

***Operation of Toll Roads, Bridges and Tunnels  
in Selected Places***

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## Executive Summary

1. Apart from the old Severn Bridge of the United Kingdom (UK) the construction of which is funded by public money, all the toll facilities studied are financed and built by private consortia. While the 91 Express Lanes of the United States (US), the Dulles Greenway of the US, the Second Severn Crossing of the UK and the Eastern Distributor of Australia adopt the Build-Operate-Transfer (BOT) model or its variants, including the Build-Transfer-Operate or the Build-Own-Operate-Transfer model, the A1(M) motorway of the UK is a Design, Build, Finance and Operate (DBFO) project.
2. Under the DBFO contract of the A1(M), the role of the private operator is similar to its counterparts in BOT projects. However, the private operator in this case receives payments from the government in the form of shadow tolls instead of charging users directly. The 91 Express Lanes, purchased from the private operator by a public agency, is not being operated as a freeway but a toll road. The purpose of toll collection is not for profit-making but for improving both the toll road and the nearby freeway and maximizing the free flow of traffic.
3. Except for the 91 Express Lanes, all the public authorities concerned compared the costs of privately financing the development of the selected transport facility studied with the publicly-financed option before deciding on the model of development. Three of the four comparisons show that a traditional publicly-funded facility would have a lower cost of capital. However, the public authorities of those places still opt for the privately-financed model for various reasons.
4. Although the evaluation of options for the A1(M) showed that the privately-financed option would bring a saving of £50 million (HK\$713 million), the National Audit Office did not agree with the assessment. The National Audit Office opined that the result was sensitive to small changes in the discount rate, and therefore, this kind of quantified comparison could be no more than guides to the exercise of judgement.
5. Two of the concessions studied, namely the A1(M) and the Eastern Distributor, are of fixed duration, whilst the remaining three are of variable length. The concession of both the 91 Express Lanes and the Dulles Greenway will end earlier if their debts are repaid earlier than expected. On the other hand, the Severn bridges employ a flexible concession term to cope with the uncertain risks affecting the revenue of the private operator, for instance, uncertain traffic volumes. The concession ends when the cumulative target revenue has been reached; whereas the concession will be extended if the target cannot be achieved within the projected date.
6. Either a toll policy is adopted by or a related statute is enacted for three of the transport facilities studied, namely the 91 Express Lanes, the Dulles Greenway and the A1(M), which ensures that the private operator will receive no more than a reasonable return or that some public objectives will be achieved, such as managing traffic volumes and encouraging the private operator to adopt measures enhancing safety and avoiding closure of lanes.

7. The 91 Express Lanes and the Dulles Greenway are the only two toll facilities studied which have a public consultation process before any toll adjustment is made. The Dulles Greenway is the only toll road studied that needs approval of the regulatory authority for the adjustment of its toll ceilings. Within the approved toll ceilings, the private operator is free to adjust the toll rates.
8. The 91 Express Lanes is the only transport facility among the facilities studied that uses traffic volumes as the basis for adjusting rush hour toll rates. The toll rates for a particular hour, day and direction will go up if the traffic volume has consistently exceeded a specified percentage of the maximum optimal capacity which may lead to congestion. Similarly, the toll rates will be reduced when the traffic volume falls below the specified level on a consistent basis.
9. Apart from the Dulles Greenway, all the transport facilities studied have their toll adjustments made entirely or partly on the basis of inflation or a combination of indexes which include inflation. However, only the Severn bridges may have their tolls cut in accordance with deflation.
10. The transport facilities studied charge different tolls according to the type of vehicles, and two of them, the 91 Express Lanes and the Dulles Greenway, charge higher rates for rush hours so as to manage traffic demand. The 91 Express Lanes also gives discounts to carpools of three or more persons and allows them to ride free during Non-Super Peak hours.
11. The tolls charged by the transport facilities studied have been raised at various rates since they opened to traffic. Owing to the free rides and discounts for carpools, the average toll of the 91 Express Lanes has decreased from US\$2.59 (HK\$20.20) prior to the public agency's purchase to US\$2.50 (HK\$19.50). Although the average toll rate of the 91 Express Lanes has decreased, the tolls for particular rush hours have increased substantially.
12. Both the 91 Express Lanes and the A1(M) have been making profits, whilst the Severn bridges had operating profits but suffered a loss after scheduled and voluntary repayment of debts and tax in both 2003 and 2004. The Dulles Greenway has been losing about US\$25 million (HK\$195 million) each year since it opened to traffic in 1995. In recent years, its revenues have covered operating costs, but not interest and principal payments of its debts. The financial performance of the Eastern Distributor is not available.
13. The Severn bridges are the only transport facilities that are required to submit their audited annual accounts to the legislature. The other toll facilities are only required to submit their audited accounts to the regulator, or the related government department or advisory committee.
14. Both the Eastern Distributor and the A1(M) specify the mechanism to re-negotiate and the scope of possible changes to be made in the contract. The other three transport facilities studied allow re-negotiation of certain contract terms, but details of the re-negotiation mechanism are not available.
15. All selected transport facilities, except for the Dulles Greenway, have a dispute resolving mechanism in their concession or contract. Disputes may be referred to independent arbitration if they cannot be resolved through negotiation.

# **Operation of Toll Roads, Bridges and Tunnels in Selected Places**

## **Chapter 1 – Introduction**

### **1.1 Background**

1.1.1 The Panel on Transport of the Legislative Council (Transport Panel), at its meeting on 27 May 2005, requested the Research and Library Services Division (RLSD) to conduct a research on the operation of toll roads, bridges and tunnels in selected places.

1.1.2 Concerned about the impacts of the recent toll increase of the Eastern Harbour Crossing and other toll tunnels, the Panel agreed that the research should, in particular, examine the toll adjustment mechanism and related matters in respect of projects involving private sector funding. Members also suggested RLSD to study the use of shadow tolls in the United Kingdom (UK) and to include a case study of toll transport facilities in Shanghai.

### **1.2 Scope of research**

1.2.1 RLSD identified the Xu Pu Bridge as a potential study subject in Shanghai. Although attempts have been made to gather relevant data on the bridge through the related government department and the former owner of the bridge as well as secondary sources, only limited information has been collected as at the publication of this report. Therefore, this report does not cover Shanghai.

1.2.2 The following transport facilities are studied in this report:

- (a) The 91 Express Lanes of the State of California (California) of the United States (US);
- (b) The Dulles Greenway of the State of Virginia (Virginia) of the US;
- (c) The new and old Severn bridges of the UK;
- (d) The A1(M) between Alconbury and Peterborough of the UK; and
- (e) The Eastern Distributor of the State of New South Wales (NSW) of Australia.

1.2.3 The transport facilities are selected in consideration of the special features of their operations, particularly the toll adjustment mechanisms and forms of ownership. In the case of the 91 Express Lanes in California, it involves a change in the mode of operation from private to public. Toll adjustment of the 91 Express Lanes is triggered if the hourly traffic volumes are "consistently too heavy" for a specified period of time. On the other hand, toll adjustment of the Dulles Greenway in Virginia requires prior approval of a state authority.

1.2.4 In the UK, the Severn bridges (connecting England and Wales) comprise two bridges built in different periods. The duration of the concession ends once the amount of revenue received by the concessionaire has reached the amount specified in the agreement. The A1(M) between Alconbury and Peterborough is built and operated by a private company, which is remunerated directly by the public authority in the form of a "shadow toll" primarily related to road usage. The Eastern Distributor in Sydney has its tolls adjusted quarterly according to a rate based on inflation and the average earnings.

1.2.5 The selected toll roads, bridges and tunnels are examined in the following aspects:

- (a) background of the development of the selected toll transport facilities, including the terms of concession and the mode of private sector participation;
- (b) cost and financing of the project;
- (c) toll policy, toll rate levels and adjustment mechanism;
- (d) cap on profits or rate of return (if any);
- (e) financial performance and financial reporting; and
- (f) dispute resolving mechanism and re-negotiation framework (if any).

### **1.3 Methodology**

1.3.1 This research adopts a desk research method, which involves Internet research, literature review and analysis, and correspondence with the relevant authorities in the places studied.

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## Chapter 2 – The 91 Express Lanes of the State of California

### 2.1 Background

#### Basic information

2.1.1 The 91 Express Lanes is a four-lane, 16.1-km toll road built in the middle of the eight-lane Riverside Freeway in California of the US. The 91 Express Lanes and the Riverside Freeway are, as a whole, known as the State Route 91, connecting the residential areas in Riverside and San Bernardino Counties with major employment centres in Orange and Los Angeles Counties. Users have reported saving about 36 minutes per trip in the afternoon by using the toll road. Saving time is considered to be the reason for motorists to choose the toll road over the freeway more frequently.<sup>1</sup>

#### Purchase by public authority

2.1.2 The 91 Express Lanes was originally a Build-Transfer-Operate (BTO) project<sup>2</sup>. The idea of privately financing the construction of the 91 Express Lanes was brought forth in response to the need for congestion relief on the Riverside Freeway when public funds were not available in the late 1980s. The California Department of Transport (Caltrans) awarded the project to a private consortium called California Private Transportation Company (CPTC)<sup>3</sup>. The franchise agreement was signed in January 1991 and construction started in 1993. Prior to opening the toll road to traffic on 27 December 1995, CPTC formally transferred ownership of the facility to the California state government. Caltrans then leased it back to CPTC for 35 years and the franchise agreement would end on 31 December 2030. An electronic toll collection system has been in use since the opening of the road.

2.1.3 There was a "non-compete" clause in the franchise agreement between CPTC and Caltrans, which prohibited any capacity-enhancing improvements to the Riverside Freeway until 2030, in order to protect CPTC's investment. In April 2002, the Orange County Transportation Authority (OCTA)<sup>4</sup> reached an agreement in concept to purchase CPTC's interest in the franchise agreement so as to eliminate this "non-compete" clause.

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<sup>1</sup> Orange County Transportation Authority (2004).

<sup>2</sup> Kopp, J. C. (1997). The BTO model was adopted to provide additional protection to the private sector from tort liability during operation as the ownership of the toll road was transferred to the state immediately after the completion of construction. The state government is immune to tort claims on public property.

<sup>3</sup> It was an entity formed by subsidiaries of Level 3 Communications, Inc., Compagnie Financiere et Industrielle des Autoroutes (Cofiroute), and Granite Construction Inc.

<sup>4</sup> OCTA is Orange County's primary transportation agency, which funds and supervises Metrolink rail services, operates bus services, plans and funds all freeway improvements in Orange County.

2.1.4 This purchase not only allows improvements to be made to the congested Riverside Freeway<sup>5</sup> and excess toll road revenue to be directed into improvements along both the Riverside Freeway and the 91 Express Lanes, but also enables OCTA to maximize the throughput of vehicles via managing the transport facilities.

2.1.5 In September 2002, the Governor of California signed the Assembly Bill 1010 into law, enabling OCTA to purchase the toll road from CPTC and giving OCTA the authority to collect toll on the 91 Express Lanes.

2.1.6 OCTA took possession of the 91 Express Lanes on 3 January 2003, replacing CPTC as the holder of the franchise agreement and operating the 91 Express Lanes for the remaining term of the franchise. The franchise may expire earlier if OCTA has repaid its debts in full and recouped its investment.<sup>6</sup> At the end of the franchise agreement, OCTA will revert the motorway to Caltrans at no cost. OCTA has awarded a three-year contract to one of the partners of the original toll road operator, Cofiroute, to handle the daily operations of the toll road.

2.1.7 OCTA has formed an advisory committee<sup>7</sup> with other local government officials. This State Route 91 Advisory Committee meets quarterly to review and make recommendations on issues such as the toll structure, operation, maintenance, use of toll revenues, and improvements along the 91 Express Lanes, and to oversee the Riverside Freeway.<sup>8</sup>

### Cost and financing

2.1.8 The state government did not consider the publicly-financed option before granting the franchise to the private consortium as the state did not possess the financial resources at that time. The 91 Express Lanes cost around US\$130 million (HK\$1.0 billion) to build. The construction cost was relatively low as it was constructed in a built-up area and in the middle of an existing highway. CPTC issued taxable bonds of US\$135 million (HK\$1.1 billion) at a rate of 7.63% to finance the construction of the toll road. The debt financing was provided by a group of commercial banks and institutional lenders.<sup>9</sup> In addition, OCTA provided a subordinated loan of US\$7 million (HK\$54.6 million) to CPTC.<sup>10</sup>

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<sup>5</sup> Orange County Transportation Authority (2002).

<sup>6</sup> Section 2(k) of the Assembly Bill 1010.

<sup>7</sup> OCTA and the Riverside County Transportation Commission have each appointed five representatives to the committee. Representatives from the Caltrans district offices in Orange County and the Inland Empire, as well as the San Bernardino Associated Governments, have also been appointed as non-voting members.

<sup>8</sup> Section 2(h) of the Assembly Bill 1010.

<sup>9</sup> The website of Caltrans.

<sup>10</sup> Levy (1996).

2.1.9 In January 2003, OCTA purchased the 91 Express Lanes for US\$207.5 million (HK\$1.7 billion)<sup>11</sup>, consisting of the assumption of CPTC's US\$135 million (HK\$1.1 billion) taxable bonds and an additional payment of US\$72.5 million (HK\$565.5 million) in cash to CPTC. To fund the immediate debt service payment required and to establish operations, the 91 Express Lanes Fund<sup>12</sup> borrowed US\$83.6 million (HK\$652.4 million) from other OCTA funds at OCTA's rate of return on short-term investments.<sup>13</sup>

2.1.10 In late 2003, OCTA issued approximately US\$200 million (HK\$1.6 billion) of tax-exempt toll road revenue refunding bonds to refinance the taxable bonds. Some of the refunding bonds are fixed-rated, while others are variable-rated with a synthetic fixed rate of around 4% achieved through interest rate swap. By refinancing, OCTA expects to save, on average, US\$1.1 million (HK\$8.6 million) per year until 2028.

## 2.2 Toll rates and toll adjustment mechanism

### Toll policy under private operator

2.2.1 Under Section 143(d) of the Streets and Highways Code, the franchise agreement required that the toll revenues be applied to *"payment of the capital costs of the project, the costs associated with operations, toll collection, administration of the facility, reimbursement to the state for the costs of maintenance and police services, and a reasonable return on investment to the private entity"*.

2.2.2 The agreement also required that any excess revenue either be applied to any indebtedness incurred by CPTC in respect of the project or be paid into the State Highway Account, or both.

### Toll adjustment mechanism under private operator

2.2.3 The California government regulated the rate of return<sup>14</sup> of CPTC, instead of directly regulating the toll rates. CPTC was free to set the toll rates, as long as the resulting return was within the ceiling return of 17% set out in the franchise agreement.<sup>15</sup>

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<sup>11</sup> Engel et al. (2005). The original private operator of the 91 Express Lanes once set the selling price of the highway at US\$274 million (HK\$2.1 billion).

<sup>12</sup> It is one of the enterprise funds of OCTA.

<sup>13</sup> The interest rate, adjusted each January, was 2.48% on 30 June 2004.

<sup>14</sup> Levy (1996). The rate of return was calculated on the basis of the net present value of cash flows.

<sup>15</sup> Gómez-Ibáñez and Meyer (1993).

2.2.4 The private toll road company could earn up to six percentage points above its allowed rate of return ceiling if it met certain public objectives, including increasing vehicle occupancy, reducing toll road operating costs or reducing accident rates. Critics were of the view that such "incentive return on investment points" was too generous or unnecessary.<sup>16</sup>

2.2.5 The inflation rate of the US was 3.6% when CPTC signed the franchise agreement in 1991, and was 2.7% in 2004. The interest rate of 20-year Federal Treasury Bills when construction of the 91 Express Lanes started in 1993 was 6.29%.

#### Toll policy under public operator

2.2.6 The Assembly Bill 1010 which enables OCTA to purchase the toll road states that "*current tolls should be reduced and to the extent feasible, the duration of the imposition of tolls should be minimized, but tolls shall be adequate to assure the payment of all financing required to acquire the facilities...*".<sup>17</sup>

2.2.7 The Assembly Bill 1010 also provides that toll revenues should only be used "*for capital and operating expenses, including payment of purchase costs, debt service, and satisfaction of other covenants and obligations relating to indebtedness, and for transportation related to the State Highway Route 91*".<sup>18</sup> OCTA has to collect tolls that generate enough revenue to maintain the Debt Service Coverage Ratio<sup>19</sup> to be at least 1.30 to 1.00.<sup>20</sup>

2.2.8 On 14 July 2003, the Board of Directors of OCTA adopted a new toll policy for the 91 Express Lanes. The goals of the toll policy are to:

- "(a) *Provide a safe, reliable, predictable commute for 91 Express Lanes customers;*
- (b) *Optimize vehicle throughput at free flow speeds;*
- (c) *Pay debt service and maintain debt service coverage;*
- (d) *Increase average vehicle occupancy;*

<sup>16</sup> Gómez-Ibáñez and Meyer (1993). It was argued that operating cost reductions and safety seemed to be largely beyond the operator's control.

<sup>17</sup> Section 1(i) of the Assembly Bill 1010.

<sup>18</sup> Section 2(e) of the Assembly Bill 1010.

<sup>19</sup> Debt service coverage ratio refers to the ratio of cash flow available to meet debt service for a certain period to debt service for such period. Debt service refers to all payments of principal, interest, premiums (if any), fees and other amounts made (including by way of prepayment) or required to be made by OCTA during such period under the bond documents.

<sup>20</sup> Orange County Transportation Authority (2003).

- (e) *Balance capacity and demand to serve customers who pay tolls as well as carpoolers with three or more persons who are offered discounted tolls;*
- (f) *Generate sufficient revenue to sustain the financial viability of the 91 Express Lanes;*
- (g) *Ensure all bond covenants are met; and*
- (h) *Repay OCTA's internal borrowing and provide net revenues for Riverside Freeway/State Route 91 corridor improvements."*<sup>21</sup>

#### Toll adjustment mechanism under public operator

2.2.9 The State Route 91 Advisory Committee may review any changes to the toll structure proposed by OCTA. To do so, the Assembly Bill 1010 provides that it should place an item on a regularly scheduled agenda for public comment and consideration.<sup>22</sup> Meanwhile, OCTA is not required to obtain the approval of the State Route 91 Advisory Committee before it changes the toll rates. Nonetheless, OCTA has committed to informing the public at least 10 days before any toll changes take place.

#### *Super Peak hours*<sup>23</sup>

2.2.10 OCTA is implementing a congestion management policy. The policy is designed to ensure that the traffic volume for any given hour remains within design capacity. The maximum number of vehicles that can predictably travel through the 91 Express Lanes at free-flow speed is about 3 400 vehicles per hour in one direction. When traffic approaches this volume, congestion may occur.

