

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

819TH – Traffic Improvements to Tuen Mun Road Town Centre Section

Members are invited to recommend to Finance Committee to increase the approved project estimate of **819TH** by \$153.5 million from \$1,814.4 million to \$1,967.9 million in money-of-the-day prices.

PROBLEM

The approved project estimate (APE) of **819TH** is not sufficient to cover the costs of the 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 of **819TH** by \$153.5 million from \$1,814.4 million to \$1,967.9 million in money-of-the-day (MOD) prices.

PROJECT SCOPE AND NATURE

3. In June 2009, the Finance Committee (FC) of the Legislative Council approved the upgrading of **819TH** to Category A at an estimated cost of \$1,814.4 million in MOD prices. The approved scope of works under **819TH** comprises –

/ (a)

- (a) widening of the Tuen Mun Road Town Centre Section (TMRTCS) between Yan Oi Town Square and Wong Chu Road of approximately 1.5 kilometres (km) long from a dual two-lane carriageway to a dual three-lane carriageway;
- (b) resurfacing of existing section of Tuen Mun Road (TMR);
- (c) construction of a single-lane flyover of approximately 450 metres (m) long, which extends from Tuen Hing Road and runs along Tsing Hoi Circuit to merge eventually with the TMR Kowloon-bound carriageway;
- (d) reconstruction of the slip road of the existing Wong Chu Road of approximately 80 m long to facilitate proper merging with the new flyover mentioned in item (c) above;
- (e) demolition and reconstruction of four existing footbridges and provision of two temporary footbridges during the construction period;
- (f) improvement of three existing traffic light signal-controlled junctions along Castle Peak Road (CPR) between Tuen Hing Road and Hoi Wing Road;
- (g) installation of the following along the carriageway –
 - (i) vertical noise barriers of about 340 m long and 5 m high;
 - (ii) cantilevered noise barriers of about 650 m long and 5.5 m to 8 m high with bend ranging from 3 m to 7 m;
 - (iii) semi-enclosures of about 800 m long and 6 m to 8 m high; and
 - (iv) full-enclosures of about 920 m long and 6 m to 8 m high;

/ (h)

- (h) provision of a traffic control and surveillance system (TCSS);
- (i) associated civil, structural, landscaping, geotechnical works, and works on re-provisioning of existing facilities, environmental mitigation, drainage, road lighting, water mains and traffic aids; and
- (j) implementation of an environmental monitoring and audit (EM&A) programme for the works mentioned in items (a) to (i) above.

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

4. The proposed works mainly cover widening of the TMRTCS between Yan Oi Town Square and Wong Chu Road from a dual two-lane carriageway to a dual three-lane carriageway, so as to cope with the existing problem of traffic congestion and anticipated traffic growth.

5. The Highways Department (HyD) commenced the construction works in December 2009. The works progress was in general satisfactory. Up till November 2012, the HyD had substantially completed the foundation works for bridges and noise barriers/enclosures, as well as part of the road widening works.

6. The HyD is also constructing a new carriageway, which extends from Tuen Hing Road and runs along Tsing Hoi Circuit to merge eventually with the TMR Kowloon-bound carriageway, so as to ease the traffic flow from Tuen Hing Road to TMR Kowloon-bound. The HyD has substantially completed the improvement works at three junctions near the project site, namely junctions of CPR/Tuen Hing Road, CPR/Fu Fat Lane, and CPR/Hoi Wing Road. Such works aim to increase flow capacities of the roads, and hence improve the traffic flow between CPR and TMR.

7. The four existing footbridges affected by the road widening works, namely Yan Oi Footbridge, Yan Ching Footbridge, Siu On Footbridge and Chi Lok Footbridge were demolished to facilitate the carrying out of the works, and are being re-provisioned. Among them, Yan Ching Footbridge and Chi Lok Footbridge were reconstructed and opened for public use.

