

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 706 – HIGHWAYS

#### Transport – Roads

#### 746TH – Reconstruction and Improvement of Tuen Mun Road

Members are invited to recommend to Finance Committee to increase the approved project estimate for **746TH** from \$4,620.5 million by \$2,183.8 million to \$6,804.3 million in money-of-the-day prices.

### PROBLEM

The approved project estimates (APE) of **746TH** is not sufficient to cover the cost of works under the project.

### PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to increase the APE for **746TH** from \$4,620.5 million by \$2,183.8 million to \$6,804.3 million in money-of-the-day (MOD) prices.

### PROJECT SCOPE AND NATURE

3. The approved scope of **746TH** comprises –

/(a) .....

- (a) reconstruction of about 13.4 kilometres (km) at-grade sections of Tuen Mun Road (TMR) and resurfacing of about 2.1 km of TMR on highway structures between Tsuen Wan and Sam Shing Hui;
- (b) improvement of the road design of TMR according to the current expressway standards as far as practicable, including the widening of traffic lanes, provision of hard shoulders 3.65 metres (m) wide and improvement of sightlines, gradients, road curvature, super elevation, etc.;
- (c) modification of highway structures including viaducts, bridges, box culverts, underpasses, footbridges, subways, as well as demolition and reprovision of a footbridge;
- (d) lengthening of the merging/diverging lanes at the interchanges at Sham Tseng and Siu Lam, and the exit ramp from Tsing Long Highway to westbound TMR;
- (e) replacement of barriers at the central median along the at-grade road by concrete profile barriers and reprovisioning of barriers along the edge of the at-grade road and the edge parapets of bridges and viaducts to current standards;
- (f) upgrading works to roadside slopes;
- (g) installation along TMR of –
  - (i) a semi-enclosure about 520 m long and 9.0 m high at Castle Peak Bay;
  - (ii) cantilevered noise barriers about 180 m long and 5.6 m high and 740 m long and 7.6 m high at Tsing Lung Tau;
  - (iii) cantilevered noise barriers about 260 m long and 8.3 m high and vertical noise barriers about 605 m long and 2 m high at Anglers' Beach;

/(iv) .....

- (iv) a semi-enclosure about 225 m long and 9 m high; cantilevered noise barriers about 355 m long and 8.3 m high and vertical noise barriers about 60 m long and 1.5 m high at Sham Tseng;
- (v) cantilevered noise barriers about 480 m long and 8 m high and vertical noise barriers about 520 m long and 4 m high at Yau Kom Tau;
- (vi) a semi-enclosure about 130 m long and 5.5 m high and cantilevered noise barriers about 2 060 m long and 8 m high at Tsuen Wan;

and implementation of the associated environmental monitoring and audit programme;

- (h) upgrading of the traffic control and surveillance system (TCSS);
- (i) installation of fire fighting system; and
- (j) associated civil, structural, landscaping works and works on environmental mitigation, drainage, road lightings, water mains and traffic aids.

————— A plan showing the proposed works is at Enclosure 1.

## JUSTIFICATION

4. Following a review of the financial situation, it is necessary to increase the APE for **746TH** from \$4,620.5 million by \$2,183.8 million to \$6,804.3 million in MOD prices to cover the additional costs arising from the following –

- (a) higher-than-expected tender outturn price for the first civil works contract;
- (b) higher estimates of the remaining works contracts;
- (c) change in contingencies;
- (d) additional resident site staff (RSS) costs; and
- (e) increase in the provision for price adjustment.

/Details .....

Details for the increase in costs are set out in paragraphs 5 to 19 below.

### **Higher-than-expected tender outturn price for the first civil works contract**

5. **746TH** is to be implemented under three civil works and one E&M contracts<sup>1</sup>. We invited tenders for the first civil works contract (i.e. Eastern Section) on 7 March 2008 and received tenders on 16 May 2008. There was a higher-than-expected tender outturn price for this contract. The actual tender prices of all the tenders were significantly higher than the original estimate for the first works contract. After assessing the tenders, we found that an additional \$794.4 million (48% of the original estimate for the first contract) is needed to cover the price of the recommended tender. The higher-than-expected tender outturn price is attributed to the accelerated increase in construction material prices and changes in market sentiments from the third quarter in 2007 to May 2008 when the tenders were returned, as well as the higher risk allowances made by tenderers for this contract with difficult site constraints. From the construction cost indices published by the Census and Statistics Department, the cost index for steel reinforcement, galvanised mild steel, bitumen and diesel fuel as at May 2008 had risen by 72%, 39%, 19% and 31% respectively compared to those in September 2007 when the project estimate was prepared. A chart showing the relevant trend of material costs increases is at Enclosure 2. The rapid rise in the cost of the above-mentioned raw materials, being the major elements of the project, drove up the tender price particularly. In addition, the tenders received revealed the potential contractors' concerns over the rapidly increasing but volatile trend of construction costs at that time. Under this high inflation risk, they were expected to tender consciously with a greater allowance for the risk. While a tender price index has not been compiled for roadworks, the changes in the tender price index for government building works<sup>2</sup> compiled by the Architectural Services Department during this high inflation period may serve as a reference. It rose by about 44% from the third quarter in 2007 to the second quarter in 2008. The rise is similar to the 48% increase in the first works contract's tender outturn price.