2.2.11 Once the hourly traffic volume is consistently too heavy and there is the potential for traffic congestion, a rate adjustment will be made. This congestion pricing strategy primarily involves altering the tolls of the eastbound traffic during the evening rush hours, i.e. approximately one to four hours in a 24-hour period.

2.2.12 The tolls during a Super Peak hour are to be determined as follows:

- (a) Hourly, day, and directional traffic volumes will be continually monitored on a rolling 12 consecutive week basis;

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<sup>21</sup> Orange County Transportation Authority (2003).

<sup>22</sup> Section 2(h)(2) of the Assembly Bill 1010.

<sup>23</sup> Super Peak refers to 92% or more of the maximum optimal capacity, i.e. 3 128 or more vehicles per hour, per day, and per direction.

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- (b) Hourly, day, and directional traffic volumes of 3 128 vehicles (i.e. 92% of the maximum optimal capacity) or more will be marked for further review;
  - (c) If the hourly, day, and directional traffic volumes are consistently, i.e. any six of 12 consecutive weeks<sup>24</sup>, at a Super Peak level, then the toll rate for that hour, day and direction may be increased; and
  - (d) The tolls will be increased, based on the average vehicle volume of the marked hour, day, and direction identified as follows:
    - (i) if the average marked vehicle volume is 3 300 (i.e. 97% of the maximum optimal capacity) or more, then the toll shall be increased by US\$1.00 (HK\$7.80); and
    - (ii) if the average marked vehicle volume is between 3 200 (i.e. 94.1% of the maximum optimal capacity) and 3 299 (i.e. 97% of the maximum optimal capacity), then the toll shall be increased by US\$0.75 (HK\$5.85).

2.2.13 The adjusted toll will be kept at that level for at least six months. Six months after the toll increase, the traffic volumes for the hour, day and direction that the toll has been increased will be reviewed for the most recent 12 consecutive weeks<sup>25</sup>. If the traffic volumes are less than 2 720 vehicles (i.e. 80% of the maximum optimal capacity) per hour, per day, and per direction in six or more of those weeks, then the traffic volumes for that hour, day and direction for the 12 consecutive weeks will be averaged. If the resulting average traffic volume is less than 2 720, then the toll will be reduced by US\$0.50 (HK\$3.90) to stimulate demand. Super Peak hours that were not adjusted in the previous 12 months will be adjusted annually in accordance with the Inflation Factor (Please refer to paragraphs 2.2.15 and 2.2.16).

2.2.14 According to OCTA, under this congestion management policy, traffic has spread out and speeded up. For instance, in the summer of 2004, eastbound rush-hour traffic increased by only 3% to 4%, while travel during non-rush hours went up 14%. The amount of overall traffic also jumped more than 12%.

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<sup>24</sup> The six weeks exclude any week with a holiday or major traffic jam anomaly.

<sup>25</sup> The 12 weeks exclude any week with a holiday or major traffic jam anomaly.

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*Non-Super Peak hours*

2.2.15 The tolls for Non-Super Peak hours are adjusted annually based on the Inflation Factor<sup>26</sup>. If the Inflation Factor turns out to be a negative figure in a particular year, the toll rates will be frozen rather than reduced in that year. The Inflation Factor is a rate calculated from the weighted combination of the Labour Index Adjuster<sup>27</sup>, which measures labour cost, and the Consumer Price Index Adjuster<sup>28</sup>, which measures inflation.

2.2.16 The Non-Super Peak tolls were frozen from the time OCTA started negotiating with CPTC to buy the 91 Express Lanes up to July 2004. Since 1 July 2004 and at the beginning of each fiscal year thereafter, the Inflation Factor has been identified and applied to all Non-Super Peak and Super Peak hours that were not adjusted in the previous 12 months. All tolls are rounded up or down to the nearest five-cent increment. OCTA does not consider factors other than the inflation rate and Labour Index Adjuster in the annual adjustment of the tolls.

*Carpools of three or more*

2.2.17 Commuters who drive in a carpool of three or more persons are able to use the 3+ Lane of the 91 Express Lanes for free, except when travelling eastbound, Monday through Friday between the hours of 4 p.m. and 6 p.m. During those rush hours, eastbound commuters who drive in a carpool of three or more persons receive a 50% discount on the posted toll. OCTA believes that this programme works as the average number of riders per vehicle has increased from 1.36 to 1.49 during the morning rush hours, and from 1.38 to 1.42 during the evening rush hours.

Termination of toll collection

2.2.18 When the 91 Express Lanes was still in private hands, the law provided that Caltrans might continue to charge tolls for the use of the toll road after the lease held by the private consortium had expired.<sup>29</sup>

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<sup>26</sup> According to the toll policy of the 91 Express Lanes, the Inflation Factor is calculated as follows:  
(1) 0.75 times the product of (A) the hourly toll for the immediately preceding fiscal year, times (B) a fraction, the numerator of which shall be the Labour Index Adjuster for June of the prior fiscal year and the denominator of which shall be the Labour Index Adjuster for June of the year immediately preceding such fiscal year, plus  
(2) 0.25 times the product of (A) the hourly toll for the immediately preceding fiscal year, times (B) a fraction, the numerator of which shall be the CPI Index Adjuster for June of the prior fiscal year and the denominator of which shall be the CPI Index Adjuster for June of the year immediately preceding such fiscal year.

<sup>27</sup> It refers to the Labour Index Adjuster for the Los Angeles-Riverside-Orange County area.

<sup>28</sup> It refers to the Consumer Price Index for the Western Region of the US.

<sup>29</sup> Section 143 of the Streets and Highways Code before the amendment by the Assembly Bill 1010.

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2.2.19 After the purchase of the 91 Express Lanes by OCTA, the Assembly Bill 1010 provides that the collection of tolls for the use of the 91 Express Lanes will terminate upon its payment in full of the bonds issued or at the expiration of the franchise agreement, i.e. 31 December 2030, whichever occurs earlier, and the 91 Express Lanes will be reverted to Caltrans at that time.<sup>30</sup>

### Toll rates

#### *Current rates*

2.2.20 Effective from 29 August 2005 onwards, tolls on the 91 Express Lanes range from US\$1.10 (HK\$8.58) to US\$3.90 (HK\$30.42) for a one-way westbound trip and from US\$1.10 (HK\$8.58) to US\$7.75 (HK\$60.45) for a one-way eastbound trip, based on the day of the week and time of the day. The 91 Express Lanes also has a holiday toll schedule, charging different rates for various holidays to reflect holiday traffic patterns. Commuters who travel in specified hours around midnight may travel for free.

#### *Rate of toll adjustment*

2.2.21 CPTC imposed six toll adjustments from December 1995 to December 2002, prior to the sale to OCTA.

2.2.22 After the sale to OCTA, as the carpools of three or more persons are allowed to ride free or at a discount, the average toll paid has decreased from US\$2.59 (HK\$ 20.20) in January 2003 (just prior to OCTA's purchase) to the current average of US\$2.50 (HK\$19.50) per trip.

2.2.23 The Super Peak tolls have been raised seven times (US\$0.75 (HK\$5.85) each time) since January 2003. Only the toll rates for particular peak hours which had reached congestion were adjusted each time. Therefore, the congestion adjustments affect only one to four hours during a 24-hour period in general. Overall, the toll hike for the Super Peak hour between 4 p.m. and 5 p.m. on Thursdays is most significant. It has increased by 63% from US\$4.75 (HK\$37.05) in January 2003 to the current toll of US\$7.75 (HK\$60.45).

2.2.24 All Non-Super Peak tolls were frozen at the November 2001 levels up to July 2004, and have been adjusted annually based on the Inflation Factor afterwards. The Inflation Factor in 2004 was 3.64%.

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<sup>30</sup> Sections 1(i) and 2(d) of the Assembly Bill 1010.

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## 2.3 Financial performance and financial reporting

### Financial performance and cap on return

#### *Private operator*

2.3.1 Traffic volumes of the 91 Express Lanes were lower than anticipated in the first year of its operation due to California's recession. Since then, traffic gradually increased and the operator reported profits by 1998.<sup>31</sup> The annual revenue also increased steadily over the years. In any event, under the franchise agreement, the rate of return was capped at 17% which had never been achieved by CPTC. The rate of return was calculated on the basis of the net present value of cash flows<sup>32</sup>. However, since CPTC is a private company, its rates of return are not available.

#### *Public operator*

2.3.2 OCTA does not operate the 91 Express Lanes on a for-profit basis per se. According to the Assembly Bill 1010,<sup>33</sup> any funds available beyond operating requirement should be utilized to benefit the 91 Express Lanes or the Riverside Freeway. This is different from the case of CPTC where funds available beyond operating costs would go to the shareholders as profits. Therefore, OCTA does not apply any rate of return to measure the return of its investment and there is no cap as such. According to OCTA, current toll revenues are sufficient to cover operating expenses and debt service. It also has positive cash flows to improve and maintain the road, and contribute to the improvements of the Riverside Freeway.

2.3.3 According to OCTA, its revenue rose 8.4% from US\$28.8 million (HK\$224.6 million) in 2003 to US\$31.2 million (HK\$243.4 million) in 2004. The revenue achieved in 2004 was record-breaking.

### Financial reporting

2.3.4 OCTA is required to conduct an audit on an annual basis of the toll revenues collected and expenditures made. The audit report should be provided to the State Route 91 Advisory Committee<sup>34</sup> while quarterly and annual audit reports should be submitted to Caltrans.

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<sup>31</sup> Infrastructure Management Group, Inc. (2000).

<sup>32</sup> Net present value is the difference between cash inflows and outflows, with the cash flows being discounted to take account of the fact that money now is worth more than money later. It is used in capital budgeting to analyze the profitability of an investment or project. Internal rate of return is the discount rate which sets the net present value of a project equal to zero.

<sup>33</sup> Section 2(e) of the Assembly Bill 1010.

<sup>34</sup> Section 2(h)(3) of the Assembly Bill 1010.

## **2.4 Dispute resolving mechanism and re-negotiation framework**

2.4.1 When CPTC operated the 91 Express Lanes, its franchise agreement stated that any controversy arising with respect to the reasonable return that was not satisfactorily resolved should be resolved in arbitration.

2.4.2 After OCTA purchased the 91 Express Lanes, there is a dispute resolving mechanism written in the franchise agreement. Disputes may be referred to arbitration. In addition, OCTA and Caltrans may re-negotiate the franchise agreement if the road is to be extended or more time is needed to repay debts.

## Chapter 3 – The Dulles Greenway of the State of Virginia

### 3.1 Background

#### Basic information

3.1.1 The Dulles Greenway<sup>35</sup> is a 22.5-km toll road connecting Washington Dulles International Airport with Leesburg in Loudon County, Virginia. It extends from a state-owned toll road<sup>36</sup> at Dulles International Airport into the rapidly developing western outskirts of the Washington, District of Columbia metropolitan area. Originally built as a four-lane road, it is being widened to six lanes along the entire length.

3.1.2 The Dulles Greenway is a built-operate-transfer (BOT) project initiated by the private sector instead of the state government.<sup>37</sup> A group of private entrepreneurs, organized as the Toll Road Corporation of Virginia (TRCV), proposed to build a toll road connecting the Dulles International Airport and Leesburg in 1986. It was later restructured as Toll Road Investors Partnerships I, which bought the land and built the Dulles Greenway for profit, in anticipation of future growth and development in the area. Construction started in 1993 and the road was opened to traffic on 29 September 1995, six months ahead of schedule. The partnership was further restructured as Toll Road Investors Partnership II<sup>38</sup> (TRIP II) which currently operates the toll road. An electronic toll collecting system has been in use since May 1996.

3.1.3 The Dulles Greenway operator and the Virginia state government do not have any agreement prohibiting the development of freeways nearby or improvement of existing freeways. In fact, there is a freeway, Route 7, running parallel to the Dulles Greenway, but with some cross roads and numerous traffic lights. Road users travelling on the Dulles Greenway may save 10 to 15 minutes over Route 7.

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<sup>35</sup> The road was first named the Dulles Toll Road Extension in the planning stage and was renamed the Dulles Greenway to express "the commitment towards the environment".

<sup>36</sup> The state-owned toll road is called the Dulles Toll Road.

<sup>37</sup> The Virginia Highway Corporation Act of 1988 authorizes the private development of toll roads.

<sup>38</sup> TRIP II is a limited partnership. It originally consisted of AIE L.L.C., the Shenandoah Group and Kellogg Brown & Root, Inc. of Houston as limited partners, and the Shenandoah Greenway Corporation as the general partner which had sole authority for the management of TRIP II. Macquarie Infrastructure Group (MIG) bought the 13.333% interest held by Kellogg Brown & Root, Inc. and has entered into agreements to provide loans against and hold long-dated options over the 86.7% partnership interest of the other two limited partners. MIG has also acquired 100% interest of the general partner of TRIP II.

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### Term of concession

3.1.4 The State Corporation Commission (SCC)<sup>39</sup> regulates the toll structure of the Dulles Greenway. SCC granted a certificate of authority<sup>40</sup> to TRIP II in 1990, which was originally planned to expire on 2 April, 2036.

3.1.5 SCC<sup>41</sup> may modify the termination date of the certificate of authority in order to take into account any refinancing, where the refinancing or modification is *"in the public interest, or any refinancing for the purpose of expansion, or early termination of the original permanent financing"*<sup>42</sup>.

3.1.6 Due to its plan of refinancing, TRIP II requested an extension of its certificate of authority in 2001. SCC approved the extension of the concession as significant capital was needed to fund improvements, whilst funding through higher tolls would discourage the use of the Dulles Greenway and reduce revenues.

3.1.7 The termination date is extended to the date when the final debt, currently scheduled for 2056, is repaid. If the loan is paid off earlier, the certificate of authority will end earlier. If the loan is paid off after 2056, the certificate of authority will be extended to no later than 2066, unless modified by a new SCC order. Upon the termination of the certificate of authority, the toll road will be transferred to the Virginia state government at no cost.<sup>43</sup>

### Comparison of publicly-financed and privately-financed options

3.1.8 Although SCC was not required to compare the cost of the privately-financed option with the publicly-financed option before granting the certificate of authority to TRIP II, the staff of SCC prepared a comparison for SCC's consideration. The comparison showed that the publicly-financed option would be cheaper, but it involved the use of public funds. On the other hand, some academics<sup>44</sup> believed that whether the public alternative was cheaper or not depended largely on whether one looked at it from a motorist's view or a taxpayer's view. In any event, SCC chose the privately-financed option. The primary reason was that as the objective of the building of the Dulles Greenway was not to relieve traffic congestion, but to aid the development of the area and, from the perspective of the private consortium which initiated the project, to make profit, the Dulles Greenway did not have sufficient priority to be built by public funding.

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<sup>39</sup> SCC regulates public utilities such as electricity, telephone and gas. The Dulles Greenway is the only toll road regulated by SCC.

<sup>40</sup> It is an order made by SCC, authorizing the private consortium to operate the Dulles Greenway.

<sup>41</sup> SCC may modify the termination date of the certificate of authority at the request of the operator or the Virginia Department of Transportation, or out of its own initiative.

<sup>42</sup> Section 56-551 of the Virginia Highway Corporation Act of 1988.

<sup>43</sup> Ibid.

<sup>44</sup> Gómez-Ibáñez and Meyer (1993). They argued that a prospective motorist on the Dulles Greenway would probably be better off with the public option, since the public option would save money from tax-exempt financing devices and shift the risk of costs and early year losses from road investors to state taxpayers. However, from the perspective of the state, they believed that the public and private costs appeared roughly comparable.

## Cost and financing

3.1.9 The Dulles Greenway cost US\$350 million (HK\$2.7 billion) to build, being privately financed by equity and debt.<sup>45</sup> TRIP II began to default its loan payments in 1996 as revenue was less than projected. In late 1998, it was granted approval by SCC for a refinancing plan by issuing approximately US\$370 million (HK\$2.9 billion) in senior bonds<sup>46</sup> and US\$76 million (HK\$592.8 million) in subordinated bonds<sup>47</sup> to take advantage of the lower interest rates at that time and to extend the repayment of debts for nine years.<sup>48</sup> Most of the new debts were in the form of discounted zero-coupon bonds<sup>49</sup>. Under the loan agreement, TRIP II has to maintain a reserve equal to one year of debt service.

3.1.10 In November 2001, TRIP II was granted approval by SCC for another refinancing plan. The refinancing involved the issuing of new zero-coupon bonds worth approximately US\$270 million (HK\$2.1 billion) with maturities extending from 2036 to 2056. Approximately US\$100 million (HK\$780 million) of the new funds were used for replacing the debts authorized by SCC in 1998, and the rest for financing a major improvement programme of the Dulles Greenway due to a foreseeable increase in traffic.<sup>50</sup> SCC approved not only the refinancing application, but also an extension of the certificate of authority.<sup>51</sup> As at 30 June 2005, the total debt of TRIP II amounted to US\$856.2 million (HK\$6.7 billion) and the average interest rate of the bonds was 6.45%.<sup>52</sup>

## **3.2 Toll rates and toll adjustment mechanism**

### Toll policy

3.2.1 The Virginia Highway Corporation Act of 1988 provides that SCC should approve the initial rates and the proposed revised tolls if *"they appear reasonable to the user in relation to the benefit obtained, not likely to materially discourage use of the roadway and provide the operator no more than a reasonable rate of return as determined by the Commission"*<sup>53</sup>.

<sup>45</sup> United States Government Accountability Office (2004). TRIP II put up US\$40 million (HK\$312 million) in equity, secured around US\$260 million (HK\$2,208 million) in privately-placed long-term fixed-rate notes (due in 2022 and 2026 respectively), and US\$40 million (HK\$312 million) in revolving credit provided by three banks.

<sup>46</sup> Senior bonds rank below secured debt in the event of default or liquidation but above subordinated bonds.

<sup>47</sup> Subordinated bonds are not insured, and debt service can only be made on subordinate bonds after operating expenses, debt service on senior bonds, and required payments to project reserves.

<sup>48</sup> United States Government Accountability Office (2004).

<sup>49</sup> They are bonds issued at a discount (i.e. below the par value), earning no interest but redeemable at its par value.

<sup>50</sup> State Corporation Commission (2001).

<sup>51</sup> Ibid.

<sup>52</sup> Macquarie Infrastructure Investment Management Limited (2005).

<sup>53</sup> Section 56-542 of the Virginia Highway Corporation Act of 1988.