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8. The remaining works mainly cover the installation of noise barrier/enclosure superstructures, construction of flyover and carriageway, re-provisioning of footbridges and landscaping works. The construction is expected to complete by December 2013 as scheduled.

JUSTIFICATION

9. After reviewing the financial position of the project, we consider it necessary to increase the APE of **819TH** by \$153.5 million (in MOD prices) to cover additional cost arising from higher-than-expected awarded tender price and increase in provision for price adjustment.

Increase in provision for price adjustment

10. According to existing Government practice, monthly payments to contractors for most construction contracts are adjusted to cover market fluctuation in labour and material costs, which are known as contract price fluctuation (CPF) payment. When FC's funding approval for **819TH** was sought in June 2009, on the basis of the assumptions on the trend rate of change in the prices of public sector building and construction output in March 2009 and estimated cash flow of the project, a provision of \$173.2 million was allowed for price adjustment in the original APE.

11. The actual CPF payments to the contractor from 2009 to 2011 were higher than expected. A larger portion of the remaining payment for works under the original project scope will be made to the contractor between 2012 and 2015. According to the latest assumptions, the trend rate of change in the price of public sector building and construction output for the same period will be on the rise¹. In light of the above, we estimate the CPF payments for the original scope of works will increase from the originally budgeted \$173.2 million by \$153.5 million to \$326.7 million.

/ **Higher.....**

¹ The original funding application was approved by FC in June 2009. The trend rate of change in the prices of public sector building and construction output adopted for the original funding application are 2% per annum between 2009 and 2013 and 3% per annum between 2014 and 2017. The latest forecast in October 2012 assumes that the trend rate of changes in the prices of public sector building and construction output will increase by 7% per annum in 2012 and 6% per annum between 2013 and 2016.

Higher-than expected awarded tender price

12. During the tender period of the project from mid to end of 2009, construction material costs increased drastically. We believed that the tenderers had increased the tender sums, while taking into account factors including changes in market conditions and stringent site conditions (e.g. a number of safety measures and limitation on working hours required for construction in the extremely busy traffic environment). Thus, the tender sums and the provision reserved for catering to risks were higher than expected.

13. We have earlier drawn \$93.3 million from the contingencies under the original APE to cope with the higher-than-expected awarded tender price. We need to retain all of the remaining \$37 million (contingencies of \$130.3 million minus the above \$93.3 million) as contingency to cover unforeseeable expenditures during the remainder of the construction period. Therefore, the remaining contingencies under the original APE could not cover the additional costs (\$153.5 million) arising from the increase in provision for price adjustment described in the paragraph 11 above.

Review of financial position

14. After reviewing the financial position of **819TH**, we consider it necessary to increase the APE by \$153.5 million from \$1,814.4 million to \$1,967.9 million (in MOD prices), in order to ensure adequate funds are available to cover the cost of the project. A breakdown of the proposed increase of \$153.5 million is as follows –

| Factors | Proposed increased amount/savings in MOD prices (\$ million) | % of the increased amount/ savings |
|--|---|---|
| Increase due to - | | |
| (a) Increase in provision for price adjustment | 153.5 | 62.2% |
| (b) Higher-than-expected awarded tender price | 93.3 ² | 37.8% |
| (c) Total increase (c) = (a) + (b) | 246.8 | 100.0% |
| | | / Factors..... |

² Since the awarded tender sum was higher than estimated, \$93.3 million out of \$130.3 million reserved for the contingencies in the original APE was used to offset the higher-than-expected return tender price. The remaining \$37 million needs to be retained as contingency to cover any unforeseeable expenditures during the remainder of the construction period.

| Factors | Proposed increased amount/savings in MOD prices (\$ million) | % of the increased amount/ savings |
|--|---|---|
| Partly offsetted by – | | |
| (d) Drawdown from Contingencies | 93.3 ² | 100.0% |
| (e) Proposed increase (e) = (c) - (d) | 153.5 | 100.0% |

15. Cost breakdowns of the latest cash flow and provision for price adjustment due to latest project estimate in MOD prices are at Enclosure 2.