6. The increase in costs is significant in respect of the following major types of works under the contract –

/(a) .....

---

<sup>1</sup> The three civil works contracts cover the road reconstruction and improvement works in the eastern section (between Tsuen Wan and Tsing Lung Tau), Tai Lam section (between Tsing Lung Tau and Siu Lam), and the Sam Shing Hui section (between Siu Lam and Tuen Mun) of TMR respectively. The E&M contract covers the installation of the TCSS along the full stretch of TMR.

<sup>2</sup> The tender price index is a quarterly index compiled by the Architectural Services Department based on data from accepted tenders.

- (a) for roads and drains in which bituminous paving will be constructed and extensive temporary traffic arrangements will be required, the cost has increased from \$211.8 million by \$35.1 million to \$246.9 million (an increase of 16.6%);
- (b) for earthworks in which temporary construction access will be formed and temporary steel shoring for excavation will be required, the cost has increased from \$190.8 million by \$205.1 million to \$395.9 million (an increase of 107.5%);
- (c) for highway structures which will be built of reinforced concrete, the cost has increased from \$118.8 million by \$78.8 million to \$197.6 million (an increase of 66.3%);
- (d) for slope works in which extensive steel rock fall protection fences will be required, the cost has increased from \$265.7 million by \$66.8 million to \$332.5 million (an increase of 25.1%);
- (e) for noise barriers which are steel structures, the cost has increased from \$272.9 million by \$178.6 million to \$451.5 million (an increase of 65.4%); and
- (f) for contract preliminaries items in which the provision of difficult site access and intensive temporary traffic arrangements will be included, the cost has increased from \$252.7 million by \$152.7 million to \$405.4 million (an increase of 60.4%).

7. The construction sites comprise the widening of vehicular viaducts including the elevated structures in a very steep natural terrain along TMR near Ting Kau and Yau Kom Tau. The contractor will be required to form lengthy and detoured construction accesses to the work site as the existing topography prevent direct site access from the existing road network. Extensive and complicated temporary arrangements will be required to maintain existing traffic at the high speed road sections together with stringent measures such as rock fall fence for the slope protection and stabilisation works to the existing slopes as required near the works sites. For works sites with close proximity to residences, stringent environmental mitigation measures such as temporary noise barriers or working in restricted hours (e.g. road closure can be implemented only after 8:00pm, except on public holidays and Sundays) are required to mitigate the construction impacts. Given such constraints, tenderers were understood to price with greater allowances for the construction difficulties and associated risks.

8. In connection with the high tender outturn price, we had scrutinized the tender submitted by the recommended tenderer with whom we negotiated for a lower tender price. However, the tender price was only slightly reduced. In parallel with the negotiation, a review (including a study on the feasibility of re-tendering) for the works contract was carried out. In view of the market condition at that time, it was considered that a re-tendering exercise during mid-2008 to late 2008 would unlikely result in any favourable tender with a significantly lower tender price which could be accommodated within the original estimate for the works contract. Moreover, a re-tendering exercise will delay the project by at least six to nine months, which is highly undesirable in view of the community's urge for the early implementation of the project. In fact, the limited potential of having a lower tender price by re-tendering was evident through the tender return for the second civil works contract (i.e. Tai Lam Section) for which we received tenders in November 2008. There was only a slight fall in the tender rates when compared with the pre-tender estimate based on the tendered rates of the first civil works contract. The average of the three tenders with the highest scores<sup>3</sup> under tender evaluation is around 4% lower than the pre-tender estimate. More details about this are in paragraphs 9 and 10 below.

### **Higher estimates of the remaining works contracts**

9. The high tender outturn price of the first civil works contract warrants a review of the costs of the remaining works. Estimates of the second (i.e. Tai Lam Section) and third (i.e. Sam Shing Hui Section) civil works contracts and the TCSS contract were reviewed based on the tender outturn price of the first civil works contract. As all the works contracts have similar nature and are in the same area, the first contract's tendered rates are considered generally applicable to the remaining works contracts. Accordingly, we revised the estimates for the remaining works contracts (i.e. second, third and TCSS contracts) upward from a total of \$1,930.9 million by \$524.0 million to \$2,454.9 million (an increase of 27.1%).

10. We invited tenders for the second civil works contract on 26 September 2008 and received seven tenders on 21 November 2008. Despite the economic situation following the outbreak of the financial turmoil in September 2008 and that tenderers were expected to have taken into account the relevant effect in submitting their tenders, the tender outturn prices of the recommended tender for the second works contract had a slight fall (around 4%) only from the revised pre-tender estimate. In assessing the tenders for this contract, we found

/that .....