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### Toll adjustment mechanism

3.2.2 TRIP II set initial toll rates as part of its application for a certificate of authority to build and operate the Dulles Greenway at the outset. Subsequently, TRIP II applies to SCC for approval of toll ceilings when the need arises. Within that approved toll ceiling, TRIP II has the flexibility to adjust its tolls without applying for SCC permission.

3.2.3 Upon application of a change in the toll ceilings, SCC orders the operator of the toll road to give notice of the application to the interested agencies and the public, including making a copy of the application available for public inspection at SCC and publishing a notice of the application at least once in a daily newspaper of general circulation within the area served by the Dulles Greenway.

3.2.4 Any interested person or government agency may file comments and requests for a public hearing on the application on toll changes with SCC. No matter whether there is any comment or request for hearing, the staff of SCC will investigate the application and file a report with SCC presenting its findings and recommendations. The staff report may consider any factor that the staff deems appropriate. For instance, in the most recent request for rate adjustment, the SCC staff considered over 500 letters from the public, most of which objected to the increase. The subsequent SCC staff report raised the issue of affordability, and recommended lower rate increases spreading over more years than those requested by the private operator. However, SCC did not adopt the staff recommendations.

3.2.5 TRIP II may respond to the SCC staff report and any comments filed with SCC. SCC considers all the views expressed in the public hearing and written comments, as well as TRIP II's responses, before making any decision. SCC, upon application, complaint or its own initiative, and after investigation, may order the operator to adjust the tolls being charged.<sup>54</sup>

### Toll rates

#### *Current rates*

3.2.6 The current toll rate is US\$2.40 (HK\$18.72) for cars accessing the Dulles Greenway from the Dulles Toll Road (users have to pay an extra US\$0.50 (HK\$3.90) for using the Dulles Toll Road) during peak hours<sup>55</sup>, and ranges from US\$1.65 (HK\$12.87) to US\$2.40 (HK\$18.72) from other access points. Vehicles with three or more axles, i.e. trucks, are charged twice as much as cars (passenger vehicles). Discount is available for users paying electronically and the amount of discount varies from US\$0.10 (HK\$0.78) to US\$0.65 (HK\$5.07), depending on access points.

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<sup>54</sup> Section 56-542 of the Virginia Highway Corporation Act of 1988.

<sup>55</sup> Peak hours for eastbound traffic and westbound traffic are from 6 a.m. to 9 a.m. and from 4 p.m. to 7 p.m. respectively.

*Rate of toll adjustment*

3.2.7 On 1 January 1996, SCC approved a toll ceiling of US\$2.00 (HK\$15.60) for cars. In March 2004, SCC authorized a series of toll ceilings: a toll ceiling of US\$2.40 (HK\$18.72) until 30 December 2005; then a toll ceiling of US\$2.70 (HK\$21.06) effective from 31 December 2005; and a ceiling of US\$3.00 (HK\$23.40) effective from 1 July 2007. Within the approved toll ceilings, TRIP II may charge any toll rate at or below the maximum rate for the respective time period.

3.2.8 The Dulles Greenway has decreased tolls once, and raised tolls six times<sup>56</sup> since the road opened in 1995. The tolls were slashed by half<sup>57</sup> in 1996 when initial traffic fell short of the projected levels. The improvements made to the free, competing Route 7 ahead of schedule<sup>58</sup> by the Virginia Department of Transportation and the recession of Virginia were cited as the main reasons for the low traffic volumes.<sup>59</sup>

3.2.9 The toll for cars has increased by 37% from the initial toll of US\$1.75 (HK\$13.65) to US\$2.40 (HK\$18.72). Each adjustment usually involved an increase of US\$0.25 (HK\$1.96) in tolls. TRIP II has explained that it has implemented toll increases in a modest manner, in order not to alienate its customers.<sup>60</sup>

### 3.3 Financial performance and financial reporting

#### Cap on rate of return

3.3.1 SCC has capped the rate of return on equity<sup>61</sup> of TRIP II at various rates throughout the term of the certificate of authority. The rates of return approved by SCC are as follows:

Year	Approved rate of return on equity
Years 1-5	30%
Years 6-7	25%
Years 8-11	20%
Years 12-16	15%
The remaining term	14%

<sup>56</sup> The Dulles Greenway raised its tolls in September 2002 except for the toll for vehicles with three or more axles which entered the toll road through the mainline.

<sup>57</sup> The toll rate for using the mainline toll plaza access points was reduced from US\$1.75 (HK\$13.65) and US\$3.50 (HK\$27.30) to US\$1.00 (HK\$7.80) and US\$2.00 (HK\$15.60) for cars and vehicles with three or more axles respectively.

<sup>58</sup> United States Government Accountability Office (2004).

<sup>59</sup> Infrastructure Management Group, Inc. (2000).

<sup>60</sup> The Dulles Greenway (2003).

<sup>61</sup> The rate of return on equity refers to the ratio of a company's profit to its shareholders' equity, expressed as a percentage.

3.3.2 The inflation rate of the US was 5.0% when SCC granted a certificate of authority to TRIP II in 1990, and dropped to 2.7% in 2004.<sup>62</sup> When the construction of the Dulles Greenway started in 1993, the interest rate of 20-year Federal Treasury Bills was 6.29%.<sup>63</sup>

3.3.3 SCC anticipated that there would be negative cash flows in the early years of operation of the Dulles Greenway. Therefore, SCC authorized the establishment of a reinvested earnings account so that the unrealized earnings from the early and riskiest years of the project could accumulate as liabilities for later repayment out of earnings.<sup>64</sup> SCC considers this treatment as a means of providing TRIP II an opportunity to earn "*a fair return without guaranteeing a return*".<sup>65</sup>

3.3.4 In the event that the net profit of the operator is significantly above the authorized return consistently for some years, the SCC staff report may identify the situation and recommend reducing the toll rates. Nonetheless, before SCC makes a decision, it may give TRIP II an opportunity to respond and request for a hearing before SCC.

#### Financial performance

3.3.5 The Dulles Greenway has not made any profits or achieved any positive rate of return since its commencement. In fact, the operator has experienced various degrees of financial difficulties throughout the period of operation. The average loss has been about US\$25 million (HK\$195 million) a year since its opening in 1995. As at 30 June 2005, the total debt of TRIP II amounted to US\$856.2 million (HK\$6,678.4 million). In recent years, revenues have been only sufficient to cover direct operating costs, but not interest and principal payments of its debts.<sup>66</sup>

3.3.6 Although the Dulles Greenway experienced difficulties in its early years, traffic growth in recent years has led to significant growth in revenue. It had an average daily traffic of 60 600 vehicles in 2004, an increase of 53% compared with that in 2000. Its toll revenue was US\$40.8 million (HK\$318.2 million) in 2004, an increase of 106% compared with that in 2000. The compound average growth rate for traffic and revenue between 1996 and 2004 was 17% and 26% respectively.<sup>67</sup>

3.3.7 SCC predicts that given the recent toll increase authorized by SCC and the projected traffic flow increase, the earliest time the Dulles Greenway can actually make a profit will be at least five years from 2005.

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<sup>62</sup> The website of Bureau of Labour Statistics.

<sup>63</sup> The website of Board of Governors of the Federal Reserve System.

<sup>64</sup> Gómez-Ibáñez and Meyer (1993).

<sup>65</sup> State Corporation Commission (2001).

<sup>66</sup> Reply from State Corporation Commission.

<sup>67</sup> Macquarie Infrastructure Investment Management Limited (2005).

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### Financial reporting

3.3.8 SCC requires TRIP II to file a balance sheet, an income statement and a cash flow statement for the quarter and for the fiscal year to date with it within 60 days of the end of the quarter.<sup>68</sup> In addition, TRIP II is required to maintain a balance of the reinvested earnings account on a quarterly basis and to provide the balance and all supporting information upon the request of SCC.<sup>69</sup>

3.3.9 SCC has also imposed reporting requirements on TRIP II regarding refinancing. From 2002 onwards, TRIP II is required to submit annual reports detailing the progress of the refinancing efforts and any changes in the plan of financing. In addition, within 60 days of the closing of any refinancing, TRIP II is required to file a report of the full details of the refinancing, including a schedule of the maturity dates and interest payment dates.<sup>70</sup>

## **3.4 Dispute resolving mechanism and re-negotiation framework**

3.4.1 The Virginia Highway Corporation Act of 1988 gives SCC the final authority to set toll rate levels and authorize a rate of return that investors of the toll road may receive. However, there is no dispute resolving mechanism regarding toll rate levels, the rate of return provided in the law or the certificate of authority. While any decision of SCC may be appealed to the Supreme Court of Virginia, the Supreme Court only hears cases involving questions of law, i.e. whether SCC has interpreted the related law correctly or not. Therefore, issues of whether the toll rate levels or the authorized rate of return are appropriate or not will not be heard by the Supreme Court.

3.4.2 The Virginia Highway Corporation Act of 1988 also provides for the termination of the certificate of authority. SCC may modify the date of termination to take into account any refinancing, where the refinancing or modification is "*in the public interest, or any refinancing for the purpose of expansion, or early termination of the original permanent financing*".<sup>71</sup> In the event of material and continuing default in the performance of the toll road operator's construction or operation duties, or failure of the operator to comply with the terms of its agreement with the Virginia Department of Transportation, SCC may revoke the certificate of authority of the toll road after a hearing in which the operator has an opportunity to participate. In that event, the Virginia Department of Transportation may take over the construction and operation of the toll road.<sup>72</sup>

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<sup>68</sup> State Corporation Commission (2001).

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

<sup>71</sup> Section 56-551 of the Virginia Highway Corporation Act of 1988.

<sup>72</sup> Section 56-549 of the Virginia Highway Corporation Act of 1988.

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## Chapter 4 – The Severn Bridges of the United Kingdom

### 4.1 Background

#### Basic information

4.1.1 The old Severn Bridge and the Second Severn Crossing are two large bridges crossing the River Severn between south-west England and south Wales of the UK. The old Severn Bridge is 1.59 km long<sup>73</sup> with two lanes each way. Before its inauguration on 8 September 1966, the road traffic between England and Wales had been via Gloucester<sup>74</sup> or by ferry. Motorists using the old Severn Bridge can save around an hour's driving. The old Severn Bridge is built by public money. The UK government had charged tolls for the use of it before the private concessionaire took over in 1992.

4.1.2 During the 1980s, traffic flows through the old Severn Bridge jumped 63%. The old Severn Bridge did not have sufficient capacity to meet the traffic and there were severe congestion problems. Therefore, in 1986, the UK government announced its intention to build the Second Severn Crossing at some five km downstream of the old Severn Bridge.

4.1.3 The John-Laing consortium, later renamed Severn River Crossing plc<sup>75</sup> (SRC), won the bid to build, finance and operate the new crossing, and to take over the financing and operation of the old Severn Bridge. It was the government's plan that the successful bidder should operate both bridges, enabling the concessionaire company to derive toll revenue from the old Severn Bridge, whilst the Second Severn Crossing was being built. The project is a bespoke concession agreement covering both the old and new bridges. The Second Severn Crossing is a build-operate-transfer project by itself, but the project does not involve the building of the old Severn Bridge.

4.1.4 SRC formally signed the concession agreement with the UK government in 1990. The Severn Bridges Act 1992 (1992 Act) provides the necessary framework to enable the Second Severn Crossing to be privately financed through the concession agreement between the UK government and a private concessionaire.

4.1.5 When the term of the concession commenced on 26 April 1992, SRC took over both the operation of the old Severn Bridge and the staff employed by the local government for its toll collection and maintenance in accordance with the 1992 Act<sup>76</sup>. Under the 1992 Act, the pay structure of those staff is protected<sup>77</sup>.

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<sup>73</sup> The old Severn Bridge links England to Beachley Island, which in turn is linked to South Wales by the Wye Bridge, and the combined length of the old Severn Bridge and the Wye Bridge is 3.2 km.

<sup>74</sup> It is a detour of approximately 112.6 km.

<sup>75</sup> It is a consortium formed by Laing and GTM with Bank of America and Barclays de Zoete Wedd.

<sup>76</sup> Section 18 of the 1992 Act.

<sup>77</sup> Section 18(1) of the 1992 Act.

4.1.6 Construction of the dual three-lane, 5.13 km long Second Severn Crossing began in 1992. It was opened to traffic on 5 June 1996, providing a direct link from the M4 motorway in England to Wales.

4.1.7 The Second Severn Crossing is the third transport project financed, built and operated by the private sector in the UK.<sup>78</sup> When the Minister for Public Transport moved the Severn Bridges Bill for Second Reading, he admitted that privately-financed roads had become a long-term policy in the UK.<sup>79</sup>

#### Least present value of revenue and term of concession

4.1.8 During the bidding of the concession, each proposed consortium was required to propose the minimum revenue that it would accept, considering all the risks involved in the construction of the Second Severn Crossing and the maintenance, operation and interest costs of both Severn bridges.<sup>80</sup> This proposed minimum revenue is expressed in terms of the present value of the cumulative revenue throughout the life of the concession at 1989 prices.

4.1.9 The concession period ends when the chosen private consortium for the project, SRC, has achieved its required revenue target of £976,837,740 (HK\$13.9 billion) at 1989 prices. This kind of bidding system is a variation of what some academics name as the "Least Present Value of Revenue" model, which takes the least present value of revenue as the only bidding variable. In this case, the UK government considered other factors as well when it evaluated the proposals for developing the Severn bridges, and assigned the concession to the consortium which offered "*the best overall value for money of all the proposals submitted*"<sup>81</sup>.

4.1.10 The 1992 Act<sup>82</sup> provides that the concession period runs for a maximum of 30 years from the appointed day, i.e. from 26 April 1992. Accordingly, the actual duration of the concession granted to SRC is of a variable length, hinging upon when the revenue target is reached. The tolls earned by SRC are taken back to 1989 prices and added up cumulatively each year. Once the revenue target is reached, the two bridges will be reverted to the UK government at no cost.<sup>83</sup> Therefore, the length of the concession period depends on traffic volumes encountered and how fast the SRC can achieve the revenue target.

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<sup>78</sup> The Channel Tunnel is the first privately-funded transport project in the UK, followed by the Dartford-Thurrock Bridge.

<sup>79</sup> HC Deb (1990-91) 183, col. 635.

<sup>80</sup> Gómez-Ibáñez and Meyer (1993).

<sup>81</sup> HC Deb (1990-91) 183, col. 637.

<sup>82</sup> Section 6(4) and (5) of the 1992 Act.

<sup>83</sup> The Secretary of State for Transport may determine the actual termination date of the concession, which should be within a period of 120 days after the required revenue target has been met by the concessionaire. The Highways Agency reviews the projected concession termination date every six months using data supplied by SRC.

4.1.11 It was originally predicted that SRC would meet the revenue target of £976,837,740 (HK\$13.9 billion) by June 2014. The termination date is currently estimated to be delayed to early 2016 after a court ruling.

4.1.12 Following a European Court of Justice ruling in 2000 that value-added tax (VAT) must be paid for the use of privately-operated roads, the government has committed to protect motorists from paying such tax on toll charges on key transport links, including the two Severn bridges. In this case, VAT is absorbed by the existing toll.<sup>84</sup> In order to compensate SRC for not raising the toll rates of the two Severn bridges after the imposition of VAT, SRC is given the right to collect tolls for a longer period. The required cumulative revenue target is raised from £976,837,740 (HK\$13.9 billion) to £995,830,000 (HK\$14.2 billion), expressed in July 1989 prices, and the termination date of the concession period is predicted to end in early 2016.

4.1.13 At the end of the concession, the Transport Secretary has the power to ask SRC to collect tolls on his behalf for a period of up to five years. Such provision is to meet any outstanding liabilities and if desired, to set up a fund for the maintenance of the Severn bridges.

#### Comparison of publicly-financed and privately-financed options

4.1.14 When the UK government invited private consortia to provide bids in the late 1980s, bidders were asked to submit proposals both for a privately-funded scheme and for a conventional, publicly-financed scheme, i.e. a scheme designed and constructed by a private consortium but funded by public money.

4.1.15 The UK government admitted that the privately-financed option would involve extra cost as the private consortium had to earn profits and that would incur slightly longer toll charging period.<sup>85</sup> However, the UK government was of the view<sup>86</sup> that this extra cost was outweighed by the advantage of placing the risk of cost overruns entirely on the private consortium without leaving the risk to taxpayers. Even if the cost of construction or operation of the bridges overruns, the private consortium cannot recover their loss through toll increases as the tolls are specified in the 1992 Act and the annual adjustment is linked to inflation.

4.1.16 Comparison of the two options is neither a statutory nor an administrative requirement. However, it is a normal practice to carry out a desk-based study in the early stages of a project's development to compare the net present value of a public sector comparator<sup>87</sup> with the expected net present value of the revenue demand for a privately-financed version of the project.

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<sup>84</sup> The toll rates have included the standard-rated VAT of 17.5%.

<sup>85</sup> HC Deb (1990-91) 183, col. 637-638.

<sup>86</sup> Ibid.

<sup>87</sup> The public sector comparator is calculated by costing what the public sector would pay to procure the construction, and operation and maintenance of the road over 30 years by traditional means.

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### Cost and financing

4.1.17 The old Severn Bridge was built in 1966 at a cost of £8 million (HK\$114.2 million), paid solely by public money. Due to the massive increase in traffic which had a detrimental effect on the structure of the bridge, the maintenance and repair works had cost the government £126 million (HK\$1.8 billion) up to 1992. When SRC took over the operation and maintenance of the old Severn Bridge in 1992, it also assumed responsibility for £122 million (HK\$1.7 billion) of the £126 million (HK\$1.8 billion) outstanding debt on the old Severn Bridge. The remaining debt of £4 million (HK\$57.1 million) was the responsibility of the Transport Secretary.

4.1.18 Of the £122 million (HK\$1.7 billion) debt owed to the UK government, £62 million (HK\$884.7 million) was paid by SRC on 26 April 1992. Of the remaining £60 million (HK\$856.2 million), the principal will be due at the end of the concession period. This £60 million (HK\$856.2 million) debt is a 6% Indexed Linked Debt, which is linked to the Retail Prices Index. The loan interest on the indexed amount was originally paid by SRC on a half yearly basis. Due to the new refinancing package resulting from the VAT ruling of the European Court of Justice, with effect from 1 January 2003, the interest of the loan has been accumulating and will be paid towards the end of the concession period.

4.1.19 The building of the Second Severn Crossing cost around £330 million (HK\$4.7 billion). Funding for the project was provided by a number of banks and debenture stockholders, including a £190 million (HK\$2.7 billion) bank loan facility and £150 million (HK\$2.1 billion) letters of credit, a £150 million (HK\$2.1 billion) European Investment Bank loan facility and £131 million (HK\$1.9 billion) 6% Index-Linked Debenture Stocks (quoted on London Stock Exchange).