16. A comparison of the cost breakdowns of the APE and the latest project estimate in MOD prices is at Enclosure 3.

FINANCIAL IMPLICATIONS

17. Subject to FC's approval, we will phase the expenditure as follows –

| Year | \$ million (in MOD prices) |
|---------------------|-------------------------------|
| Up to 31 March 2012 | 609.2 |
| 2012 – 2013 | 470.6 |
| 2013 – 2014 | 665.8 |
| 2014 – 2015 | 204.9 |
| 2015 – 2016 | 14.4 |
| 2016 – 2017 | 3.0 |
| | <hr/> 1,967.9 <hr/> |

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

PUBLIC CONSULTATION

19. During the course of construction, the HyD has maintained liaison with the Traffic & Transport Committee and the Environment, Hygiene & District Development Committee, and the Working Group on Tuen Mun Greening under the Tuen Mun District Council, as well as the local community to report the works progress and the associated temporary traffic arrangements from time to time. The HyD will continue to liaise with the Tuen Mun District Council and the local community.

20. We consulted the Legislative Council Panel on Transport on the proposed increase in APE on 16 November 2012. Members supported the Administration's proposal.

ENVIRONMENTAL IMPLICATIONS

21. The proposed increase in the APE will not have any environmental implications.

HERITAGE IMPLICATIONS

22. The proposed increase in the APE will not affect any heritage sites, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

23. The proposed increase in the APE will not require any land acquisition.

/ BACKGROUND.....