---

<sup>3</sup> Each of the tenders comprised a technical submission and a tender price document, which were evaluated separately. Their respective scores evaluated were combined in a weighting of 40% for technical submission and 60% for tender price document to give an overall score for ranking the tenders.

that in general those major tendered rates showed little deviation as compared to those in the revised pre-tender estimate. We consider that a re-tendering exercise during early 2009 to mid-2009 will unlikely result in a significantly lower tender price. It will also delay the works commencement by at least six to nine months which is highly undesirable and would delay job creation. The second civil works contract was therefore awarded on 18 February 2009.

### **Change in contingencies**

11. As the tender price for the first two civil works contracts and the estimates for the remaining works contracts are higher, the contingency sums for unforeseen works will also need upward adjustments. It is considered necessary to revise the contingency upward by \$56.7 million from \$395.9 million to \$452.6 million (an increase of 14.3%).

### **Additional resident site staff (RSS) cost**

12. When the original project estimate was prepared, the composition of the RSS team was built up on the basis of two works contracts. After consulting the construction industry, the number of works contracts was increased to three. The increase in the number of contracts was in response to the concerns of the construction industry at the prevailing time that the contracts should be spilt up to enable more contractors to bid for the contracts. The size of the RSS team has to be slightly expanded to cope with more contract administrative and interfacing work.

13. To maintain the TMR service during the implementation of the project, the majority of the proposed roadworks are scheduled to be carried out during non-rush hours or at night. To ensure better interfaces with routine road maintenance works for the section of TMR within the project boundary, which are to be executed during the same period of the day, it was later decided to also incorporate the routine road maintenance of TMR under the three civil works contracts to minimise overall traffic disruption. As a result, the RSS will be required to carry out additional programming and coordination in order to make the most effective use of the limited time windows available each day for both the proposed roadworks under **746TH** and the routine maintenance. Therefore, the RSS establishment has also been strengthened accordingly.

14. Having reviewed the sum for RSS costs, we found that an additional sum of \$37.3 million is required to cover the increased cost from \$387.9 million to \$425.2 million (an increase of 9.6%)

**/Increase.....**

**Increase in the provision for price adjustment**

15. According to existing Government practice, in general, monthly payments to contractors for construction contracts are adjusted to cover market fluctuations in labour and material costs, which are known as Contract Price Fluctuation (CPF) payment. The adjustment mechanism<sup>4</sup> is stipulated in the contract in accordance with the General Conditions of Contract for Civil Engineering Works. The CPF system allows for both upward and downward adjustments to contract payments in accordance with movements in the cost of labour and materials in Government civil engineering and building contracts. The objective of this system is for equitable risk sharing between Government as the employer and the contractor. In the planning stage when a project estimate is prepared, the MOD project estimate is derived by applying to the project estimate at constant price a set of price adjustment factors based on the assumption of the increase/ decrease in the cost of construction works at that time.

16. There are two factors contributing to the proposed increase in the provision of price adjustment. One is the increase in the total project estimate as mentioned in paragraphs 5 to 14 above and the other is the slight increase in the price adjustment factors estimated on the basis of projected prices for public sector building and construction output.

17. When the MOD project estimate of **746TH** was prepared, the applicable set of price adjustment factors was based on the projection in February 2008 on prices for public sector building and construction output, which was assumed to increase by 1% per annum for the period from 2008 to 2011 and 2% per annum afterwards. The provision of price adjustment was \$246.4 million based on the original project estimate of \$4,374.1 million in September 2007 prices. According to the information promulgated in February 2009, the increase in the prices is assessed to be 6.8% provisionally in 2008 and assumed to be 2% per annum over the period from 2009 to 2013 and 3% per annum over the period from 2014 to 2019. With the revised project estimate of \$5,786.5 million in September 2007 prices as mentioned in paragraphs 5 to 14 above and the set of price adjustment factors based on the Government Economist's information in February 2009, the revised provision for price adjustment is \$1,017.8 million leading to a net increase of \$771.4 million. Details are at Enclosure 3.

**/Overall.....**

---

<sup>4</sup> Under the adjustment mechanism, the actual monthly payment made to the contractor is derived by multiplying the value of work done with a contract price fluctuation factor which varies from month to month. The price fluctuation factor appropriate to a particular month is determined by –

- (a) the relative proportions of labour and material content contained in a Schedule of Proportions submitted by the contractor with his tender, which is related to the contractor's working methods; and
- (b) the Index Numbers of the Costs of Labour and Materials Used in Public Sector Construction Project (April 2003 = 100) published by the Census and Statistics Department on a monthly basis.