## **4.2 Toll rates and toll adjustment mechanism**

### Toll policy and toll adjustment mechanism

#### *Under the Severn Bridge Tolls Act 1965*

4.2.1 The Severn Bridge Tolls Act 1965 (the 1965 Act) empowered the Minister for Public Transport to levy tolls for the use of the old Severn Bridge over a period of 40 years, beginning from the date on which the bridge became open for use<sup>88</sup>, i.e. 8 September 1966.

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<sup>88</sup> Section 4 of the 1965 Act.

4.2.2 The 1965 Act neither fixed the amount of tolls to be levied nor provided any formula by which tolls might be levied and adjusted. It only provided that tolls could be levied on a scale which "*would be sufficient, but not more than sufficient*"<sup>89</sup> for the purpose of reimbursement with interest<sup>90</sup> of all expenses in providing the relevant maintenance, repair and administration works during the toll period and for the purpose of making a provision for the maintenance, repair and renewal works at the end of the toll period if necessary.<sup>91</sup>

4.2.3 The 1965 Act also provided that tolls might be levied at different rates by reference to a combination of circumstances, "*such as those relating to classes of vehicles, seasons of the year, days of the week or times of day*"<sup>92</sup>, as the Minister for Public Transport considered appropriate.

4.2.4 To make an order for adjusting the toll rates, the Minister for Public Transport was required to publish the proposed order in at least one local newspaper circulating in the localities in which the ends of the bridge were situated, and in the London Gazette. Within six weeks from the latest date of publication of the proposed order, any person might write to the Minister for Public Transport to object to the making of the order.

4.2.5 If the objection came from either of the county councils of Gloucester and Monmouth (in which the ends of the old Severn Bridge were located), from any other local authority<sup>93</sup> in England or Wales, or from any interest-related organization<sup>94</sup> listed in Schedule 1 of the 1965 Act, a local inquiry had to be held.<sup>95</sup> If the objection came from other sources, the Minister for Public Transport might decide whether a local inquiry would be held as he thought fit.<sup>96</sup>

4.2.6 After considering any objection to the proposed order and the report of the local inquiry (if any), the Minister for Public Transport might make an order as he thought fit, with or without any modification to the proposed order.<sup>97</sup> The order had to be approved by a resolution of the House of Commons.<sup>98</sup>

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<sup>89</sup> Section 4(2) of the 1965 Act.

<sup>90</sup> The interest was determined by the Treasury of the UK government.

<sup>91</sup> Section 4(2) and Schedule 2 of the 1965 Act.

<sup>92</sup> Section 2(2) of the 1965 Act.

<sup>93</sup> Local authorities refer to the councils of counties, county boroughs or county districts.

<sup>94</sup> For instance, vehicle owners' organizations or organizations representing the interests of persons who were likely to be frequent users of the bridge.

<sup>95</sup> Section 3(3)(a) of the 1965 Act.

<sup>96</sup> Section 3(3)(b) of the 1965 Act.

<sup>97</sup> Section 3(4) of the 1965 Act.

<sup>98</sup> Section 4(4) of the 1965 Act.

*Under the 1992 Act*

4.2.7 With effect from 26 April 1992, the 1965 Act was repealed by the 1992 Act. The 1992 Act does not specify any overall toll policy, apart from providing that adjustments of the toll levels should be based upon the change in inflation. The 1992 Act provides that the old Severn Bridge and the Second Severn Crossing share a common toll charging scheme. Tolls are charged in only one direction to reduce both operating costs and disruption to traffic.

4.2.8 Section 9(3) of the 1992 Act specifies the amount of tolls to be levied in 1989 prices:

Category of vehicles	Description of vehicles in the category	1992	1993	1994	1995 and each subsequent year
1	Motor cars and motor caravans up to nine seats	£2.35 (HK\$33.53)	£2.51 (HK\$35.81)	£2.68 (HK\$38.24)	£2.85 (HK\$40.67)
2	Small goods vehicles up to 3 500 kg and small buses up to 17 seats	£4.70 (HK\$67.07)	£5.02 (HK\$71.64)	£5.35 (HK\$76.34)	£5.71 (HK\$81.48)
3	Other goods vehicles exceeding 3 500 kg and buses with 18 seats or more	£7.05 (HK\$100.60)	£7.52 (HK\$107.31)	£8.03 (HK\$114.59)	£8.56 (HK\$122.15)

4.2.9 Toll levels have been amended each year on the basis of the change in the Retail Price Index<sup>99</sup> since 1989, whether the change is an increase or a decrease. For example, the toll payable by category 1 vehicles in 1992 was £2.80 (HK\$39.95). This toll payable was fixed by applying the increase of 19.85% in the Retail Price Index between March 1989 and September 1991 to the toll level specified in section 9(3) of the 1992 Act.

4.2.10 The annual adjustment of tolls is automatic. The concessionaire does not need to apply for adjustments on an annual basis. In December each year, the Transport Secretary will exercise his powers under section 9(2) of the 1992 Act and make an order fixing the adjusted tolls payable for the use of the two bridges at the beginning of the following year.

<sup>99</sup> The references in section 9 of the 1992 Act to the Retail Price Index are references to the general index of retail prices (for all items) published by the Central Statistical Office of the Chancellor of the Exchequer.

4.2.11 Contrary to the practice under the 1965 Act, the 1992 Act does not have any provision for local authorities and other interested parties to call a public inquiry on toll changes. In any event, the order for fixing the annual adjustments does not require the approval of Parliament.

4.2.12 The Transport Secretary may make an order fixing tolls at an amount less than the amount determined by applying the increase in the Retail Price Index, but he can only do so with the concessionaire's consent.<sup>100</sup> Under SRC's financing agreements, the company is obliged to charge the maximum toll permitted.

4.2.13 A change in the amount of tolls specified in the table contained in section 9(3) of the 1992 Act may be made in response to the occurrence of any of the particular circumstances in which the concession agreement authorizes.<sup>101</sup> Under such circumstances, the Transport Secretary may make an order to provide for a change in the toll rates and this affirmative order must be passed by each House of Parliament.<sup>102</sup> The Transport Secretary needs to consider those circumstances on their merits if and when they occur.

*Arguments for and against adjustments capped by inflation rate*

4.2.14 During the debate on the passing of the 1992 Act, the Transport Secretary stated that the capping of the rate of increase of tolls by the inflation rate was because the Severn bridges were essentially a monopoly, and the Retail Price Index was used because it was considered to be closely related to the likely trend of the annual costs falling on the operator who also maintained the bridges.<sup>103</sup>

4.2.15 However, a Member of Parliament suggested that core inflation was irrelevant to the toll bridge operation which consisted almost entirely of capital costs, an interest-dependent variable.<sup>104</sup> In response, the Transport Secretary claimed that statistics revealed that if toll increases were linked to a combination of the construction industry index and the movements in interest rates rather than the inflation rate, road users would be subjected to greater magnitudes of toll increases.<sup>105</sup>

4.2.16 Although toll rates could not go up by more than the inflation rate, another Member of Parliament<sup>106</sup> criticized that the baseline for the annual increase formula had been jacked up to an unbelievable level in the four years before the formula came into effect.<sup>107</sup>

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<sup>100</sup> Section 10(1) and (2) of the 1992 Act.

<sup>101</sup> Section 9(5) of the 1992 Act.

<sup>102</sup> Section 37(2) of the 1992 Act.

<sup>103</sup> HC Deb (1990-91) 183, col. 641 and 643.

<sup>104</sup> HC Deb (1990-91) 183, col. 643.

<sup>105</sup> Ibid.

<sup>106</sup> Mr Rhodri Morgan (Cardiff, West).

<sup>107</sup> HC Deb (1992-93) 224, col. 149.

Toll rates*Current tolls*

4.2.17 Both the old Severn Bridge and the Second Severn Crossing charge the same level of tolls, and tolls are charged in one direction only. Discount is given to those who use the electronic payment system and pay in advance for monthly or quarterly usage. As at December 2005, the standard toll rates were as follows:

Category of vehicles	Toll amount
1	£4.80 (HK\$68.50)
2	£9.60 (HK\$137.00)
3	£14.30 (HK\$204.06)

*Rate of toll adjustment*

4.2.18 The old Severn Bridge had charged a low toll rate for a long period of time since its opening. However, in the 1980s, the toll went up significantly. In 1985, the toll for a goods vehicle or a passenger vehicle carrying more than 16 passengers was £1.00 (HK\$14.27), and the toll for any other vehicles was 50 pence (HK\$7.12).<sup>108</sup> Tolls were charged in both directions. In 1989, the toll for both categories of vehicles doubled to £2.00 (HK\$28.54) and £1.00 (HK\$14.27) respectively.

4.2.19 When SRC took over the old Severn Bridge in 1992, the initial toll for categories 1, 2 and 3 vehicles was immediately raised to £2.80 (HK\$39.96), £5.60 (HK\$79.91) and £8.40 (HK\$119.87) respectively, which were substantial hikes:

Category of vehicles	Increase in tolls (%)
1	40
2	180
3	110

4.2.20 The government explained to Parliament that the increases reflected the cost of building the Second Severn Crossing, which would provide a substantial and long-needed improvement in the road links between south Wales and England.<sup>109</sup> Compared to the toll rates charged in 1992 after the rate hikes, the current toll rates are around 70% higher for all three categories of vehicles.

<sup>108</sup> A 10% discount was given to those who bought a book of 50 vouchers in advance.

<sup>109</sup> HC Deb (1991-92) 204, col. 308.

4.2.21 The inflation rate (i.e. annual change in the Retail Price Index) in 1992 was 3.7%. Since 1993, it has been fluctuating in a relatively narrow range, from around 1.5% to 3.5%<sup>110</sup>. The interest rate of a 25-year gilt-edged stock (a UK government security with interest paid half-yearly) issued in 1992 was 8.75%.<sup>111</sup>

### 4.3 Financial performance and financial reporting

#### Financial performance

4.3.1 SRC made an operating profit of £35.5 million (HK\$506.6 million) in 2004, but recorded a loss of £3.0 million (HK\$42.8 million) after scheduled and voluntary repayments of debts<sup>112</sup> and tax.<sup>113</sup> The loss was £3.5 million (HK\$50.0 million) in 2003. Turnover<sup>114</sup> increased by 3% to £66.4 million (HK\$947.5 million) in 2004.<sup>115</sup> Toll revenues are expected to grow in line with increases in toll rates and traffic levels.

4.3.2 The annual traffic volume (westbound only) for both Severn bridges in 1996, i.e. the year when the Second Severn Crossing opened to traffic, was 9.2 million. In 2004, the annual traffic figure rose to 12.8 million, an increase of 39% over nine years. The annual increase was within the range of 1.4% to 6.1%.

4.3.3 SRC has used the internal rate of return measure for appraising the toll rates in its bid for building and operating the Second Severn Crossing, and for forecasting its financial performance. Nonetheless, SRC has not disclosed the expected internal rates of return and the actual rates of return achieved.

#### Financial reporting

##### *Under the 1965 Act*

4.3.4 Under the 1965 Act, the Minister for Public Transport was required to prepare a statement of accounts and send it to the Comptroller and Auditor General each year. The Comptroller and Auditor General would examine and certify the statement, and lay it with his own report before Parliament.<sup>116</sup>

<sup>110</sup> The website of the Office for National Statistics.

<sup>111</sup> The website of the United Kingdom Debt Management Office.

<sup>112</sup> During 2004, the Company made scheduled repayments of £8.8 million (HK\$125.6 million) of bank debt, £9.8 million (HK\$139.9 million) of European Investment Bank loans and voluntary prepayments of £15 million (HK\$214.1 million) of bank debt.

<sup>113</sup> Severn River Crossing PLC. (2004).

<sup>114</sup> Turnover represents revenue received from tolls net of VAT.

<sup>115</sup> Severn River Crossing PLC. (2004).

<sup>116</sup> Section 21 of the 1965 Act.

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*Under the 1992 Act*

4.3.5 Under the 1992 Act, SRC is required to prepare an annual statement of accounts of revenue and costs and send it to the Transport Secretary. These accounts are audited by independent chartered accountants, reviewed by the Highways Agency, and, in accordance with the 1992 Act, laid before Parliament by the Transport Secretary.<sup>117</sup>

4.3.6 In addition, the Transport Secretary should prepare an annual statement of accounts relating to the debt owed by SRC to the government. The Comptroller and Auditor General will certify and examine the statement, and then lay it, together with his report, before Parliament.<sup>118</sup>

#### **4.4 Dispute resolving mechanism and re-negotiation framework**

4.4.1 The concession agreement provides a mechanism for resolving disputes between SRC and the Transport Secretary. Either party may refer a dispute to a Financial or Technical Panel<sup>119</sup> which acts as an independent expert. Any unanimous decision of the Financial or Technical Panel is final and binding upon the parties. In the event of non-unanimous decisions, it is binding only when the dispute has been settled or referred to arbitration.

4.4.2 The concession agreement provides a mechanism for re-negotiation between the concessionaire and the Transport Secretary in certain circumstances. The 1992 Act specifies the occurrence of certain particular circumstances in which the concession agreement authorizes the making of a change in the amount of tolls specified in the 1992 Act. For instance, a major change in other legislation or ground rules which has a substantial effect on the viability of the Severn bridges would fall within the definition of an adverse relevant event in the concession agreement, and SRC may ask for an increase in tolls as compensation. In that case, the Transport Secretary would lay an affirmative order before Parliament. If the order is not passed, the concession would be terminated. The UK government would then take over the bridges and the liabilities of the concessionaire, and continue to levy tolls.<sup>120</sup>

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<sup>117</sup> Section 27 of the 1992 Act.

<sup>118</sup> Section 28 of the 1992 Act.

<sup>119</sup> Pending information on the composition of the Panel.

<sup>120</sup> HC Deb (1990-91) 194, col. 285-287.

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## Chapter 5 – The A1(M) between Alconbury and Peterborough of the United Kingdom

### 5.1 Background

#### Basic information

5.1.1 The A1(M) widening between Alconbury and Peterborough forms part of the improvement of the existing A1 between London (M25) and Newcastle, opened to traffic on 31 October 1998. The overall length of the widened motorway is 21 km, with 13 km being dual four-lane and the remainder largely dual three-lane.

5.1.2 The A1(M) project is one of the first privately-financed road contracts signed by the Highways Agency<sup>121</sup>. During the bidding exercise, a private consortium called Road Management Services (Peterborough) Ltd (RMS)<sup>122</sup> was awarded the Design, Build, Finance and Operate (DBFO) contract to finance, construct, operate and maintain the motorway for a period of 30 years. In return, RMS would receive payments from the Highways Agency in the form of a "shadow toll" calculated primarily based on road usage. Road users do not pay directly for using the A1(M). There is no clause in the contract agreement between RMS and the Highways Agency which prohibits the building of a parallel free highway alongside the A1(M). Nonetheless, according to the Highways Agency, the A1(M) could possibly make a claim against the Highways Agency for loss of revenue in such a situation.

#### Design, Build, Finance and Operate contract

5.1.3 A DBFO contract is similar to a BOT contract; however, it is not a concession as the operating company cannot charge users. The private company is remunerated directly by the public authority. The Highways Agency describes the DBFO concept as a precursor or transition to user-paid toll roads, with the private sector assuming the responsibility for building, operating and maintenance of roads or specified improvement schemes.

5.1.4 The principal benefit of DBFO contracts lies in the increased value for money through a transfer of risks, such as risk of construction cost overruns, and the introduction of private-sector innovations and efficiency. According to the Highways Agency, the DBFO contracts for road infrastructures have delivered an average value-for-money saving of 15%.

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<sup>121</sup> The Highways Agency is responsible for the construction and maintenance of trunk roads and motorways in England.

<sup>122</sup> It is a consortium of four partners: AMEC, Alfred McAlpine, Brown & Root and Dragados.

5.1.5 Both the National Audit Office and the Select Committee on Public Accounts of Parliament<sup>123</sup> are of the view that as the operator of a DBFO transport facility cannot control or manage the risk of traffic volumes, *"the bidders can be expected to have included a premium in their pricing for taking this risk which is likely to reduce the value for money offered by these contracts"*.<sup>124</sup>

5.1.6 Eleven DBFO contracts have been signed and construction has been completed for eight of them.<sup>125</sup> The eight completed projects involve the private sector in managing about 5% of the existing Highways Agency network.<sup>126</sup>

5.1.7 Whilst the eight DBFO contracts, including the A1(M), use the same shadow toll payment mechanism under which payments are made for each vehicle on a per km of the road travelled basis, details of their payment structures varies. The remaining three DBFO contracts as well as the future DBFO transport facilities will use variations of this payment mechanism, rather than simply pegging payments with usage of the road.<sup>127</sup> The Highways Agency has explained that they adopt shadow tolls as the payment mechanism because the UK government wishes to foster the development of a private sector road-operating industry in the UK. Accordingly, the adoption of shadow tolls is a policy-driven decision rather than a cost-minimizing decision.

#### Term of concession

5.1.8 The 30-year contract for the A1(M) project commenced on 1 April 1996 and will end on 31 March 2026. Loans for this type of projects generally have a maximum repayment period of around 20 years. Accordingly, a 30-year contract period for this DBFO road project provides a buffer period to allow for the event when cash flows are less than anticipated, especially at the start. Since the 30-year contract period is beyond the range of conventional debts, this design permits the use of alternative funding and the possibility of re-financing after the completion of construction. A longer contract period also allows more time for full cost recovery.<sup>128</sup>

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<sup>123</sup> The Select Committee on Public Accounts' suggestions have led to the subsequent development of new payment mechanisms in other projects, which focus more on road and congestion management.

<sup>124</sup> House of Commons (1998) and National Audit Office (1998).

<sup>125</sup> Highways Agency (2005b).

<sup>126</sup> Highways Agency (2005d).

<sup>127</sup> The three contracts employ two alternative payment mechanisms under which shadow tolls are paid by the government to the private operator, but the main basis of payments is different. They are the availability payment mechanism which aims at optimizing the availability of lanes to avoid disruption to road users at busy times, and the active management payment mechanism which aims at actively managing the project road to reduce congestion and increasing the reliability of road user journey times.

<sup>128</sup> Highways Agency (1997).

5.1.9 The Highways Agency retains ownership of the road. It has appointed a consultant company to monitor RMS' performance as the Department's representative. RMS is required to return the road in good condition to the Highways Agency at the end of the contract period.

#### Comparison of publicly-financed and privately-financed options

5.1.10 For each DBFO project, including the A1(M) between Alconbury and Peterborough project, the Highways Agency needs to decide whether the proposed contract offers value for money compared with conventional publicly-financed roads<sup>129</sup> by the use of the public sector comparator.<sup>130</sup> The public sector comparator is calculated by costing what the public sector would have paid to procure the construction, operation and maintenance of the project road over 30 years by traditional means.<sup>131</sup> The Highways Agency also quantifies the value of the risks transferred and incorporates them into the public sector comparator.