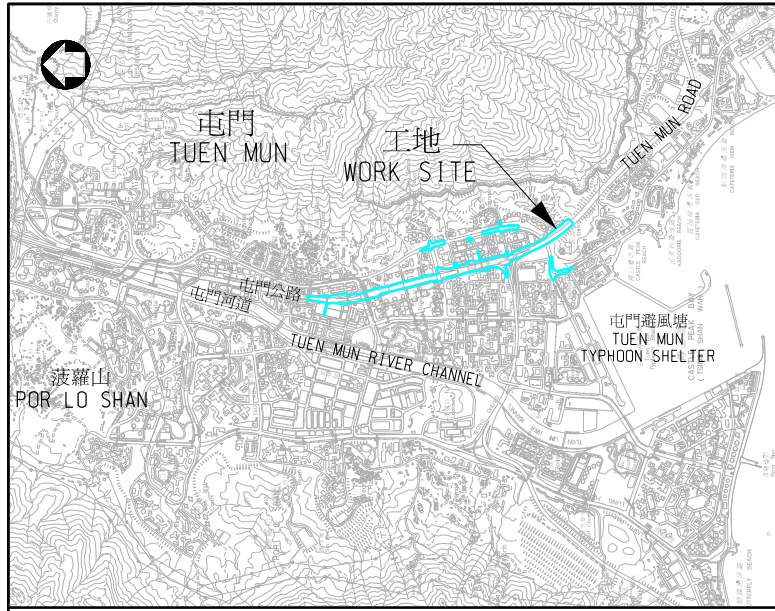
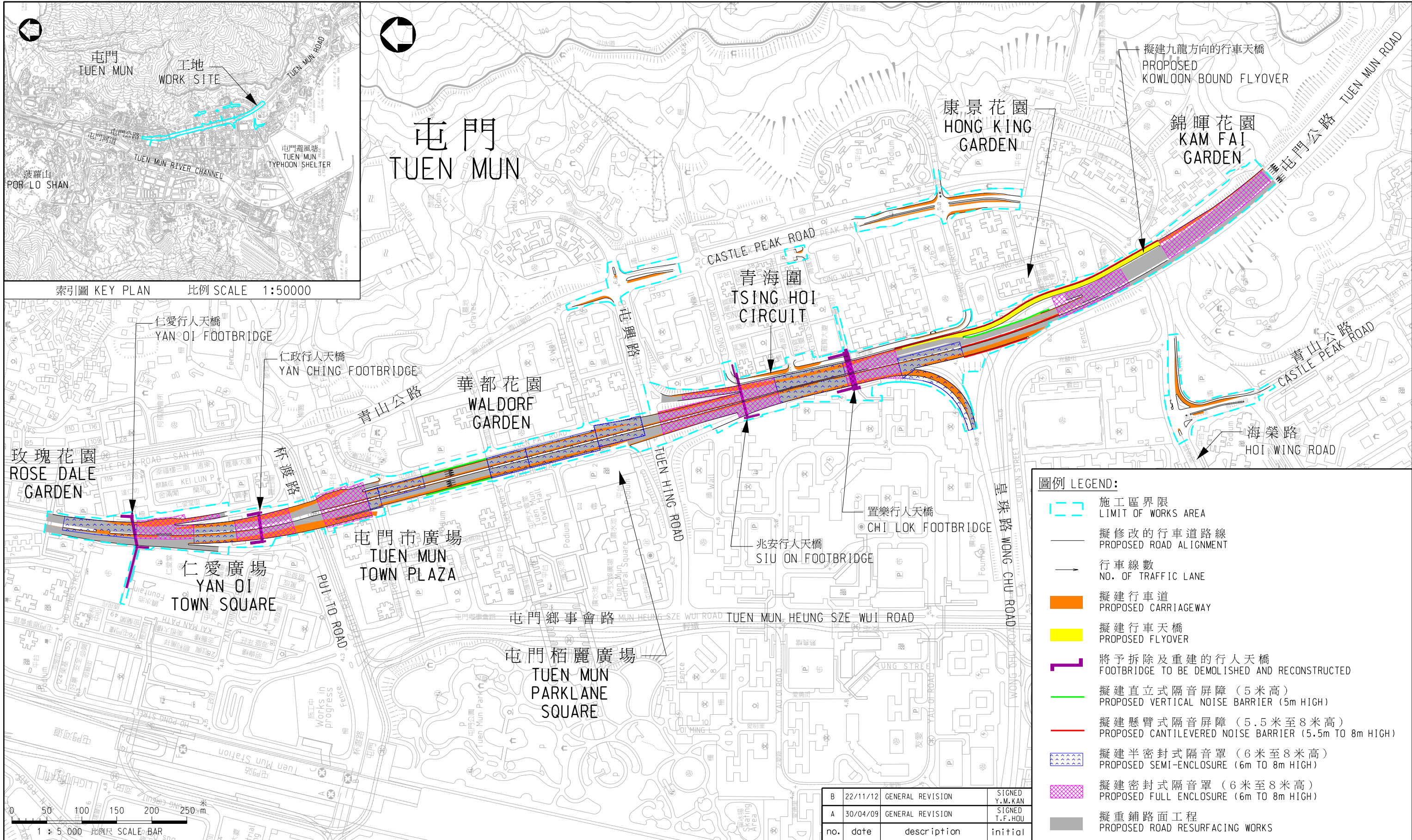
BACKGROUND INFORMATION

24. In June 2009, FC approved the upgrading of **819TH** to Category A at an estimated cost of 1,814.4 million in MOD prices for the construction works covering mainly the widening of the TMRTCS between Yan Oi Town Square and Wong Chu Road from a dual two-lane carriageway to a dual three-lane carriageway. The construction works commenced in December 2009 and the remaining works are expected to be completed by December 2013.