### Overall Review

18. Upon a review of the financial position of the project, we consider it necessary to increase the APE of **746TH** from \$4,620.5 million by \$2,183.8 million to \$6,804.3 million in MOD prices to ensure adequate funds are available to cover the cost of the project. A breakdown of the proposed increase of \$2,183.8 million is as follows –

| Factors  | Proposed increased<br>amount<br>(\$ million) | % of the<br>total<br>increased<br>amount |
|--|--|--|
| Additional cost associated with –  |  |  |
| (a) Higher-than-expected tender outturn price for the first civil works contract | 794.4  | 36.4                                     |
| (b) Higher estimate of the remaining works contracts                             | 524.0  | 24.0                                     |
| (c) Change in contingencies  | 56.7   | 2.6                                      |
| (d) Additional RSS costs   | 37.3   | 1.7                                      |
| (e) Provision for price adjustment   | 771.4  | 35.3                                     |
| Total  | 2,183.8                                      | 100.0                                    |

\_\_\_\_\_ A comparison of the cost breakdowns of the APE and the revised project estimate in MOD prices is at Enclosure 4.

### FINANCIAL IMPLICATIONS

19. Subject to approval, we will revise the phasing of the expenditure as follows –

/Year.....

| Year        | \$ million<br>(MOD) |
|-------------|---------------------|
| 2008 – 2009 | 154.7               |
| 2009 – 2010 | 463.1               |
| 2010 – 2011 | 796.0               |
| 2011 – 2012 | 942.1               |
| 2012 – 2013 | 961.0               |
| 2013 – 2014 | 980.2               |
| 2014 – 2015 | 1,007.2             |
| 2015 – 2016 | 899.2               |
| 2016 – 2017 | 600.8               |
|             | 6,804.3             |

20. The proposed increase in the APE will not give rise to additional recurrent expenditure.

### **PUBLIC CONSULTATION**

21. We consulted the Legislative Council Panel on Transport on 27 February 2009 of the proposal to increase the APE for **746TH**. Members did not raise objection to the proposal and requested that further explanation on the calculations of the price adjustment provisions for this project be included in the PWSC paper (see paragraphs 15-17).

### **ENVIRONMENTAL IMPLICATIONS**

22. The proposed increase in the APE does not give rise to any adverse environmental implication.

### **HERITAGE IMPLICATIONS**

23. The proposed increase in the APE does not have any heritage implication.

/LAND.....

**LAND ACQUISITION**

24. The proposed increase in the APE does not require any land acquisition.

**BACKGROUND INFORMATION**

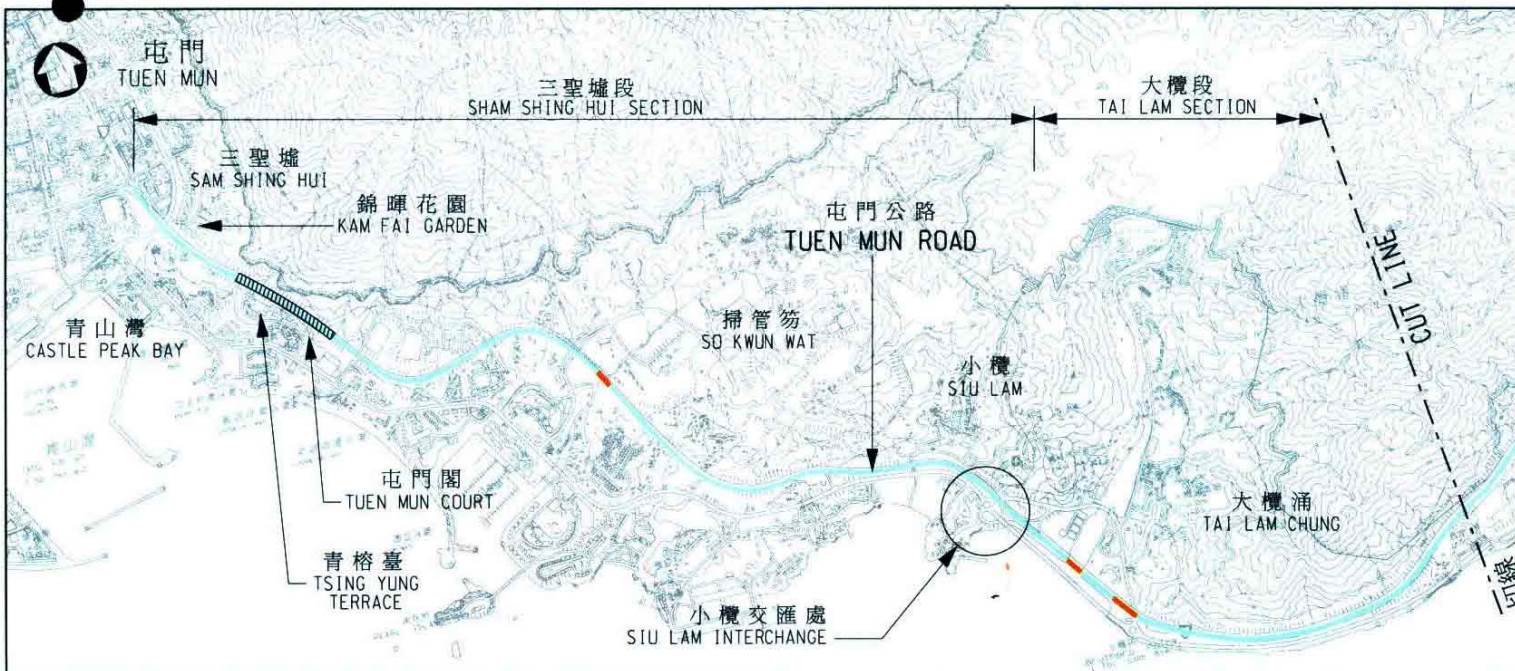
25. Finance Committee approved the upgrading of **746TH** to Category A in April 2008. The first civil works contract (Eastern Section) commenced in October 2008 for completion in September 2014. The second civil works contract (Tai Lam Section) commenced in February 2009 for completion in September 2014. We invited tenders for the third civil works contract (Sam Shing Hui Section) in January 2009. We plan to commence works for the third civil works contract in June 2009 for completion in September 2014.

