He would be required to closely liaise with the existing and new parking system suppliers, as well as the card service provider to implement the phasing out programme. Nearing completion of the conversion, he would have to wind down the e-Park card distribution as well as to monitor the refund of the residual value of e-Park cards to the purchasers. There would be additional responsibilities both during and after the transition period and the savings in the contractor's fee could only be realised in the long run after full replacement of the existing parking system.

7. The current management contract will expire in September 2003. In view of the foregoing changes in responsibility, the annual fee for the next management contractor is estimated to be around \$47m, similar to the amount paid to the management contractor on introduction of the e-Park card operated meters. The exact management fees payable, however, will be subject to the results of an open tender for the new management contract.

**/Fees .....**

### **Fees for Uploading Commission**

8. The uploading commission is a fee payable to the card service provider for its provision of transaction clearance and settlement services. Octopus Cards Ltd is now charging a 1% standard rate for all transport-related services. The fee of \$3.6m per annum is largely based on this standard rate of 1% of the annual meter revenue (i.e., around \$300m per year plus some allowance for meter expansion).

9. While the management contractor fees and the uploading commission amount to about \$51m (\$47.4m plus \$3.6m) under the Octopus operated parking meter system, the proposed system is also expected to generate a recurrent annual saving of around \$8.4m (largely due to the savings in e-Park card production) as compared to the existing parking meter system.

### **The Way Forward**

10. We will seek the approval of the Finance Committee on 24 May 2002 on funding for the implementation of the project.

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Transport Bureau  
May 2002