

For discussion  
on 25 May 2005

PWSC(2005-06)9

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 711 – HOUSING**

#### **Civil Engineering – Land development**

#### **564CL – Development near Choi Wan Road and Jordan Valley**

Members are invited to recommend to Finance Committee to increase the approved project estimate for **564CL** from \$1,779.3 million by \$230.0 million to \$2,009.3 million in money-of-the-day (MOD) prices.

### **PROBLEM**

The approved project estimate (APE) of **564CL** is not sufficient to cover the cost of works under the project.

### **PROPOSAL**

2. The Director of Civil Engineering and Development (DCED), with the support of the Secretary for Housing, Planning and Lands, proposes to increase the APE for **564CL** from \$1,779.3 million by \$230.0 million to \$2,009.3 million in MOD prices.

**/PROJECT .....**

## PROJECT SCOPE AND NATURE

3. The approved scope of the project comprises –
- (a) formation of about 20 hectares of building platforms for housing development, seven schools, district open space, and associated slopes and retaining walls;
  - (b) about 3 900 metres (m) of roadworks with width ranging from 7.9 m to 16.6 m, including road junction improvement works;
  - (c) five footbridges and two flyovers;
  - (d) about 10 500 m of associated drainage and sewerage works with diameter ranging from 225 millimetres (mm) to 1 800 mm;
  - (e) landscaping works; and
  - (f) environmental mitigation measures, including implementation of an environmental monitoring and audit (EM&A) programme for the works mentioned in paragraphs (a) to (e) above.

———— A site plan showing the details of the above works is at Enclosure 1.

4. We commenced construction of the works under items (a), (b) and (d) to (f) (except those related to road junction improvement works) in November 2001 (hereinafter referred to as the first contract) and anticipate substantial completion of the works in 2006. We plan to commence construction of the remaining works in late 2005 for completion in stages from 2008 to 2010 to tie in with the housing development programme.

**/JUSTIFICATION .....**

**JUSTIFICATION**

5. Following a review of the project programme and financial situation, we consider it necessary to increase the APE of **564CL** from \$1,779.3 million by \$230.0 million to \$2,009.3 million to cover the additional cost arising from the following –

- (a) variations due to unforeseeable geological conditions under the first contract;
- (b) changes of the bridgework (item (c) of paragraph 3) design of the remaining works; and
- (c) additional site staff costs for the first contract and the remaining works.

Details of the increase in cost are set out in paragraphs 6 to 10 below.

**Variations due to unforeseeable geological conditions under the first contract**

6. The project involves cutting of an existing huge slope of 110 m high and 1 000 m wide to form about 13 hectares of slope faces and 20 hectares of building platforms for housing and school development within a site of about 35 hectares. The total quantity of earthworks involved is about 9.3 million cubic metres of rock and soft materials. While we carried out site investigation<sup>1</sup> for the design of the project before commencement of the first contract, during the construction stage, we encountered unforeseeable soil and rock profiles in various areas within the site. Accordingly, the following changes and additional works are required –

/(a) .....

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<sup>1</sup> The site investigation included over 200 number of boreholes, inspection trenches and pits, among other surveys, in-situ and laboratory tests.

- (a) The ratio of quantities of soft materials and rock in the bulk excavation for building platforms has been found to be different from what we originally provided for in the contract. The proportion of soft materials is increased from 16% to 27% leading to a total cost increase of about \$159 million.
- (b) The works involve trench excavation and laying of about 10 kilometres (km) of drains and sewers under the future carriageway of the newly formed building platforms. The amount of trench excavation work in rock for the drains and sewers has been found to be more than originally allowed in the contract<sup>2</sup>. This has resulted in an increase of about \$23 million.
- (c) Additional slope improvement works in the form of retaining walls, soil nails, erosion mats, rock dowels and spray concrete are required to ensure slope stability. This has resulted in an increase of about \$31 million.

### **Changes to bridgework design of the remaining works**

7. The actual geological conditions were found to be different from that predicted from the site investigation. We have revised the design of the foundation of flyovers and footbridges as part of the remaining works, involving additional mini-piles and longer bored piles for flyovers and larger and longer bored piles for footbridges<sup>3</sup>. The change will result in a cost increase of about \$32 million.

8. A pedestrian link in the form of escalators as part of the remaining works was proposed in the original design to connect two building platforms at /a .....

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<sup>2</sup> The contract has allowed about 45% of the trench excavation in rock for drains and sewers. Due to unforeseeable geological conditions, the latest estimate of rock excavation is increased to about 58%.

<sup>3</sup> For flyovers, the length of bored piles is increased from 500 m to 900 m and about 1 000 m of mini-piles are added. For footbridges, the bored pile length is increased from 1 000 m to 1 100 m and the diameter of about 400 m bored piles is increased from 1 000 mm to 1 500 mm.

a height difference of 50 m within the development. In view of the great variation in height of the two building platforms and having regard to the latest requirement of footbridge design, the design has been revised to provide lifts in lieu of escalators. This can better serve disabled persons and other pedestrian users. The change will lead to a net increase in cost of about \$26 million.