26. The proposed increase in APE will not involve any additional tree removal or plant proposal.

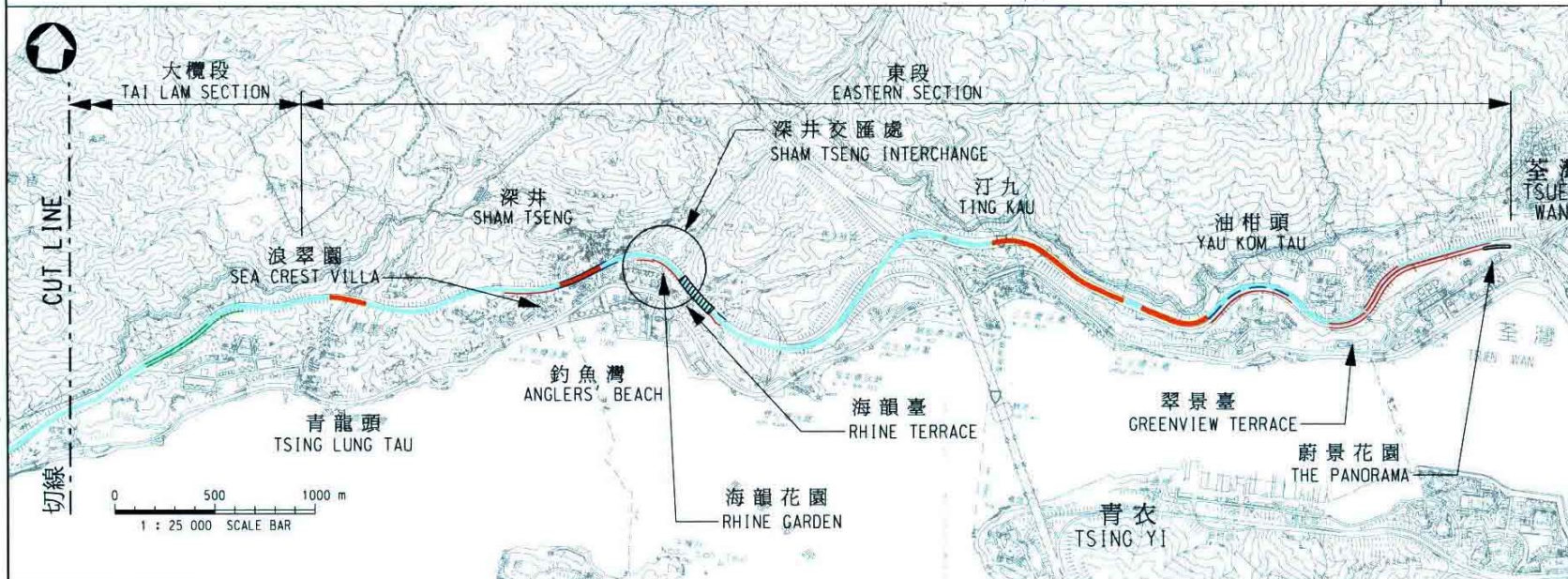
27. We estimate that the proposed increase in RSS costs will create about 20 jobs for professional/technical staff providing a total employment of 865 man-months.