5.1.11 During the Highways Agency's assessment of the A1(M) project, the public sector comparator was calculated to be £204 million (HK\$2.9 billion), while the DBFO contract bid by RMS was expected to cost around £154 million (HK\$2.2 billion). Therefore, it would be £50 million (HK\$713.5 million) cheaper to have the road built and operated by RMS. With the lowest bid submitted, RMS was awarded the contract. The expected payments to the A1(M) under the DBFO contract<sup>132</sup> was discounted at a rate of 8% (after inflation) to derive the net present value.

5.1.12 Both the National Audit Office and the Select Committee on Public Accounts of Parliament criticized that the discount rate of 8%<sup>133</sup> was too high, which led to the overstating of savings brought about under the private option. If a discount rate of 6% was used instead, the savings of the A1(M) project under a DBFO contract would be reduced to £30 million (HK\$428.1 million). In fact, the Treasury is currently advising the adoption of a discount rate of 3.5%.

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<sup>129</sup> Conventional publicly-financed roads refer to those built under a road construction contract in which the Highways Agency pays the contractor as the works progress. Such projects are fully paid for on completion.

<sup>130</sup> Highways Agency (2005c).

<sup>131</sup> Under a conventional construction contract, public money is fully paid at the completion of construction, whilst under a DBFO project, public money is paid in the form of shadow tolls over a period of 30 years. A discount rate is used to take account of differences in timing of payments during the comparison of costs between the two options.

<sup>132</sup> The value of the other three DBFO road projects awarded in the same period was also discounted at a rate of 8%.

<sup>133</sup> The discount rate of 8% a year was decided on the Treasury's advice in 1994 as it was also the discount rate for investment appraisal of railway projects and publicly-financed roads since 1989. The reason for using an 8% rate for investment appraisal for nationalized industries and other central government bodies selling their services or products in commercial markets was to ensure an average return on capital employed of 8%, which would provide a level playing field with private companies. The UK government considered that the same rate should be used for appraising road investments.

5.1.13 The National Audit Office was of the view that since a small percentage change in the discount rate would markedly affect the calculated cost difference between the private and public options, the quantified comparison could be nothing more than guides to the exercise of judgement.

### Cost and financing

5.1.14 RMS takes responsibility for financing the construction cost of widening the A1(M), which is around £128 million (HK\$1.8 billion). Accordingly, RMS has to bear both interest rate risk and default risk under the debt and derivative facilities. Details of how RMS financed the construction of the project are not available.

5.1.15 The annual change in the Retail Price Index of the UK was 2.4% in 1996 when the term of the concession started. Since the road opened to traffic in 1998, the annual inflation rate has been in a relatively narrow range of 1.5% to 3.5%<sup>134</sup>. The interest rate of a 25-year gilt-edged stock (a UK government security with interest paid half-yearly) issued in 1996 was 8%.<sup>135</sup>

## **5.2 Toll rates and toll adjustment mechanism**

### Shadow toll policy

5.2.1 The Highways Agency pays shadow tolls to the operator of the A1(M), primarily according to the usage of the road, plus bonus payments for safety enhancements and charges for lane closures. Payments are determined on the basis of the following:

- (a) Usage/demand: Shadow toll payments are made for each vehicle on a per km of the project road travelled basis, in accordance with the toll banding structure,<sup>136</sup> and increase over time in accordance with an indexation formula<sup>137</sup>, which includes the Retail Price Index. Toll payments are capped when the level of traffic has reached the highest band;
- (b) Availability of service: Since the A1(M) widening project involved improvement of an existing road, the A1(M) itself remained open during construction. Prior to the completion of construction, shadow toll payments were made at a reduced, fixed level representing the cost of operating and maintaining the existing road;

<sup>134</sup> The website of the Office for National Statistics.

<sup>135</sup> The website of the United Kingdom Debt Management Office.

<sup>136</sup> Toll rates are different for each band of traffic volumes. Details of the band structure are not available.

<sup>137</sup> According to the Highways Agency, the indexation formula of each DBFO project varies.

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- (c) Safety performance payment: In order to encourage the private consortium to suggest safety improvement schemes on the project road, the private consortium is recompensed for the implementation of any approved safety improvement scheme by receiving 25% of the economic cost of each personal injury accident avoided<sup>138</sup> in the following five-year period after the commencement of the safety improvement scheme; and
- (d) Lane closure charges: A deduction is made from the toll payment when lanes are closed. Lane closure charges are only made for closures within the control of the private consortium, while no reduction for closures out of its control, for instance, closures required by the police.

5.2.2 Toll rates were proposed by RMS during the bidding process, on the basis of toll rates per vehicle km travelled by road users for two categories of vehicles, i.e. long vehicles over 5.2 m (primarily heavy goods vehicles) and short vehicles less than 5.2 m, and the level of traffic in each band.

5.2.3 The toll payment is zero if there is no traffic. The total annual toll payment is capped, which means that when the traffic volume has grown to the level set for the top band, the Highways Agency does not pay any tolls for the traffic above that level. The toll payment within the same band does not vary according to peak hours and non-peak hours.

#### Toll adjustment mechanism

5.2.4 Shadow toll payments are adjusted annually in accordance with an indexation formula. The Retail Price Index, which reflects inflation, is part of the indexation formula. The Highways Agency has not disclosed further details on the composition of the indexation formula for the A1(M) as it considers this information commercially sensitive.

#### Toll rates

5.2.5 The actual shadow toll payment made per vehicle per km and the rate of increase are not available.

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<sup>138</sup> Highways Agency (1997). Accidents avoided are determined by comparing the actual statistics with data over the three years prior to the implementation of the safety improvement scheme.

### **5.3 Financial performance and financial reporting**

#### Financial performance

5.3.1 The turnover, i.e. the amount RMS received from the Highways Agency in the form of shadow tolls, for 2004 was £24.3 million (HK\$346.8 million) and that for 2003 was £24.1 million (HK\$343.9 million). The profit for 2004, after taxation, amounted to £2.7 million (HK\$38.5 million), whilst that for 2003 was £2.4 million (HK\$34.2 million).<sup>139</sup>

#### Financial reporting

5.3.2 RMS provides annual and interim audited accounts and reports to Companies House under law, but it is not required to lay them before Parliament.

### **5.4 Dispute resolving mechanism and re-negotiation framework**

#### Dispute resolution

5.4.1 When initial negotiation fails to resolve a dispute between RMS and the Highways Agency, a senior official from either side will hold a meeting to try to resolve it. If the dispute is not resolved by the meeting, they will refer it to be adjudicated by an agreed independent expert and the dispute will be adjudicated within 40 days.

#### Changing the technical or commercial requirements

5.4.2 In view of possible changes in the circumstances over the 30-year contract period, the Highways Agency would prefer to reserve the right to change the technical or commercial requirements under the DBFO contract, and the right to require road improvements to be made, for instance, building a new bypass. However, the bidders would not enter into agreement where there is the possibility of the Highways Agency changing the specification at extra, unanticipated cost to them. Therefore, a balance is struck by specifying the scope of possible changes required by the Highways Agency and where such a change alters the private consortium's costs or the traffic flow on the road, the shadow tolls are revised.

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<sup>139</sup> Road Management Services (Peterborough) Limited (2004).

5.4.3 The method of calculating the adjustment in tolls is set out in the DBFO contract.<sup>140</sup> First, the party raising the change should identify the change in costs and/or traffic. The effect of the change must exceed a specified threshold before the toll revision mechanism is activated. The revised costs and/or changes in estimated revenues, possibly caused by the anticipated change in traffic, are put into the financial model of the project to establish a revised net present value of cash flows. Adjustment is then made to future toll levels (either up or down) to ensure that the resulting net present value is the same as that before the change.

5.4.4 If the threshold is not reached, RMS (or any DBFO company in such a contract) will get a one-off compensation instead. If agreement cannot be reached regarding the magnitude of such changes or whether the threshold has been exceeded, it will be referred to a dispute resolution process.

#### Introduction of user-paid tolls

5.4.5 All DBFO contracts, including the A1(M) project, have clauses for the introduction of user-paid tolls if it is considered desirable by the UK government. In the event that user-paid tolls are introduced, this money will go directly to the UK government who will continue to pay shadow tolls to the private operator during the term of the contract.

5.4.6 If the introduction of user-paid tolls diverts traffic to alternative non-tolled roads, which may affect the road operator's income, the contract allows the operator to claim compensation for the reduction in traffic.

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<sup>140</sup> Highways Agency (2005a).

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## Chapter 6 – The Eastern Distributor of Australia

### 6.1 Background

#### Basic information

6.1.1 The Eastern Distributor links the Sydney Central Business District and Sydney Harbour crossings with the southern suburbs and Sydney Airport. This six-km expressway includes two tunnels and mostly three-lane in both directions. It is built to cater for the increased volumes of traffic passing through the area, in particular related to the Sydney 2000 Olympics. Road users travelling on the Eastern Distributor bypass 19 sets of traffic lights and save at least ten minutes of travelling time.

6.1.2 The Eastern Distributor is a Build-Own-Operate-Transfer (BOOT)<sup>141</sup> project. The Roads and Traffic Authority of New South Wales (RTA)<sup>142</sup> signed an agreement with Airport Motorway Limited (AML)<sup>143</sup> in August 1997 for AML to finance, build, operate and maintain the Eastern Distributor for a period of 48 years<sup>144</sup>, commencing from the opening of Stage 2 of the expressway. Construction commenced in August 1997 and the first stage opened to traffic on 18 December 1999, eight months ahead of schedule. The second stage opened to traffic on 24 July 2000. By the end of the concession, i.e. 2048, the Eastern Distributor will be reverted to RTA at no cost. An electronic toll collection system was introduced for the expressway in 2001.

6.1.3 There is no explicit agreement between RTA and AML prohibiting the building of parallel competing freeways. However, RTA has promised to consult with AML before carrying out any "*widespread or significant*" changes to the NSW road system, if these changes might materially alter the status of the Eastern Distributor as "*the principal north-south road corridor for the eastern area of Sydney*".<sup>145</sup> Moreover, if RTA builds or grants a concession for the building of a juxtaposed competing arterial road, and AML reasonably considers that such development has had a material adverse effect on its ability to repay its debts, or on the level or timing of the project's revenues, then RTA or the Minister for Roads must re-negotiate the contract with AML.

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<sup>141</sup> AML finances, builds and owns the Eastern Distributor under a lease arrangement, and it operates the facility and transfers it to the state government at the end of the concession.

<sup>142</sup> RTA is a NSW statutory authority established under the Transport Administration Act 1988. It is responsible for the provision and maintenance of a safe and efficient road system, testing and licensing drivers, and registering and inspecting vehicles.

<sup>143</sup> AML is a company specially formed for the purpose of financing, building and operating the Eastern Distributor. Its major shareholder is Macquarie Infrastructure Group (71.35%).

<sup>144</sup> Before the final approval of the project was granted, environmental improvements worth about AU\$140 million (HK\$802.2 million) had been added to the original proposal, to satisfy demands of the community and the Department of Urban Affairs and Planning. To cover the increased cost, the term of the lease was stretched from 38 years to 48 years.

<sup>145</sup> Road and Traffic Authority of New South Wales (1998).

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Comparison of publicly-financed and privately-financed options

6.1.4 RTA compared a publicly-funded toll road alternative to the privately-financed option, before deciding whether the Eastern Distributor project should proceed as a private or public toll road. The result of that comparison indicated that a government-funded toll road would provide a marginally higher return than the private proposal, but the government did not pursue this option for a number of reasons. One reason was that the government would need to raise debt if it funded the toll road, which did not comply with the intent of the General Government Debt Elimination Act 1995. Secondly, under the publicly-funded option, the government would take on traffic volume risk and interest rate risk as the returns were very sensitive to movements in traffic volumes and interest rates.

6.1.5 RTA also considered that as the private operator's revenue depended directly on tolls, the privately-financed option provided a financial incentive to complete construction cost-efficiently and achieve the earliest possible opening date. In addition, the privately-funded option was consistent with the government's policy of having the project completed before the 2000 Olympics.

Cost, concession fee and financing

6.1.6 The total cost of the project is around AUS\$700 million (HK\$4.0 billion).<sup>146</sup> Apart from the construction cost, AML must pay RTA concession fees in accordance with a schedule in return for the right to levy tolls and use the resulting revenue for its own benefit. According to the Project Deed, the payment of some of these concession fees (an annual fee of AUS\$15 million (HK\$86 million) payable for 24 years starting from 1997) can be deferred<sup>147</sup> until the return achieved has reached a specified level<sup>148</sup>, after which cash payments will need to be made. Other concession fees<sup>149</sup> are paid on their due dates regardless of the return achieved by the investors. Once AML's deferred payments have been paid in full to RTA, AML will need to make an annual cash payment equal to 10% of its cash surplus<sup>150</sup> for the remaining term of the 48-year lease.

6.1.7 Over AUS\$500 million (HK\$2.9 billion) of tax-free infrastructure bonds have been issued to fund the development of the Eastern Distributor. AML is entitled to refinance all or part of the project debts, provided that they have RTA's prior consent.

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<sup>146</sup> International Tunnelling Association (2005).

<sup>147</sup> The payments may be deferred through the issuing of promissory notes, i.e. a formal acknowledge of the debt and a firm commitment to a schedule of payments.

<sup>148</sup> A real after tax internal rate of return of at least 10% per annum.

<sup>149</sup> These concession fees comprise AUS\$2.2 million (HK\$12.6 million) payable in 1998, AUS\$8 million (HK\$45.8 million) payable in 2000 and three other additional cash payments of up to AUS\$6.5 million (HK\$37.3 million) each in 2001, 2002 and 2003.

<sup>150</sup> Cash surplus means cash generated from all sources after payments of debt service and operating cost.

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## 6.2 Toll rates and toll adjustment mechanism

### Toll policy

6.2.1 Whilst AML has declined to disclose whether or not they have any toll policy, RTA has not replied to a related query.

### Toll adjustment mechanism

6.2.2 The initial toll rates and the toll adjustment mechanism were proposed by the private operator, AML, in its bid for the Eastern Distributor project and they were approved by RTA.

6.2.3 Under the agreed mechanism, toll adjustments are made automatically either on the basis of quarterly movements in both the consumer price index (37.5% weighting) and the average weekly earnings (62.5% weighting), or for a 1% increase per quarter, whichever is greater.<sup>151</sup> The adjusted tolls are rounded to the nearest 50 cents.

6.2.4 The Audit Office of New South Wales, in its 1997 report, criticized that as the average weekly earnings grew faster than the consumer price index<sup>152</sup> and the former had a heavier weighting than the latter in the formula for adjusting tolls, it could be expected that the tolls of the Eastern Distributor would rise at a faster rate than the inflation rate.<sup>153</sup> In fact, the quarterly movements in inflation have been mostly less than 1%, whilst those in the average weekly earnings have been more than 1%. For instance, the inflation rate between March 2005 and June 2005 was 0.6%, whilst the quarterly movement in the average weekly earnings between February 2005 and May 2005 was 1.5%.

6.2.5 The Audit Office also raised the concern that other private toll roads did not use the average weekly earnings as a determinant of toll adjustment. Overall, the Audit Office was of the view that in a 48-year context, the difference in the level of tolls charged by the Eastern Distributor and other private toll roads would likely be significant.

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<sup>151</sup> The New South Wales Audit Office (1997). AML, in its proposal, assumed that the consumer price index would have an annual growth rate of 4%, whilst the average weekly earnings would have an annual growth rate of 5%. The Audit Office believed that the assumed growth rate in earnings was based on the movements of the average weekly earnings from the mid-1980s to the mid-1990s, which had an artificially low real growth in weekly earnings due to wage accords and other reasons which dampened the growth in weekly earnings.

<sup>152</sup> This is because wage earners gain from the real growth in the economy, as well as being compensated for nominal price increases.

<sup>153</sup> The New South Wales Audit Office (1997).

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## Toll rates

### *Current rates*

6.2.6 The toll for Class A vehicles (cars<sup>154</sup> and motor-cycles) was AUS\$4.50<sup>155</sup> (HK\$25.79) in October 2005. The toll for Class B vehicles (vehicles other than cars and motor cycles, accounting for less than 3% of traffic on the Eastern Distributor) was AUS\$8.50<sup>156</sup> (HK\$48.71). No tolls apply to government buses. Tolls only apply to traffic using the northbound tunnel, and southbound traffic is not charged for tolls.

### *Rate of toll adjustment*

6.2.7 The initial toll rates in 2000 were AUS\$3.00 (HK\$17.19) for Class A vehicles and AUS\$6.00 (HK\$34.38) for Class B vehicles. In other words, the toll rate for Class A and Class B vehicles increased by 50% and 42% respectively since the opening of the Eastern Distributor in July 2000. Meanwhile, the inflation rate from June 2000 to June 2005 went up by 17.6% only. The yield of the 10-year Treasury bonds, serving as a guide to the level of long-term interest rates, was 6.16% per annum in June 2000 and 5.87% per annum in June 2004.<sup>157</sup>

## **6.3 Financial performance and financial reporting**

### Financial performance

6.3.1 Information on the financial performance of AML is not available.

### Financial reporting

6.3.2 AML is required to fulfil a number of reporting obligations, including the following:

- (a) to provide RTA with copies of the project's financing agreements and security documents;

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<sup>154</sup> Cars are defined as (a) motor vehicles under 2.8 m in height with two or less axles; or (b) motor vehicles under 2 m in height with three or less axles.

<sup>155</sup> The rate includes 10% Goods and Services Tax.

<sup>156</sup> Ibid.

<sup>157</sup> Australian Bureau of Statistics (2005).

- (b) to maintain accounts and other records relating to the Eastern Distributor and make them available to RTA for inspection and auditing purposes;
- (c) to give RTA quarterly company-certified cash flow and profit and loss statements, an independently audited annual profit and loss statement and monthly traffic reports; and
- (d) to notify RTA when the project debts have been repaid in full and when AML derives an amount sufficient to give the project's equity investor a real after-tax internal rate of return of 10% per annum.

#### **6.4 Dispute resolving mechanism and re-negotiation framework**

##### Re-negotiation

6.4.1 The Project Deed expressly envisages a range of circumstances under which the project's contract might need to be re-negotiated. These circumstances include a change in the legislation or legally binding guidelines of the NSW government or public authority, or the building of a juxtaposed competing arterial road by RTA or a concessionaire of RTA, which adversely affects AML's ability to repay its debts and the level or timing of the project's revenues.