25. The proposed increase in the APE will not involve any tree felling and removal or planting proposal.

26. The proposed increase in the APE will not involve the creation of any additional job opportunities.

Transport and Housing Bureau
December 2012



索引圖 KEY PLAN 比例 SCALE 1:50000

圖例 LEGEND:

- 施工區界限
LIMIT OF WORKS AREA
- 擬修改的行車道路線
PROPOSED ROAD ALIGNMENT
- 行車線數
NO. OF TRAFFIC LANE
- 擬建行車道
PROPOSED CARRIAGEWAY
- 擬建行車天橋
PROPOSED FLYOVER
- 將予拆除及重建的行人天橋
FOOTBRIDGE TO BE DEMOLISHED AND RECONSTRUCTED
- 擬建直立式隔音屏障 (5米高)
PROPOSED VERTICAL NOISE BARRIER (5m HIGH)
- 擬建懸臂式隔音屏障 (5.5米至8米高)
PROPOSED CANTILEVERED NOISE BARRIER (5.5m TO 8m HIGH)
- 擬建半密封式隔音罩 (6米至8米高)
PROPOSED SEMI-ENCLOSURE (6m TO 8m HIGH)
- 擬建密封式隔音罩 (6米至8米高)
PROPOSED FULL ENCLOSURE (6m TO 8m HIGH)
- 擬重鋪路面工程
PROPOSED ROAD RESURFACING WORKS

| | | | |
|-----|----------|------------------|-------------------|
| B | 22/11/12 | GENERAL REVISION | SIGNED Y.M.KAN |
| A | 30/04/09 | GENERAL REVISION | SIGNED T.F.HOU |
| no. | date | description | initial |

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|--|--|--|--|-------------|--|-------------------------------|--|----------|--|
| 圖則名稱 plan title | | 設計 designed | | 繪圖 drawn | | 圖則編號 plan no. | | 比例 scale | |
| 工務計劃項目第819TH號 - 屯門公路市中心段交通改善工程 - 平面圖 | | T.F.HOU | | W.L.LAM | | HMW6819TH-SP0002-B | | 1:5000 | |
| PWP ITEM NO. 819TH - TRAFFIC IMPROVEMENTS TO TUEN MUN ROAD TOWN CENTRE SECTION - LAYOUT PLAN | | 覆核 checked | | 批准 approved | | © 版權所有 COPYRIGHT RESERVED | | | |
| | | W.C.CHAN | | C.K.WONG | | HIGHWAYS DEPARTMENT HONG KONG | | 路政署 | |
| | | 主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE | | | | | | | |

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819TH - Traffic Improvements to Tuen Mun Road Town Centre Section

Table 1 – Cash flow and provisions for price adjustment provided in PWSC(2009-10)29

| Year | Original project estimate (\$ million, in September 2008 prices) X | Original price adjustment factors (February 2009)# Y | Approved project estimate (\$ million, in MOD prices) Z | Provision for price adjustment (\$ million) A=Z – X |
|--------------|--|---|---|--|
| 2009 - 2010 | 16.2 | 1.03500 | 16.8 | 0.6 |
| 2010 - 2011 | 196.4 | 1.05570 | 207.3 | 10.9 |
| 2011 - 2012 | 348.0 | 1.07681 | 374.7 | 26.7 |
| 2012 - 2013 | 408.0 | 1.09835 | 448.1 | 40.1 |
| 2013 - 2014 | 375.0 | 1.12032 | 420.1 | 45.1 |
| 2014 - 2015 | 157.0 | 1.15113 | 180.7 | 23.7 |
| 2015 - 2016 | 140.6 | 1.18566 | 166.7 | 26.1 |
| 2016 - 2017 | 0.0 | - | 0.0 | 0.0 |
| Total | 1,641.2 | | 1,814.4 | 173.2 |