-----

Transport and Housing Bureau  
March 2009



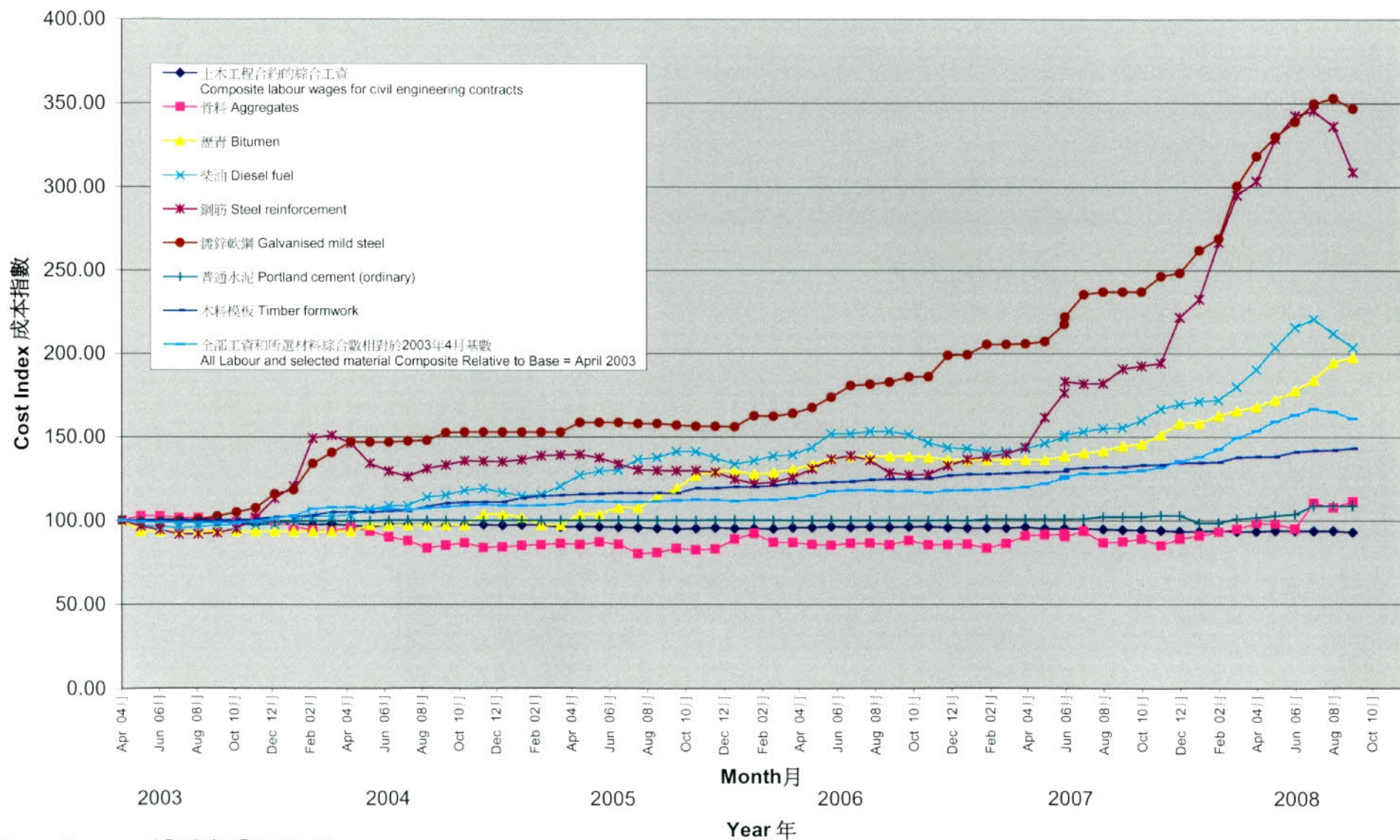
索引圖  
KEY PLAN  
比例 SCALE 1:250 000



- 圖例  
LEGEND
- 擬重建/改善的地面路段  
AT-GRADE ROAD SECTIONS TO BE RECONSTRUCTED/IMPROVED
  - 擬改善的現有行車橋/高架道路  
EXISTING VEHICULAR BRIDGES /VIADUCTS TO BE IMPROVED
  - 擬建之1.5/2米高直立式隔音屏障  
PROPOSED 1.5/2m HIGH VERTICAL NOISE BARRIER
  - 擬建之4米高直立式隔音屏障  
PROPOSED 4m HIGH VERTICAL NOISE BARRIER
  - 擬建之5.6/7.6米高懸臂式隔音屏障  
PROPOSED 5.6/7.6m HIGH CANTILEVER NOISE BARRIER
  - 擬建之8/8.3米高懸臂式隔音屏障  
PROPOSED 8/8.3m HIGH CANTILEVER NOISE BARRIER
  - 擬建之9米高半封闭式隔音屏障  
PROPOSED 9m HIGH SEMI - ENCLOSURE
  - 擬建之5.5米高半封闭式隔音屏障  
PROPOSED 5.5m HIGH SEMI - ENCLOSURE