6.4.2 Under these circumstances, RTA or the Minister for Roads must enter into good faith negotiations with AML. They must negotiate so as to enable AML to repay their debtors substantially in accordance with their debt financing arrangements and give the equity investors of AML the real after-tax internal rate of return they would have received had the event not occurred.

6.4.3 The Project Deed also envisages a range of possible actions after negotiations. The possible actions include changing the toll calculation schedule and the risk allocation between the parties concerned; the waiving or releasing of existing rights, including the right to receive payments; and requesting the project's debtors to restructure the debt financing arrangements. If the parties concerned cannot agree on the action to be taken within 30 days of entering into the negotiations, the matter may be referred to arbitrators for binding determination.

### Arbitration

6.4.4 Disputes concerning whether an event giving rise to a right to re-negotiate the project's contract, or disputes which are not resolved by re-negotiation within 30 days, may be referred by RTA or AML to a *"mutually agreed, mutually appointed independent expert for final, binding determination"*<sup>158</sup>. In addition, issues concerning the calculation of the tolls to be charged by AML, the calculation of the equity investors' real after-tax internal rates of return, the calculation of the early termination payments to be made to AML following a termination of the Project Deed for an RTA default, may also be referred to arbitration.

6.4.5 Any other disputes under the Project Deed or the lease which are not specified to be referred to arbitrators may be referred by RTA or AML for mediation by the Australian Commercial Disputes Centre Limited in Sydney.

### Termination of Project Deed

6.4.6 The consequences of any early termination of the Project Deed vary, depending on the reasons for the termination and the party at fault. There are provisions under the Project Deed for the various circumstances arisen.

6.4.7 If new NSW legislation prohibits AML from operating the Eastern Distributor or levying its tolls, or a government authority resumes any part of the Eastern Distributor and this has a material adverse effect on AML's ability to operate the Eastern Distributor or levy its tolls, AML may terminate the Project Deed by giving RTA 30 days' notice.

6.4.8 If the Project Deed is terminated by AML owing to any of the situations mentioned above, the Minister for Roads must pay AML an *"early termination amount"* within 30 days. This amount should be equal to the debts to the project's debtors and sufficient to give AML's equity investors the expected real after-tax internal rate of return they will receive up to the termination date. Any dispute about the calculation of this *"early termination amount"* may be referred to arbitrators for binding determination.

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<sup>158</sup> Road and Traffic Authority of New South Wales (1998).

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## Chapter 7 – Analysis

### 7.1 Introduction

7.1.1 This study has examined the operation of toll roads, bridges and tunnels in five places, including the 91 Express Lanes of the State of California (California) of the United States (US), the Dulles Greenway of the State of Virginia (Virginia) of the US, the old Severn Bridge and the Second Severn Crossing of the United Kingdom (UK), the A1(M) between Alconbury and Peterborough of the UK, and the Eastern Distributor of Sydney of Australia. With the exception of the old Severn Bridge, all these transport facilities opened to traffic during the period between 1995 and 2000.

7.1.2 This analysis shows that tolls, apart from funding the development and operation of transport infrastructures, can be a tool to achieve public objectives. Whilst private operators of transport facilities usually charge road users, the charge may be levied on the government under certain arrangements. The toll facilities studied have adopted various mechanisms to adjust their tolls on a variety of bases, with some of them allowing tolls to go down as well as to go up.

### 7.2 Toll rationalization and franchise extension

7.2.1 At the Transport Panel meeting held on 19 December 2005, the Administration presented its initial views on the possible measures to improve the distribution of traffic among the three road harbour crossings. It took the view that the extension of the franchises of the Eastern Harbour Crossing and Western Harbour Crossing together with toll rationalization (i.e. increasing the toll of the Cross-Harbour Tunnel and reducing the tolls of the Eastern Harbour Crossing and the Western Harbour Crossing) would be a direct and effective approach worth taking forward among the various options considered.<sup>159</sup>

7.2.2 As to the issue of extendable franchises, the flexible-term concession of the Severn bridges and the "Least Present Value of Revenue" model on which the variable duration of the concession is based (paragraphs 7.5.1 - 7.5.9) may shed some light on its pros and cons.

7.2.3 This research report does not contain any case study where a similar toll rationalization exercise has taken place to re-distribute the traffic among nearby highways or tunnels. However, lessons may be drawn from what the 91 Express Lanes of the US and the Severn bridges of the UK have adopted to manage traffic flows along the respective transport facilities.

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<sup>159</sup> Environment, Transport and Works Bureau (2005).

7.2.4 The 91 Express Lanes has adopted a congestion pricing policy to spread the traffic along the roadway during various periods of the day. Despite the fact that the toll road is built in the proximity of a freeway, the 91 Express Lanes manages to attract customers and makes a profit as it offers a distinct time-saving advantage over the freeway. Most customers report saving up to a half hour off their daily commute by using the toll road. The public authority that has purchased and operated the 91 Express Lanes considers that saving time is the reason for road users to choose the toll road over the freeway more frequently.<sup>160</sup>

7.2.5 The Second Severn Crossing of the UK also has a parallel crossing nearby, which is the old Severn Bridge. However, they are not competing against each other since they are operated by the same concessionaire. More importantly, both Severn bridges share a common toll charging scheme.

### **7.3 Model of financing and its relationship with user-paid tolls**

7.3.1 Apart from the old Severn Bridge, all the toll facilities studied are financed and built by private consortia, although their models of development and financing vary. The 91 Express Lanes, the Dulles Greenway, the Second Severn Crossing and the Eastern Distributor adopt the Build-Operate-Transfer (BOT) model or its variants, such as the Build-Transfer-Operate model or the Build-Own-Operate-Transfer model.

7.3.2 The A1(M) is a Design, Build, Finance and Operate (DBFO) project. Under the DBFO contract, the private consortium which operates A1(M) receives payments from the Highways Agency of the UK in the form of shadow tolls, calculated primarily on the basis of road usage.

7.3.3 Although the role of the private sector in the A1(M) project is similar to its counterparts in BOT projects, it does not necessarily mean that the private sector has to charge motorists directly in order to recover its investment and make profit. In this case, the private operator is paid by the government instead.

7.3.4 The case of the A1(M) illustrates that the bond between private financing and user-paid tolls is not unbreakable, although user-paid tolls have provided the main source of revenues for the private investors in four of the five transport facilities studied.

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<sup>160</sup> Orange County Transportation Authority (2004).

7.3.5 The case of the 91 Express Lanes illustrates that a highway operated by a public agency does not necessarily mean that it is free of charge. The public agency purchased the toll road in order to eliminate a clause in the franchise agreement prohibiting capacity-enhancing improvements to be made to the nearby freeway. However, the agency does not turn the toll road into a freeway, and motorists are still charged for using the 91 Express Lanes. Nevertheless, the purpose of toll collection has changed from profit-making to improving both the toll road and the nearby freeway, and maximizing the free flow of traffic.

## **7.4 Comparison of publicly-financed and privately-financed options**

7.4.1 Except for California, the public authority in the selected places compared the costs of privately financing the transport facilities and the publicly-financed option before deciding whether the facilities should be built by public or private money.

7.4.2 Comparisons conducted by three of the transport facilities studied in the planning stage showed that the traditional publicly-funded option would have a lower cost of capital than the privately-financed alternative. However, the public authorities of those places still opted for the privately-financed model for various reasons. Virginia chose to have the Dulles Greenway privately built because the proposed highway did not have a high priority for public spending. Some academics believed that whether or not the public alternative in the case of the Dulles Greenway was cheaper depended largely on whether one looked at it from a motorist's view or a taxpayer's view.<sup>161</sup> In the case of the Severn bridges, the UK government believed that the extra costs brought by private financing were outweighed by the advantage of transferring the risk of cost overrun to the private sector. The Roads and Traffic Authority of New South Wales (RTA) also had the Eastern Distributor privately built for the reason of transferring risks, in addition to its unwillingness to raise public debt.

7.4.3 The comparison performed for the A1(M) did show that the privately-financed option would bring a saving of £50 million (HK\$713 million). However, both the National Audit Office and the Select Committee on Public Accounts of Parliament criticized that a discount rate of 8% was too high for determining shadow tolls over the concession period, which led to the overstating of savings brought under the private option. The National Audit Office was of the view that since a small percentage change in the discount rate would markedly affect the outcome of comparison, the quantified comparison could be no more than guides to the exercise of judgement.

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<sup>161</sup> Gómez-Ibáñez and Meyer (1993).

## 7.5 Variable duration of concession and toll charging

7.5.1 Two of the concessions studied, namely the A1(M) and the Eastern Distributor, are of fixed duration, whilst the remaining three are of variable length. The concession of both the 91 Express Lanes and the Dulles Greenway may end earlier if their debts are repaid earlier than expected. Whilst the original term of the concession for the 91 Express Lanes was fixed, the enactment of new legislation in 2002 allows the public agency to buy the toll road, as well as an earlier termination of both the franchise and its authority to collect tolls.

7.5.2 Whilst the termination date for the concession on operating the Dulles Greenway may end earlier if the debt is paid off earlier than expected, it may be extended by the state regulator to take account of any refinancing. In fact, it has been extended from around 46 years to 66 years due to refinancing of the project. The extension of the concession helps avoid immediate toll hikes when there is a need for funds. Otherwise, improvements of the Dulles Greenway have to be funded through higher tolls, which would discourage the use of the road.

7.5.3 In the case of the Severn bridges, the flexibility of concession term is employed to cope with the uncertain risks which may affect the revenue of the private operator, for instance, uncertain traffic volumes. The operator of the Severn bridges cannot raise tolls to cover any revenue shortfall as the toll rates are fixed by legislation and the annual adjustment rate is pegged with inflation. In the event of such revenue shortfalls, the duration of its concession will be extended, enabling the operator to recover its revenue over a longer period of time.

7.5.4 The flexible-term concession of the Severn bridges project is a characteristic under the "Least Present Value of Revenue" model. The duration of the concession depends on how fast the private operator achieves the target revenue. For instance, the private operator of the Severn bridges could not raise toll rates to cope with the value-added tax imposed on the tolls following a court ruling, as the UK government had promised motorists that they would not bear that tax burden. Instead, it has had its target revenue raised and concession extended as compensation. While the concession of the Severn bridges has a flexible term, it is capped at a maximum duration of 30 years by the UK legislation.

7.5.5 Some academics believe that the problems of estimating compensation for the concessionaire faced by the 91 Express Lanes and demand uncertainty faced by the Dulles Greenway in the 1990s could have been avoided if these two US highways had adopted the kind of "Least Present Value of Revenue" franchise arrangement used by the Severn bridges.<sup>162</sup>

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<sup>162</sup> Engel et al. (2005).

7.5.6 Before the opening of the Dulles Greenway, it was estimated that there would be a daily traffic flow of 35 000 vehicles, but the average number of vehicles turned out to be only 8 500.<sup>163</sup> If the concession had allowed an extension of the term whenever the demand turned out to be lower than expected and a shortening of the term when the demand was higher than projection, the risk to the concessionaire would have been smaller without affecting the expected revenue of the concessionaire.

7.5.7 Some academics believe that when a concession is terminated before expiry date, the adoption of the "Least Present Value of Revenue" model reduces the difficulty in estimating the forgone future income of the concessionaire, i.e., the amount of compensation to be given to the concessionaire.<sup>164</sup> For instance, the original private operator of the 91 Express Lanes once set the selling price of the highway at US\$274 million (HK\$2.1 billion), although it only cost US\$130 million (HK\$1.0 billion) to build.<sup>165</sup> If the 91 Express Lanes had adopted the "Least Present Value of Revenue" model, the government could simply give the concessionaire the difference between what it had originally bid and what it had already earned.

7.5.8 In addition, some academics consider that a clear and objective estimation of compensation is important to the public acceptance of the results of a re-negotiation on concession terms.<sup>166</sup> In a dispute over a concession contract, the government is supposed to re-negotiate on behalf of consumers. However, those academics opine that it is difficult to hold a re-negotiation as open and transparent as a competitive bidding process. Therefore, re-negotiations often arouse the public's suspicions and undermine the legitimacy of the concession programme.<sup>167</sup> An objective estimation of compensation facilitates the monitoring of the re-negotiations by the public, and in turn, makes the process more accountable and transparent.<sup>168</sup>

7.5.9 The "Least Present Value of Revenue" model does have a few drawbacks. It does not resolve possible cash flow problems faced by the concessionaire in the event that the traffic level drops.<sup>169</sup> In addition, the concession offers little incentive for the private operator to make demand-enhancing and quality-enhancing investments, such as improvements on the quality of the highway, as the target revenue to be received by the concessionaire is fixed, and the associated revenue shortfall will be made up through a longer concession period.<sup>170</sup> Nonetheless, it is believed that this latter drawback can be remedied by setting road and service quality standards and having third parties verifying minimum quality standards.<sup>171</sup>

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<sup>163</sup> Engel et al. (2005).

<sup>164</sup> Gómez-Lobo and Hinojosa (2000).

<sup>165</sup> The 91 Express Lanes was sold to the public agency at US\$207.5 million (HK\$1.7 billion) in 2003.

<sup>166</sup> Gómez-Ibáñez et al. (2004).

<sup>167</sup> Ibid.

<sup>168</sup> Gómez-Lobo and Hinojosa (2000).

<sup>169</sup> Ibid.

<sup>170</sup> Engel et al. (2000).

<sup>171</sup> Tirole (1997).

## 7.6 Toll policy

7.6.1 Either a toll policy is adopted by or a related statute is enacted for three of the transport facilities studied, namely the 91 Express Lanes, the Dulles Greenway and the A1(M), which ensures that the private operator will receive no more than a reasonable return or that some public objectives are achieved, such as managing traffic volumes and encouraging the private operator to adopt measures enhancing safety and avoiding closure of lanes. The Severn bridges do not have a specified toll policy, whilst the information regarding the Eastern Distributor is not available.

### Cap on rate of return

7.6.2 The legislation of Virginia provides that the public regulator should approve the toll rates and toll adjustments on the Dulles Greenway if such rates provide the private operator no more than a reasonable return. Similarly, when the 91 Express Lanes was operated by a private concessionaire, the state legislation also provided that the toll revenues be applied to a reasonable return on investment, i.e. 17%. The Dulles Greenway has its return capped at different levels at different time periods: 30% for the first five years and gradually down to 14% from the seventeenth year onwards.

### Achieving public objectives

7.6.3 After the public agency purchased the 91 Express Lanes, it has adopted a new toll policy, which does not aim at maximizing its return or achieving a reasonable return. The 91 Express Lanes is the only facility studied that has a policy for using tolls to manage traffic volumes. The objectives are to optimize vehicle throughput at free flow speeds and direct net revenues for improvements of both the 91 Express Lanes and the freeway next to it.

7.6.4 The Highways Agency of the UK has also adopted a toll policy for achieving public objectives for the A1(M). The shadow toll policy pegs the payments to the private operator not only with traffic volumes, but also with road safety and the availability of the lanes.

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## 7.7 Toll adjustment mechanism

### Public consultation

7.7.1 The 91 Express Lanes and the Dulles Greenway are the only two toll facilities studied which have a public consultation process before any toll adjustment is made. The State Route 91 Advisory Committee may review any changes to the toll structure of the 91 Express Lanes and will place an item on its agenda for public comment as well. However, the opinion of the advisory committee is not binding on the toll adjustment of the 91 Express Lanes. Similarly, when the operator of the Dulles Greenway applies to the regulatory authority for an adjustment of toll ceilings, it has to give notice to the interested parties and the public, so that they can comment and/or request for a public hearing. Staff of the regulatory authority will review the public comments before making non-binding recommendations to the regulatory authority.

7.7.2 When the old Severn Bridge was operated by the government, the Minister for Public Transport was required to publish the proposed toll adjustments in at least one local newspaper and the London Gazette for public comment. A local inquiry might be held if there was any objection to the adjustments. However, this consultation requirement is no longer applicable to the private operator of the two Severn bridges.

### Bases of adjustment

7.7.3 The 91 Express Lanes is the only transport facility among the facilities studied that uses traffic volumes as the basis for adjusting rush hour toll rates in order to manage congestion. Some other facilities may charge higher tolls for certain rush hours, but they do not adjust their toll rates on the basis of traffic volumes as such.

7.7.4 Once the hourly traffic volumes of the 91 Express Lanes are consistently too heavy, traffic volumes will be continually monitored on a rolling 12 consecutive week basis. If in any six of 12 consecutive weeks, the average traffic volume of any particular hour, day and direction reaches 97% of the maximum optimal capacity of the road or more, the toll will be raised by US\$1.00 (HK\$7.80). If the average traffic volume is between 94.1% and 97% of the maximum optimal capacity, the toll will be increased by US\$0.75 (HK\$5.85). Six months after the toll increase, if the average traffic volume is less than 80% of the maximum optimal capacity, the toll will be reduced by US\$0.50 (HK\$3.90) to stimulate demand.

7.7.5 Apart from the Dulles Greenway, all the transport facilities studied have their toll adjustments made on the basis of, or partly on the basis of inflation or a combination of indexes which include inflation.

7.7.6 The toll rates of the Severn bridges are fixed by legislation but adjusted annually on the basis of changes in the Retail Price Index since 1989, whilst the toll rates of the Eastern Distributor are adjusted quarterly on the basis of quarterly movements in both the consumer price index (37.5% weighting) and the average weekly earnings (62.5% weighting), or a 1% increase per quarter, whichever is greater. For the 91 Express Lanes, both the Non-Super Peak and Super Peak tolls, which have not been adjusted in the previous 12 months, are adjusted annually based on a combination of the inflation rate and labour cost. The shadow toll payment of the A1(M) is also adjusted by an indexation formula, which includes the inflation rate.

7.7.7 Although the inflation rate is a popular basis for making toll adjustments, there are views against its use. During the debate on the passing of the 1992 Act, a Member of the UK Parliament suggested that core inflation was irrelevant to the toll bridge operation which consisted almost entirely of capital costs, an interest-dependent variable.<sup>172</sup> In response, the Transport Secretary of the UK claimed that statistics revealed that if toll increases were linked to a combination of the construction industry index and the movements in interest rates rather than the inflation rate, road users would be subjected to greater magnitudes of toll increases.