Table 2 – Latest cash flow and provision for price adjustment due to latest project estimate (PE) and adjustment factors

| Year | Latest PE (\$ million, in September 2008 prices) a | Latest PE (\$ million, in September 2012 prices) ^^ b | Latest price adjustment factors (October 2012) ## c | Latest PE (\$ million, in MOD prices) d | Latest provision for price adjustment (\$ million) e | Net increase in provision for price adjustment (\$ million) f |
|---------------------|---|--|---|---|---|---|
| Up to March 2012 | 567.7 | 609.2^ | 1.00000 | 609.2^ | e = d – a | f = e – A |
| 2012 - 2013 | 390.5 | 470.6 | 1.00000 | 470.6 | | |
| 2013 - 2014 | 520.0 | 626.6 | 1.06250 | 665.8 | | |
| 2014 - 2015 | 151.0 | 181.9 | 1.12625 | 204.9 | | |
| 2015 - 2016 | 10.0 | 12.1 | 1.19383 | 14.4 | | |
| 2016 - 2017 | 2.0 | 2.4 | 1.26545 | 3.0 | | |
| Total | 1,641.2 | 1,902.8 | | 1,967.9 | 326.7 | 153.5 |

Notes:

Price adjustment factors adopted in March 2009 were based on the projected movement of prices for public sector building and construction output at that time, which were assumed to be increased by 2% per annum from 2009 to 2013, and 3% per annum from 2014 to 2017.

Price adjustment factors adopted in October 2012 were based on the latest movement of prices for public sector building and construction output, which are assumed to increase by 7% per annum in 2012, and 6% per annum from 2013 to 2017.

^ \$609.2 million was the actual expenditure up to March 2012.

^^ The latest project estimate (in September 2008 prices) was multiplied by 1.20502 for conversion to September 2012 prices. The figure of 1.205021 represented the changes in price movement for public sector building and construction output between September 2008 and September 2012.

819TH – Traffic Improvements to Tuen Mun Road Town Centre Section

Comparison between Approved Project Estimate and the Latest Project Estimate

| | (A) Approved Project Estimate | (B) Revised Project Estimate | (B) - (A) Difference |
|--|--|---------------------------------------|-------------------------|
| | (\$million) | (\$million) | (\$million) |
| (a) Roads and drains | 97.3 | 153.6 | 56.3 |
| (b) Earthworks and slopeworks | 26.9 | 20.0 | (6.9) |
| (c) Flyover and footbridges | 179.0 | 301.8 | 122.8 |
| (d) Noise mitigation measures | 1,042.2 | 967.2 ¹ | (75.0) |
| (e) Traffic control and surveillance system | 9.3 | 5.4 | (3.9) |
| (f) Landscaping works | 14.1 | 14.1 | 0.0 |
| (g) Consultant's fees | 11.9 | 11.9 | 0.0 |
| (i) construction supervision and contract administration | 5.4 | | |
| (ii) management of resident site staff | 3.9 | | |
| (iii) EM&A programme | 2.6 | | |
| (h) Remuneration of resident site staff | 130.2 | 130.2 | 0.0 |
| (i) Contingencies | 130.3 | 37.0 | (93.3) |
| Sub-total | 1,641.2 | 1,641.2 | 0.0 |
| (j) Provision for price fluctuation | 173.2 | 326.7 | 153.5 |
| Total | 1,814.4 | 1,967.9 | 153.5 |

As regards **items (a) (roads and drains) to (e) (traffic control and surveillance system)**, the variations reflect the differences between the awarded tender and the APE in pricing these five items. In comparison with the APE, the awarded tender price for **items (a) to (e)** is \$93.3 million (6.9%) higher than that of the APE.

2. As regards **item (i) (contingencies)**, we have drawn \$93.3 million from the contingencies to cope with the higher-than-expected awarded tender price. All of the remaining \$37 million has to be retained as contingency to cover unforeseeable expenditures during the remainder of the construction period.

¹ Including the expenditure of about \$105 million on vertical and roof greening of noise barriers/enclosures, accounting for around 5.3% of the revised project estimate.

3. As regards **item (j) (provision for price adjustment)**, an increase of \$153.5 million is due to an unanticipated increase in the actual and projected payment for contract price fluctuation.