|  |                   |  |                   |  |                                  |  |                                |  |
|--|-------------------|--|-------------------|--|----------------------------------|--|--------------------------------|--|
| 圖則名稱 drawing title   | 設計 designed       |  | 繪圖 drawn          |  | 圖則編號 drawing no.                 |  | 比例 scale                       |  |
|  | W.S.LEE 17/03/09  |  | M.W.YAN 17/03/09  |  | HMW6746TH-SP0008                 |  | 1:25 000<br>或顯示<br>OR AS SHOWN |  |
| 工務計劃項目第746TH號-屯門公路重建及改善工程<br>PWP ITEM No.746TH - RECONSTRUCTION AND IMPROVEMENT OF TUEN MUN ROAD | 覆核 checked        |  | 批准 approved       |  | © 版權所有 COPYRIGHT RESERVED        |  |                                |  |
|  | H.M.CHAN 17/03/09 |  | C.K.WONG 17/03/09 |  |                                  |  |                                |  |
| 主要工程管理處<br>MAJOR WORKS PROJECT MANAGEMENT OFFICE   |                   |  |                   |  | HIGHWAYS DEPARTMENT<br>HONG KONG |  | 路 香<br>政 港<br>署                |  |
|  |                   |  |                   |  |                                  |  |                                |  |

工資及物料的成本指數(2003年4月 = 100)  
(2003年4月至2008年9月)  
Cost of Labour and Material Index (April 2003 = 100)  
(April 2003 - September 2008)



Source: Census and Statistics Department  
資料來源：香港政府統計處

## 746TH – Reconstruction and improvement of Tuen Mun Road

Table 1 - Cash Flow and Price Adjustment in PWSC(2007-08)88

| Year         | Original Project Estimate<br>(\$ million, in Sept 2007 prices) | Original Price Adjustment Factor # | Approved Project Estimate<br>(\$ million, in MOD prices) | Provision for Price Adjustment<br>(\$ million) |
|--------------|--|------------------------------------|--|--|
|              | X  | Y                                  | Z  | Z - X  |
| 2008 - 2009  | 320.5  | 1.00750                            | 322.9  | 2.4  |
| 2009 - 2010  | 540.2  | 1.01758                            | 549.7  | 9.5  |
| 2010 - 2011  | 626.8  | 1.02775                            | 644.2  | 17.4   |
| 2011 - 2012  | 626.8  | 1.03803                            | 650.6  | 23.8   |
| 2012 - 2013  | 626.8  | 1.05619                            | 662.0  | 35.2   |
| 2013 - 2014  | 626.8  | 1.07732                            | 675.3  | 48.5   |
| 2014 - 2015  | 543.3  | 1.09886                            | 597.0  | 53.7   |
| 2015 - 2016  | 462.9  | 1.12084                            | 518.8  | 55.9   |
| <b>Total</b> | <b>4,374.1</b>   |                                    | <b>4,620.5</b>   | <b>246.4</b>                                   |

Table 2- Revised Cash Flow and Provision for Price Adjustment due to Revised Project Estimate (PE) and Latest Adjustment Factor

| Year         | Revised PE<br>(\$ million, in Sept 2007 prices) | Revised PE<br>(\$ million, in Sept 2008 prices)<br>* | Latest Price Adjustment Factor *** | Revised PE<br>(\$ million, in MOD prices) | Revised Provision for Price Adjustment<br>(\$ million) | Net Increase in Provision for Price Adjustment<br>(\$ million) |
|--------------|---|--|------------------------------------|---|--|--|
|              | a   | b  | c                                  | d   | e  | f  |
| 2008 - 2009  | 146.2   | 154.7  | 1.00000                            | 154.7                                     | e = d - a  | f = e - (Z - X)  |
| 2009 - 2010  | 424.0   | 448.7  | 1.03200                            | 463.1                                     |  |  |
| 2010 - 2011  | 714.6   | 756.2  | 1.05264                            | 796.0                                     |  |  |
| 2011 - 2012  | 829.2   | 877.5  | 1.07369                            | 942.1                                     |  |  |
| 2012 - 2013  | 829.2   | 877.5  | 1.09517                            | 961.0                                     |  |  |
| 2013 - 2014  | 829.2   | 877.5  | 1.11707                            | 980.2                                     |  |  |
| 2014 - 2015  | 829.2   | 877.5  | 1.14779                            | 1,007.2                                   |  |  |
| 2015 - 2016  | 718.7   | 760.6  | 1.18222                            | 899.2                                     |  |  |
| 2016 - 2017  | 466.2   | 493.4  | 1.21769                            | 600.8                                     |  |  |
| <b>Total</b> | <b>5,786.5</b>                                  |  |                                    | <b>6,804.3</b>                            | <b>1,017.8</b>   | <b>771.4</b>   |

**Note:**

# Price adjustment factors adopted in February 2008 are based on the projection of prices for public sector building and construction output to increase by 1% per annum for the period from 2008 to 2011 and 2% afterwards.

\* Revised PE (in September 2007 price) is multiplied by 1.05825 to convert to September 2008 price.