7.7.8 The use of a combination of movements in the inflation rate and the average weekly earnings to adjust the tolls of the Eastern Distributor was also criticized by the Audit Office of New South Wales. It opined that the average weekly earnings grew faster than the consumer price index, and the former had a heavier weighting than the latter in the formula for future increases in tolls. Therefore, it was expected that the tolls of the Eastern Distributor would rise at a faster rate than the inflation rate.<sup>173</sup>

### Toll reduction

7.7.9 Although most of the selected transport facilities studied have their toll adjustments based on changes in the inflation rate, not all of them reduce their tolls when there is deflation instead of inflation. The Non-Super Peak tolls of the 91 Express Lanes will be frozen rather than reduced if there is deflation in a particular year. In the Eastern Distributor, tolls are automatically raised by either 1% or a rate calculated based on inflation and earnings, whichever is greater, on a quarterly basis under the agreed mechanism. On the contrary, the Severn bridges will have their tolls cut in accordance with deflation. In addition, the Transport Secretary of the UK has the power to adjust the tolls of the Severn bridges at a rate less than that of inflation with the concessionaire's consent. However, the private operator of the Severn bridges is obliged to charge the maximum toll permitted under its financing agreements.

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<sup>172</sup> HC Deb (1990-91) 183, col. 643.

<sup>173</sup> The New South Wales Audit Office (1997).

7.7.10 Although the Dulles Greenway does not adjust its toll on the basis of inflation, SCC may, upon application or its own initiative, order any toll being charged by the operator be substituted.

#### Approval by regulator or legislature

7.7.11 The toll rates of the Severn bridges are fixed by legislation which required approval of the UK Parliament, although the subsequent annual adjustment of tolls is automatic. The Dulles Greenway is the only toll road studied that needs approval of the regulatory authority for the adjustment of its toll ceilings. Within the approved toll ceilings, the private operator has the freedom to adjust its toll rates on its own. The other toll roads, bridges and tunnels have their toll adjustments based on inflation, other indexes or traffic volumes. These adjustments are automatic and do not require approval of the regulator or the legislature.

### **7.8 Toll rates and rate of adjustment**

7.8.1 Apart from charging different tolls according to the type of vehicles, the 91 Express Lanes and the Dulles Greenway charge tolls at different rates depending on the time of the day so as to manage traffic demand. The 91 Express Lanes gives further discount to carpools of three or more persons.

7.8.2 Two of the transport facilities studied charge tolls for one direction only. They are the Severn bridges and the Eastern Distributor. The 91 Express Lanes and the Dulles Greenway charge tolls for both ways. The actual payment per trip or per km made by the Highways Agency to the A1(M) operator is not available.

7.8.3 The rates charged by the toll facilities studied have increased at various rates since they opened to traffic. Regarding the 91 Express Lanes, as carpools of three or more persons are allowed to ride free or at a discount, the average toll has decreased from US\$2.59 (HK\$20.20) prior to the public agency's purchase to US\$2.50 (HK\$19.50). Although the average toll rate of the 91 Express Lanes has decreased, the tolls for particular rush hours have increased substantially to manage congestion. The Super Peak tolls have been raised seven times (US\$0.75 (HK\$5.85) each time) since January 2003, each of which generally affects one to four hours in a 24-hour period.

7.8.4 For the Dulles Greenway, the toll for cars has increased by 37% since it opened to traffic in 1995, with a cut in toll rates by half in 1996 when initial traffic fell short of the projected levels. The toll rates of the Severn bridges have increased by around 70% for all three categories of vehicles since the private operator took over in 1992. Meanwhile, the toll rate of the Eastern Distributor has increased by 50% and 42% for Class A and Class B vehicles respectively since its opening in July 2000. The increase in the shadow toll rate of the A1(M) is not available.

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## **7.9 Financial performance and financial reporting**

### Financial performance

7.9.1 Both the Severn bridges and the Eastern Distributor use the internal rate of return to assess the return to the facility. When the Highways Agency of the UK assessed the bids for developing and operating the A1(M), it used the net present value measure. When the 91 Express Lanes was operated by the private operator, the rate of return was also calculated on the basis of the net present value of cash flows. Meanwhile, the Dulles Greenway uses the rate of return on equity for measuring its performance.

7.9.2 Since the 91 Express Lanes is currently operated by a public agency and is not being operated for profit-making purposes, the rate of return concept is not used to measure its return of investment.

7.9.3 Both the 91 Express Lanes and the A1(M) have been making profits, whilst the Severn bridges had operating profits but suffered a loss after scheduled and voluntary repayment of debts and tax in both 2003 and 2004. The Dulles Greenway has been losing about US\$25 million a year since it opened to traffic in 1995. In recent years, the revenues of the Dulles Greenway have covered operating costs, but not interest and principal payments of its debts. The financial performance of the Eastern Distributor is not available. The actual rates of return achieved by all the toll facilities studied are not available.

### Financial reporting

7.9.4 The Severn bridges are the only transport facilities required to submit their audited annual accounts to the legislature. The other selected toll facilities are only required to submit their audited accounts to their regulator, or to the related government department or advisory body.

## **7.10 Dispute resolving mechanism and re-negotiation framework**

### Re-negotiation

7.10.1 The length of concession of the toll roads, bridges and tunnels studied varies from 24 years for the Severn bridges to 66 years for the Dulles Greenway. The term of contract of the A1(M) is 30 years, whilst the concession of the 91 Express Lanes lasts 35 years and the Eastern Distributor 48 years.

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7.10.2 Toll road concessions are usually long. The legal, economic and social environments will change during the concession period. Some academics<sup>174</sup> are of the view that it is better to have rules laid down for dealing with re-negotiations, so that it is possible to adapt the contract terms to unforeseen changing circumstances, and have the risks of the various players of the concession, i.e. the regulator and the concessionaire, reasonably allocated.

7.10.3 Both the Eastern Distributor and the A1(M) specify the mechanism to re-negotiate and the scope of possible changes to be made in the contract. There are certain circumstances under which the concession agreement of the Severn bridges authorizes changing the amount of tolls specified in the legislation. The concession agreement of or legislation related to the remaining two facilities studied allows some issues to be re-negotiated, such as extension or termination of the concession, but details are not available.

7.10.4 Regarding the case of the Eastern Distributor, its Project Deed expressly envisages a range of circumstances under which the public authority (RTA) must enter into re-negotiation with the concessionaire (AML). For instance, a change in the legislation or the building of a juxtaposed competing arterial road may adversely affect the concessionaire's ability to repay its debts or its level of revenue. Under such circumstances, RTA must negotiate with AML in good faith so as to enable AML to repay their debtors substantially in accordance with the debt financing arrangements, and give the investors of AML the internal rate of return they would have received had the event not occurred. If the parties concerned cannot agree on the action to be taken within 30 days of entering the negotiations, the matter may be referred for binding determination. The Project Deed also provides the rules for handling an early termination of concession.

7.10.5 For the A1(M), where a change in the contract terms required by the Highways Agency alters the private consortium's costs or the traffic flow on the project road, the shadow tolls are revised or compensation is provided in accordance with a specified mechanism. The contract also provides for the introduction of user-paid tolls if it is considered desirable by the UK government.

### Dispute resolution

7.10.6 During the term of the concession, disputes may arise between the concessionaire and the government or the regulatory authority. All selected transport facilities, except for the Dulles Greenway, have a dispute resolving mechanism in their concession or contract. The parties concerned of the 91 Express Lanes, the A1(M) and the Eastern Distributor contracts can refer the dispute to independent experts for adjudication if they fail to resolve it through negotiation. Disputes concerning the Severn bridges are referred to independent experts first. If the experts cannot make a unanimous decision, the dispute may be referred to arbitration.

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<sup>174</sup> Estache and de Rus eds. (2000) and Gómez-Lobo and Hinojosa (2000).

## Appendix

## Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Basic information</b>					
Location of the toll road /bridge/tunnel	It connects Riverside and San Bernardino Counties with Orange and Los Angeles Counties in California.	It connects Washington Dulles International Airport with the developing western outskirts of the Washington D.C. metropolitan area.	It crosses River Severn between south-west England and south Wales of the United Kingdom (UK).	It is part of the existing A1 motorway (between Alconbury and Petersborough) which links London and Newcastle.	It links the Sydney Central Business District and Sydney Harbour crossings with the southern suburbs and Sydney Airport.
Length and number of lanes	<ul style="list-style-type: none"> <li>• 16.1 km.</li> <li>• Four-lane.</li> </ul>	<ul style="list-style-type: none"> <li>• 22.5 km.</li> <li>• Partly four-lane and partly six-lane.</li> </ul>	Old Severn Bridge: <ul style="list-style-type: none"> <li>• 1.59 km and four-lane.</li> </ul> Second Severn Crossing: <ul style="list-style-type: none"> <li>• 5.13 km and six-lane.</li> </ul>	<ul style="list-style-type: none"> <li>• 21 km.</li> <li>• More than half is dual four-lane, with the remainder largely dual three-lane.</li> </ul>	<ul style="list-style-type: none"> <li>• Six km, including two tunnels.</li> <li>• Dual three-lane.</li> </ul>
Toll road operator	Before 3 January 2003: <ul style="list-style-type: none"> <li>• Private consortium: California Private Transportation Company (CPTC).</li> </ul> Since 3 January 2003: <ul style="list-style-type: none"> <li>• Public agency: Orange County Transportation Authority (OCTA).</li> </ul>	Private consortium: Toll Road Investors Partnership II (TRIP II).	From September 1966 to 25 April 1992: <ul style="list-style-type: none"> <li>• Avon County Council operated on behalf of the UK government.</li> </ul> From 26 April 1992: <ul style="list-style-type: none"> <li>• Private consortium: Severn River Crossing plc (SRC).</li> </ul>	Private consortium: Road Management Services (Peterborough) Ltd (RMS).	Private consortium: Airport Motorway Limited (AML).
Date of opening to traffic	27 December 1995.	29 September 1995.	Old Severn Bridge: <ul style="list-style-type: none"> <li>• 8 September 1966.</li> </ul> Second Severn Crossing: <ul style="list-style-type: none"> <li>• 5 June 1996.</li> </ul>	31 October 1998.	First stage: <ul style="list-style-type: none"> <li>• 18 December 1999.</li> </ul> Second stage: <ul style="list-style-type: none"> <li>• 24 July 2000.</li> </ul>

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Basic information (cont'd)</b>					
Is Build-Operate-Transfer or one of its variants adopted as the model of development and funding?	<ul style="list-style-type: none"> <li>• Yes, it is a Build-Transfer-Operate (BTO) project.</li> <li>• The private consortium financed and built the infrastructure facility. It transferred the facility to the government after the completion of construction rather than at the end of the franchise agreement. The private consortium then leased it from the government and operated it before the facility was purchased and operated by the public agency.</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, it is a Build-Operate-Transfer (BOT) project.</li> <li>• The private consortium financed and built the infrastructure facility, and operates it. The facility will be transferred to the government at the expiry of the certificate of authority (the certificate of authority is an order made by the State Corporation Commission (SCC), which authorizes the private consortium to operate the Dulles Greenway).</li> </ul>	<ul style="list-style-type: none"> <li>• Partly BOT.</li> <li>• The whole concession consists of two parts. The Second Severn Crossing on its own is a BOT project. It is built and financed by SRC which operates it. The facility will be transferred to the government at the end of the concession. However, the old Severn Bridge is not a BOT project. It was financed by public funding, but is now operated by SRC.</li> </ul>	<ul style="list-style-type: none"> <li>• No, the Design, Build, Finance and Operate (DBFO) model is adopted.</li> <li>• It is similar to the BOT concept. However, DBFO is not a concession as the operating company cannot charge users.</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, it is a Build-Own-Operate-Transfer (BOOT) project.</li> <li>• The private consortium financed and built the infrastructure facility. The private consortium owns it under a lease arrangement, operates the facility and will transfer the facility to the New South Wales (NSW) government at the end of the concession.</li> </ul>

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Basic information (cont'd)</b>					
Is there any clause in the concession/contract prohibiting the building of a competing freeway or improvements made to the nearby freeway?	<p>When the 91 Express Lanes was operated by CPTC:</p> <ul style="list-style-type: none"> <li>• Yes, there was a non-compete clause prohibiting capacity enhancing improvements from being made to the Riverside Freeway before 2030.</li> </ul> <p>As the 91 Express Lanes has been operated by OCTA since 2003:</p> <ul style="list-style-type: none"> <li>• No, the non-compete clause has been eliminated.</li> </ul>	No.	Information not available.	No.	No, but the Roads and Traffic Authority of New South Wales (RTA) promises to consult with AML before carrying out any changes to the NSW road system that can materially alter the status of the Eastern Distributor as " <i>the principal north-south road corridor for the eastern area of Sydney</i> ". If AML considers that the development will adversely affect its ability to repay its debts, or on its revenues, RTA or the Minister for Roads must re-negotiate the contract with AML.

## Appendix (cont'd)

## Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Period of concession</b>					
Is the term of the concession/contract fixed or variable?	<ul style="list-style-type: none"> <li>Variable.</li> <li>After OCTA purchased CPTC's interests in the franchise agreement, OCTA has the right to operate the 91 Express Lanes for the remaining term of the franchise, but the franchise may end earlier if all debts are repaid and all investments are recouped.</li> </ul>	<ul style="list-style-type: none"> <li>Variable.</li> <li>The regulator, SCC, may modify the termination date of the certificate of authority to take into account any refinancing, where the refinancing or modification is <i>"in the public interest, or any refinancing for the purpose of expansion, or early termination of the original permanent financing"</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Variable.</li> <li>The legislation provides that the concession period runs for a maximum of 30 years, but the actual duration depends on when the concessionaire has reached its revenue target stated in its bid.</li> </ul>	<ul style="list-style-type: none"> <li>Fixed.</li> </ul>	<ul style="list-style-type: none"> <li>Fixed.</li> <li>Nonetheless, the operating term may change if the state government has done something which adversely affects AML's ability to repay their debts and/or the level or timing of the project's revenue.</li> </ul>
Length of the concession/contract (date of commencement of the concession /contract)	35 years (from December 1995).	<ul style="list-style-type: none"> <li>Around 66 years (from 1990).</li> <li>The term of the certificate of authority has been extended from 2036 to 2056 after refinancing. The concession may expire earlier if the debt is repaid earlier, or it may expire at no later than 2066 if the debt is paid off after the scheduled date.</li> </ul>	<ul style="list-style-type: none"> <li>Around 24 years (from April 1992).</li> <li>After the UK government decided that the concessionaire would bear the VAT charged on tolls without raising the toll rates, the term of the concession has been extended from 2014 to early 2016.</li> </ul>	30 years (from April 1996).	48 years (from July 2000).

## Appendix (cont'd)

## Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Cost and financing</b>					
Construction cost	Around US\$130 million (HK\$1.0 billion).	US\$350 million (HK\$2.7 billion).	Old Severn Bridge: <ul style="list-style-type: none"> <li>£8 million (HK\$114.2 million).</li> </ul> Second Severn Crossing: <ul style="list-style-type: none"> <li>£330 million (HK\$4.7 billion).</li> </ul>	Around £128 million (HK\$1.8 billion).	<ul style="list-style-type: none"> <li>Around AUS\$700 million (HK\$4.0 billion).</li> <li>Apart from the construction cost, AML has to pay concession fees to RTA.</li> </ul>
Did the government compare the costs of privately financing and publicly financing the building of the road/bridge/tunnel before choosing the former option?	No.	<ul style="list-style-type: none"> <li>Yes, the staff of SCC made a comparison for SCC's consideration.</li> <li>The comparison showed that the publicly-financed option would be cheaper, but SCC chose the privately-financed option as the transport facility did not have a high priority for public spending, given that the purpose was to aid the development of the area, rather than to relieve congestion.</li> </ul>	<ul style="list-style-type: none"> <li>Yes.</li> <li>The UK government admitted that the privately-financed option was more expensive, but this extra cost was outweighed by the advantage of placing the risk of cost overruns entirely on the private sector.</li> </ul>	<ul style="list-style-type: none"> <li>Yes.</li> <li>The Highways Agency's assessment indicated that at a discount rate of 8%, it would be £50 million (HK\$713 million) cheaper to have the road built and operated by the private consortium RMS.</li> </ul>	<ul style="list-style-type: none"> <li>Yes.</li> <li>RTA's comparison indicated that a government-funded toll road would provide a marginally higher return than the private proposal, but the government did not pursue the publicly-funded alternative as it did not wish to raise debt or take on traffic volume risk and interest rate risk.</li> </ul>

## Appendix (cont'd)

## Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Cost and financing (cont'd)</b>					
Financing of the project	<p>When CPTC financed the building of the 91 Express Lanes:</p> <ul style="list-style-type: none"> <li>CPTC issued taxable bonds of US\$135 million (HK\$1.1 billion) at a rate of 7.63%. OCTA provided a subordinated loan of US\$7 million (HK\$54.6 million).</li> </ul> <p>When OCTA purchased the 91 Express Lanes:</p> <ul style="list-style-type: none"> <li>OCTA financed the purchase by borrowing US\$83.64 million (HK\$652.4 million) from other OCTA funds at an annually adjustable interest rate representing OCTA's rate of return on short-term investments, i.e. 2.48% on 30 June 2004. In late 2003, OCTA issued around US\$200 million (HK\$1.6 billion) of tax-exempt bonds to refinance its debts.</li> </ul>	<p>The project was financed by equity and debt and was refinanced in 1998 and 2001. As at 30 June 2005, the total debt amounted to US\$856.2 million (HK\$6.7 billion) and the average interest rate was 6.45%.</p>	<p>Old Severn Bridge:</p> <ul style="list-style-type: none"> <li>The construction cost was financed solely by public funding.</li> <li>The maintenance cost of £126 million (HK\$1.8 billion) was paid by public money at first, but SRC has assumed the responsibility of £122 million (HK\$1.7 billion) of the cost. SRC financed £60 million (HK\$856.2 million) of the cost by a 6% Indexed Linked Debt.</li> </ul> <p>Second Severn Crossing:</p> <ul style="list-style-type: none"> <li>SRC financed the cost by bank loans and index-linked debenture stock.</li> </ul>	<p>Funding has been provided via a bond issue and a loan from the European Investment Bank.</p>	<p>AML issued over AUS\$500 million (HK\$2.9 billion) of tax-free bonds to fund the development.</p>

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Toll policy and adjustment mechanism</b>					
Does the road/bridge/tunnel charge tolls directly on users?	Yes.	Yes.	Yes.	No, the private operator, RMS, receives payments directly from the Highways Agency in the form of "shadow tolls".	Yes.
Toll policy	<p>When the 91 Express Lanes was operated by CPTC:</p> <ul style="list-style-type: none"> <li>The legislation provided that the toll revenues be applied to the payment of the capital costs and operating costs, the reimbursement to the state for the costs of maintenance and police services, and a reasonable return on investment to the private entity.</li> </ul>	<p>The Virginia Highway Corporation Act of 1988 provides that SCC should approve the toll rates if <i>"they appear reasonable to the user in relation to the benefit obtained, not likely to materially discourage use of the roadway and provide the operator no more than a reasonable rate of return as determined by the Commission"</i>.</p>	<p>When the government operated the old Severn Bridge before 1992:</p> <ul style="list-style-type: none"> <li>Tolls were levied on a scale which <i>"would be sufficient, but not more than sufficient"</i> for the reimbursement with interests of all expenses in providing maintenance and administration of the Severn Bridge and for making a provision for the maintenance after the toll period.</li> </ul> <p>Since 1992 when SRC started operating both Severn bridges:</p> <ul style="list-style-type: none"> <li>The Severn Bridges Act 1992 (1992 Act) does not specify a toll policy, but provides that toll adjustments should be made based upon the changes in the Retail Price Index since 1989.</li> </ul>	<ul style="list-style-type: none"> <li>The Highways Agency pays shadow tolls to RMS primarily based on road usage, plus bonus payments for safety enhancements and charges for lane closures.</li> <li>The purpose of the shadow toll payment mechanism as a whole is to foster the development of the private sector road-operating industry in the UK.</li> </ul>	Information not available.