\*\*\* The price adjustment factors adopted in February 2009 are based on the projection of prices for public sector building and construction section to increase by 6.8% in 2008 and by 2% per annum over the period from 2009 to 2013 and by 3% per annum over the period from 2014 to 2019.

**746TH – Reconstruction and improvement of Tuen Mun Road**

A comparison of the approved project estimate (APE) and the revised project estimate in MOD prices is as follows –

|  | <b>APE<br/>(\$<br/>million)<br/>(i)</b> | <b>Revised<br/>project<br/>estimate<br/>(\$ million)<br/>(ii)</b> | <b>Difference<br/>(\$ million)<br/>(iii)=(ii) - (i)</b> |
|--|---|---|---|
| (a) Roads and drains                                   | 691.0                                   | 831.6   | 140.6   |
| (b) Earthworks   | 629.6                                   | 845.8   | 216.2   |
| (c) Modifications to highway structures                | 252.9                                   | 407.3   | 154.4   |
| (d) Slope upgrading works                              | 714.5                                   | 881.1   | 166.6   |
| (e) Noise mitigation measures                          | 594.0                                   | 1,041.1   | 447.1   |
| (i) semi-enclosures                                    | 280.0                                   | 506.1   | 226.1   |
| (ii) cantilevered noise barriers                       | 286.0                                   | 500.9   | 214.9   |
| (iii) vertical noise barriers                          | 28.0                                    | 34.1  | 6.1   |
| (f) TCSS   | 244.5                                   | 412.9   | 168.4   |
| (g) Landscaping works                                  | 261.4                                   | 274.0   | 12.6  |
| (h) Fire fighting system                               | 105.3                                   | 116.3   | 11.0  |
| (i) Site investigation and structural condition survey | 97.1                                    | 98.6  | 1.5   |

|  | <b>APE<br/>(\$<br/>million)<br/>(i)</b> | <b>Revised<br/>project<br/>estimate<br/>(\$ million)<br/>(ii)</b> | <b>Difference<br/>(\$ million)<br/>(iii)=(ii) - (i)</b> |
|--|---|---|---|
| (j) Consultants' fees and resident site staff (RSS) cost | 387.9                                   | 425.2   | 37.3  |
| (k) Contingencies  | 395.9                                   | 452.6   | 56.7  |
| (l) Provision for Price adjustment                       | 246.4                                   | 1,017.8   | 771.4   |
| Total  | <b>4,620.5</b>                          | <b>6,804.3</b>  | <b>2,183.8</b>  |

2. As regards **1(a) to (c) (Roads and drains, Earthworks, and Modifications to highway structures)**, the increase of \$511.2 million is mainly due to the higher-than-expected tender outturn price and provision of higher estimates for remaining works based on the tender outturn price for the first and second civil works contracts.

3. As regards **1(d) (Slope upgrading works)**, the increase of \$166.6 million is mainly due to the higher-than-expected tender outturn price and the provision of higher estimate for remaining works based on the tender outturn price for the first and second civil works contracts.

4. As regards **1(e) (Noise mitigation measures)**, the increase of \$447.1 million is mainly due to the higher-than-expected tender outturn price and the provision of higher estimate for remaining works based on the tender outturn price for the first and second civil works contracts.

5. As regards **1(f) (TCSS)**, the increase of \$168.4 million is mainly due to the higher-than-expected tender outturn price and the provision of higher estimate based on the tender outturn price for the first and second civil works contracts.

6. As regards **1(g) (Landscaping works)**, the increase of \$12.6 million is mainly due to the higher-than-expected tender outturn price and the provision of higher estimate based on the tender outturn price for the first and second civil works contracts.

7. As regards **1(h) (Fire fighting system)**, the increase of \$11.0 million is mainly due to the higher-than-expected tender outturn price and the provision of higher estimate based on the tender outturn price for the first and second civil works contracts.



8. As regards **1(i) (Site investigation and structural condition survey)**, the increase of \$1.5 million is mainly due to the higher-than-expected tender outturn price and the provision of higher estimate for remaining works based on the tender outturn price for the first and second civil works contracts.

9. As regards **1(j) (Consultants' fees and resident site staff (RSS) costs)**, the increase of \$37.3 million is mainly due to an increase in RSS establishment to cope with additional programming and coordination work for both the proposed roadworks under **746TH** and the routine road maintenance works, and additional contract administrative and interfacing work.

10. As regards **1(k) (Contingencies)**, the increase of \$56.7 million is mainly due to the higher than expected tender outturn price and the higher estimate for remaining works based on the tender outturn prices for the first and second civil works contracts, based on which the works to be covered by contingencies, if required, will be carried out and paid.

11. As regards **1(l) (Provision for price adjustment)**, the increase of \$771.4 million is mainly due to the higher estimates of all the works contracts and also the latest price adjustment factors which are higher than the originally adopted.