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Toll policy and adjustment mechanism (cont'd)</b>					
Toll policy (cont'd)	<p>As the 91 Express Lanes has been operated by OCTA since 2003:</p> <ul style="list-style-type: none"> <li>• The goals of the toll policy are as follows:                             <ul style="list-style-type: none"> <li>"(a) <i>Provide a safe, reliable, predictable commute for customers;</i></li> <li>(b) <i>Optimize vehicle throughput at free flow speeds;</i></li> <li>(c) <i>Pay debt service and maintain debt service coverage;</i></li> <li>(d) <i>Increase average vehicle occupancy;</i></li> <li>(e) <i>Balance capacity and demand to serve customers who pay tolls as well as carpoolers with three or more persons who are offered discounted tolls;</i></li> <li>(f) <i>Generate sufficient revenue to sustain the financial viability of the 91 Express Lanes;</i></li> <li>(g) <i>Ensure all bond covenants are met; and</i></li> <li>(h) <i>Repay OCTA's internal borrowing and provide net revenues for the Riverside Freeway and the 91 Express Lanes improvements."</i></li> </ul> </li> </ul>				

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Toll policy and adjustment mechanism (cont'd)</b>					
Is there any public consultation before toll adjustment?	<p>When the 91 Express Lanes was operated by CPTC:</p> <ul style="list-style-type: none"> <li>No.</li> </ul> <p>As the 91 Express Lanes has been operated by OCTA since 2003:</p> <ul style="list-style-type: none"> <li>Yes. The State Route 91 Advisory Committee may review any changes to the toll structure and it will place an item on the agenda for public comment and consideration of the advisory committee. OCTA is not required to obtain the approval of the State Route 91 Advisory Committee before it decides to change the toll rates.</li> </ul>	<ul style="list-style-type: none"> <li>Yes, SCC orders the toll road operator to give notice of the application of toll adjustment to the interested parties and the public. Any interested person or government agency may comment and/or request for a public hearing with SCC.</li> <li>Staff of SCC reviews opinions from the public before making recommendations to SCC.</li> </ul>	<p>When the government operated the old Severn Bridge before 1992:</p> <ul style="list-style-type: none"> <li>Yes, the Minister for Public Transport was required to publish the proposed order on the adjustment of toll rates in at least one local newspaper and the London Gazette. Any person might write to the Minister to object to the adjustment within six weeks.</li> <li>If the objection came from either of the county councils in which the old Severn Bridge was located, from any other local authority in England or Wales or from any interest-related organization specified in the Severn Bridges Tolls Act 1965, a local inquiry had to be held. In other cases, the Minister might decide whether one would be held.</li> </ul> <p>Since 1992 when SRC started operating both Severn bridges:</p> <ul style="list-style-type: none"> <li>No.</li> </ul>	Not applicable.	No.

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Toll policy and adjustment mechanism (cont'd)</b>					
The toll adjustment mechanism	<p>When the 91 Express Lanes was operated by CPTC:</p> <ul style="list-style-type: none"> <li>CPTC was free to set the toll rates, as long as the resulting return was within the maximum rate of return set out in the franchise, i.e. 17%.</li> </ul> <p>As the 91 Express Lanes has been operated by OCTA since 2003:</p> <ul style="list-style-type: none"> <li>Once the hourly traffic volumes are consistently too heavy in six of 12 consecutive weeks, the tolls for those high demand Super Peak hours will be increased by US\$1.00 (HK\$7.80) if the average vehicle volume has reached 97% of the maximum optimal capacity or more, or by US\$0.75 (HK\$5.85) if the average vehicle volume is between 94.1% and 97% of the maximum optimal capacity.</li> <li>Non-Super Peak tolls and Super Peak tolls not adjusted for the previous 12 months are adjusted annually based on the Inflation Factor, a weighted combination of indexes measuring labour cost and inflation.</li> </ul>	<p>TRIP II initiates the adjustments of toll ceilings and applies for the approval of SCC. Within those ceilings, TRIP II is free to adjust the toll rates on its own.</p>	<p>When the government operated the old Severn Bridge before 1992:</p> <ul style="list-style-type: none"> <li>After considering all concerns on the proposed toll adjustment, the Minister for Public Transport might make an order, with or without any modification to the original proposed order. The order had to be approved by a resolution of the House of Commons to become effective.</li> </ul> <p>Since 1992 when SRC started operating both Severn bridges:</p> <ul style="list-style-type: none"> <li>The toll rates have been fixed by the 1992 Act in 1989 prices. The annual adjustment based on inflation is automatic. The Transport Secretary may make an order for the adjustment to become effective.</li> </ul>	<p>Shadow toll payments are adjusted annually in accordance with an indexation formula. Retail Price Indexes are used as part of the indexation formula, but details of the formula are not available.</p>	<p>Toll adjustments are made automatically either on the basis of quarterly movements in both the consumer price index (37.5% weighting) and the average weekly earnings (62.5% weighting), or for a 1% increase per quarter, whichever is greater.</p>

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Toll policy and adjustment mechanism (cont'd)</b>					
Is approval of public regulator or legislature required for toll adjustment?	When the 91 Express Lanes was operated by CPTC: • No.  As the 91 Express Lanes has been operated by OCTA since 2003: • No.	Yes, approval of SCC is required for adjustment of toll ceilings.	When the government operated the old Severn Bridge before 1992: • Yes.  Since 1992 when SRC started operating both Severn bridges: • No.	No.	No.
Is there any mechanism to reduce the toll rates or adjust the toll rates at a level less than what is permitted?	<ul style="list-style-type: none"> <li>• Yes, six months after an increase in Super Peak tolls, the traffic volume of the most recent 12 consecutive weeks has to be reviewed. If the traffic volume for six of the 12 consecutive weeks is less than 80% of the maximum optimal capacity, the traffic volumes of all 12 weeks will be averaged. If the average traffic volume is less than 80% of the maximum optimal capacity, then the toll will be reduced by US\$0.50 (HK\$3.90).</li> <li>• For Non-Super Peak tolls, if the Inflation Factor turns out to be negative in a particular year, the toll rates will be frozen rather than reduced in that year.</li> </ul>	Yes, SCC, upon application, complaint or its own initiative, and after investigation, may order any toll being charged by the operator be substituted.	<ul style="list-style-type: none"> <li>• Yes, the toll rates will be adjusted downwards if there is deflation.</li> <li>• The Transport Secretary has the power to adjust the tolls at a rate less than that of inflation, but he can only do so with the concessionaire's consent. However, SRC is obliged to charge the maximum toll permitted under its financing agreements.</li> <li>• The Transport Secretary may also make an order to change the tolls specified in the 1992 Act, but the order requires approval of each House of Parliament.</li> </ul>	Not applicable.	Information not available.

## Appendix (cont'd)

## Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Toll rates</b>					
Current toll rates	<ul style="list-style-type: none"> <li>Tolls are charged for both ways.</li> <li>Tolls range from US\$1.10 (HK\$8.58) to US\$3.90 (HK\$30.42) for a westbound trip and from US\$1.10 (HK\$8.58) to US\$7.75 (HK\$60.45) for an eastbound trip, based on the day of the week and time of the day.</li> <li>Commuters who travel in specified hours around midnight and those who drive in a carpool of three or more persons (for most hours of the day) may travel for free. It also has a holiday toll schedule, with lower rates being charged.</li> </ul>	<ul style="list-style-type: none"> <li>Tolls are charged for both ways.</li> <li>Tolls range from US\$1.65 (HK\$12.87) to US\$2.40 (HK\$18.72) for cars, depending on access points and the time of the day. Vehicles with three or more axles are charged twice as much.</li> </ul>	<ul style="list-style-type: none"> <li>Tolls are charged for one direction only.</li> <li>The old Severn Bridge and the Second Severn Crossing share a common toll charging scheme. Tolls are £4.80 (HK\$68.50), £9.60 (HK\$136.99) and £14.30 (HK\$204.06) for the three categories of vehicles respectively.</li> </ul>	The actual shadow toll payment per vehicle per km is not available.	<ul style="list-style-type: none"> <li>Tolls are charged for one direction only.</li> <li>The toll for Class A vehicles (cars and motor-cycles) is AUS\$4.50 (HK\$25.79). The toll for Class B vehicles (vehicles other than cars and motor cycles) is AUS\$8.50 (HK\$48.71). The toll rates include goods and services tax.</li> </ul>

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Toll rates (cont'd)</b>					
Rate of toll adjustment	<ul style="list-style-type: none"> <li>As carpools of three or more persons are allowed to ride free or at a discount, the average toll has decreased from US\$2.59 (HK\$20.20) prior to OCTA's purchase to US\$2.50 (HK\$19.50).</li> <li>The Super-Peak tolls have been raised seven times (US\$0.75 (HK\$5.85) each time) since January 2003, affecting one to four hours in a 24-hour period in general. The increase in the tolls charged between 4 p.m. and 5 p.m. on Thursdays has been most significant. It has increased by 63%.</li> <li>Non-Super Peak tolls were frozen from November 2001 to June 2004. From 1 July 2004 onwards, tolls have been adjusted based on the Inflation Factor. The Inflation Factor was 3.64% in 2004.</li> </ul>	<ul style="list-style-type: none"> <li>The toll for cars has increased by 37% since the Dulles Greenway opened to traffic in 1995. Most of the adjustments involved an increase of US\$0.25 (HK\$1.96) in tolls.</li> <li>The tolls were slashed by half in 1996 when initial traffic fell short of the projected levels.</li> </ul>	Compared the current toll rates with those charged in 1992 when the private operator took over, the toll rates have increased by around 70% for all three categories of vehicles.	Information not available.	The toll rates for Class A and Class B vehicles have increased by 50% and 42% respectively since the opening of the Eastern Distributor in July 2000.

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Financial performance and financial reporting</b>					
Does the toll road operator use the internal rate of return to evaluate its returns?	<p>CPTC:</p> <ul style="list-style-type: none"> <li>The calculation of its rate of return was based on the net present value of the cash flows.</li> </ul> <p>OCTA:</p> <ul style="list-style-type: none"> <li>No, it does not apply any rate of return to measure its return of investment as it does not operate for profit-making purposes.</li> </ul>	No, it uses the rate of return on equity.	Yes.	The Highways Agency assessed the bids by comparing the net present value of expected payments using an 8% discount rate.	Yes.
Is there any cap on the rate of return to be achieved by the toll road operator?	<p>When the 91 Express Lanes was operated by CPTC:</p> <ul style="list-style-type: none"> <li>Yes, the rate of return was capped at 17%. However, CPTC could earn up to six percentage points above its allowed rate of return ceiling if it met certain public objectives, for instance, reducing accident rates.</li> </ul> <p>As the 91 Express Lanes has been operated by OCTA since 2003:</p> <ul style="list-style-type: none"> <li>No.</li> </ul>	<ul style="list-style-type: none"> <li>Yes, the approved rates of return on equity for years 1-5 is 30%; years 6-7 is 25%; years 8-11 is 20%; years 12-16 is 15% and the rate for the remaining term is 14%.</li> <li>On the other hand, unrealized earnings from early years will accumulate as liabilities for later repayment out of earnings.</li> </ul>	No.	No, but the total annual toll payment received by RMS is capped to a level, which means when traffic volumes have grown to the level set for the top band, the Highways Agency pays no more tolls for the traffic volume above that level.	No.

## Appendix (cont'd)

## Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Financial performance and financial reporting (cont'd)</b>					
What are the actual rates of return achieved by the toll road operator?	When the 91 Express Lanes was operated by CPTC: <ul style="list-style-type: none"> <li>Information not available.</li> </ul> As the 91 Express Lanes has been operated by OCTA since 2003: <ul style="list-style-type: none"> <li>Not applicable. Any funds available beyond operating requirements are utilized to improve the 91 Express Lanes and the Riverside Freeway.</li> </ul>	TRIP II has not achieved any positive rate of return yet as the project has not made any profit.	Information not available.	Information not available.	Information not available.
Financial performance of the toll road operator	When the 91 Express Lanes was operated by CPTC: <ul style="list-style-type: none"> <li>The operator reported profits by 1998.</li> </ul> As the 91 Express Lanes has been operated by OCTA since 2003: <ul style="list-style-type: none"> <li>Current toll revenues have been sufficient to cover operating expenses and debt service. Revenue rose 8.4% from US\$28.8 million (HK\$224.6 million) in 2003 to US\$31.2 million (HK\$243.4 million) in 2004. The revenue achieved in 2004 was record-breaking.</li> </ul>	<ul style="list-style-type: none"> <li>TRIP II has been losing about US\$25 million (HK\$195 million) a year since the Dulles Greenway opened in 1995.</li> <li>In recent years, revenues have covered direct operating costs, but not interest and principal payments. It is predicted that the earliest time that the Dulles Greenway can actually make a profit will be at least five years from 2005.</li> </ul>	SRC made an operating profit of £35.5 million (HK\$506.6 million) in 2004, but recorded a loss of £3.0 million (HK\$42.8 million) after finance charges and tax. The loss was £3.5 million (HK\$50.0 million) in 2003.	<ul style="list-style-type: none"> <li>The turnover, i.e. the amount earned from the Highways Agency in the form of shadow tolls, for 2004 was £24.3 million (HK\$ 346.8 million) and that for 2003 was £24.1 million (HK\$ 343.9million).</li> <li>The profit for 2004, after taxation, amounted to £2.7 million (HK\$38.5 million), whilst that for 2003 was £2.4 million (HK\$34.2 million).</li> </ul>	Information not available.

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Financial performance and financial reporting (cont'd)</b>					
Is the toll road operator required to submit an annual audited financial statement to the legislature?	No, but OCTA has to submit audit reports to the State Route 91 Advisory Committee, and quarterly and annual audit reports to Caltrans.	No, but TRIP II has to file the financial statements for the quarter and for the fiscal year to date with SCC within 60 days of the end of the quarter and the end of the fiscal year respectively.	Yes, SRC has to prepare an annual audited statement and submit it to the Transport Secretary, who will lay the statement before Parliament.	No.	No, but AML has to provide RTA with quarterly company-certified cash flow and profit and loss statements, an independently audited annual profit and loss statement and monthly traffic reports.
<b>Dispute resolving mechanism and re-negotiation framework</b>					
Is there any mechanism in the concession/contract agreement to resolve disputes between the toll road operator and the government/regulator?	Yes, disputes may be referred to arbitration.	No, there is no dispute resolving mechanism provided in the law or the certificate of authority regarding disputes over toll rate levels or rate of return.	<ul style="list-style-type: none"> <li>• Yes, the concession agreement provides that either party may refer a dispute to a Financial or Technical Panel acting as an independent expert.</li> <li>• Any unanimous decision of the Panel is final and binding upon the parties; otherwise a decision of the Panel is binding only when the dispute has been settled or referred to arbitration.</li> </ul>	When initial negotiation fails to resolve a dispute between RMS and the Highways Agency, a senior official from either side will hold a meeting to try to resolve it. If the dispute is not resolved by the meeting, they will refer it to be adjudicated by an agreed independent expert and the dispute will be adjudicated within 40 days.	<ul style="list-style-type: none"> <li>• Yes, some disputes are specified in the Project Deed, which may be referred by RTA or AML to a "mutually agreed, mutually appointed independent expert for final, binding determination".</li> <li>• Any other disputes may be referred by RTA or AML for mediation by the Australian Commercial Disputes Centre Limited in Sydney.</li> </ul>

Appendix (cont'd)

Comparison of various attributes of the operation of toll roads, bridges and tunnels in selected places

	91 Express Lanes of California, the United States	Dulles Greenway of Virginia, the United States	Severn Bridges of the United Kingdom	A1(M) of the United Kingdom	Eastern Distributor of Sydney, Australia
<b>Dispute resolving mechanism and re-negotiation framework (cont'd)</b>					
Is there a re-negotiation framework in the concession/contract agreement by which the toll road operator and the government can re-negotiate the concession/contract?	Yes, for instance, if the road is to be extended or more time is needed to repay debt, the franchise agreement may be re-negotiated.	<ul style="list-style-type: none"> <li>• SCC may modify the date of termination of the certificate of authority to take into account any refinancing of TRIP II.</li> <li>• In the event of material and continuing default in the performance of the toll road operator's construction, or operation duties, or failure of the operator to comply with the terms of its agreement with the Virginia Department of Transportation, SCC may revoke the certificate of authority of the toll road after a hearing.</li> </ul>	<ul style="list-style-type: none"> <li>• The concession agreement has provisions allowing some re-negotiations between the concessionaire and the Transport Secretary in certain circumstances.</li> <li>• The 1992 Act specifies the occurrence of certain particular circumstances under which the concession agreement authorizes changing the amount of the toll specified in the 1992 Act.</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, the scope of possible changes required by the Highways Agency is specified in the contract. Where such a change alters RMS' costs or the traffic flow on the road, the shadow tolls will be revised or a one-off compensation will be given to RMS.</li> <li>• There is a provision in the contract for the introduction of user-paid tolls. If that happens, the user-paid tolls will go to the government, who will continue to pay shadow tolls to RMS during the term of the contract. If traffic is diverted to alternative non-tolled roads, which may affect the road operator's income, the contract allows RMS to claim compensation.</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, the Project Deed expressly envisages a range of circumstances under which the project's contracts might need to be re-negotiated.</li> <li>• Under these circumstances, RTA or the Minister for Roads must enter into good faith negotiations with AML so as to enable AML to repay their debtors substantially and give the equity investors of AML the real after-tax internal rate of return they would have received had the event not occurred.</li> <li>• If the parties cannot agree on the action to be taken within 30 days of entering the negotiations, the matter may be referred for binding determination.</li> </ul>

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