### **Additional site staff costs for the first contract and the remaining works**

9. The works under the first contract involves large scale site formation works, construction of about 3 900 m of new roads and associated drainage and sewerage works. For the additional work, for example, increased slope treatment works, coupled with existing site constraints and proximity to adjacent residential blocks which rendered a more complicated sequence for the blasting and temporary works, we considered it necessary to strengthen the site supervision by employing additional resident site staff in stages. Accordingly, the resultant total site staff cost is about 6.6% of the construction cost of the works under the first contract<sup>4</sup>. This will result in a cost increase of about \$29 million.

10. In the original programme of 2001, we scheduled to complete the works under the first contract and the remaining works like footbridges and flyovers by mid-2006. In view of a revision to the housing development programme (with population intake revised from 2006 onwards to 2008 and 2010), the remaining works will be rescheduled for completion in stages from 2008 to 2010. The overall period of the construction works will therefore be longer than that originally expected. As a result, we cannot share the managerial and technical resources under a combined site staff establishment. This will lead to an additional expenditure of about \$7 million. Moreover, there is also an increase of \$3 million on site staff cost due to additional cost of remaining works mentioned in paragraphs 7 and 8 above. The overall increase of site staff cost for the remaining works will therefore be about \$10 million<sup>5</sup>.

**/Overall .....**

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<sup>4</sup> The original estimate of site staff cost was about 5% of the cost of works. The nominal percentage of site staff cost for large scale civil engineering contracts is about 8% of the cost of the works.

<sup>5</sup> The total site staff cost for the remaining works will be increased to \$20 million, which is about 5% of the cost of the remaining works.

**Overall Review**

11. Upon a review of the financial position of the project, we consider it necessary to increase the APE of **564CL** from \$1,779.3 million by \$230.0 million to \$2,009.3 million in MOD prices in order to cover the additional cost of works under the project. A breakdown for the proposed increase of \$230.0 million is as follows –

<b>Factors</b>	<b>Proposed increased amount in MOD prices (\$ million)</b>	<b>% of the total increased amount</b>
Additional costs associated with –	310.0	
(a) Variation in earthwork quantities	159.0	69.1%
(b) Additional trench excavation in rock	23.0	10.0%
(c) Variations and additional slope improvement works	31.0	13.5%
(d) Changes to bridgework design of the remaining works	58.0	25.2%
(e) Additional site staff costs	39.0	17.0%
Partly offset by-		
(f) Drawdown from Contingencies	(80.0) <sup>6</sup>	(34.8%)
<b>Total</b>	<b>230.0</b>	<b>100.0</b>
		/A .....

<sup>6</sup> The original contingencies in the APE are \$161.6 million. The drawdown of \$80.0 million comprises a sum of \$60.0 million from the original contingencies and a surplus fund of \$20.0 million arising from the lower tender sum of the first contract. Figures in brackets represent negative values.

A comparison of the cost breakdowns of the APE and the revised project estimate in MOD prices, together with reasons leading to the proposed increase in the APE, is at Enclosure 2.

## FINANCIAL IMPLICATIONS

12. Subject to approval, we will revise the phasing of the expenditure as follows-

Year	\$ million (MOD)
Up to 31 March 2005 <sup>7</sup>	1,045.8
2005-06	282.0
2006-07	261.5
2007-08	139.2
2008-09	100.5
2009-10	90.2
2010-11	66.3
2011-12	<u>23.8</u>
	<u>2,009.3</u>

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

/PUBLIC .....

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<sup>7</sup> This is actual expenditure up to 31 March 2005.

## **PUBLIC CONSULTATION**

14. We consulted the Housing Panel of the Legislative Council on the proposed increase in APE of **564CL** on 10 May 2005. Members did not raise any objection to the proposal.

## **ENVIRONMENTAL IMPLICATIONS**

15. The proposed increase in the APE will not give rise to any adverse environmental implications. There will not be any increase of construction and demolition materials generated.

## **LAND ACQUISITION**

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

## **BACKGROUND INFORMATION**

17. In March 2001, Finance Committee approved the upgrading of **564CL** "Development near Choi Wan Road and Jordan Valley" to Category A at an estimated cost of \$1,779.3 million in MOD prices.

18. The proposed housing development near Choi Wan Road and Jordan Valley was originally scheduled for both public housing (Sites 1 and 3B at Enclosure 1) and private developments (Sites 2 and 3A at Enclosure 1) to accommodate a population of 35 000. Following the Government's recent decision to re-allocate Site 2 and Site 3A from private to public housing construction, all four residential sites are now reserved for public housing development. The public housing development will be completed in phases by 2010/11, with first population intake scheduled for 2008.

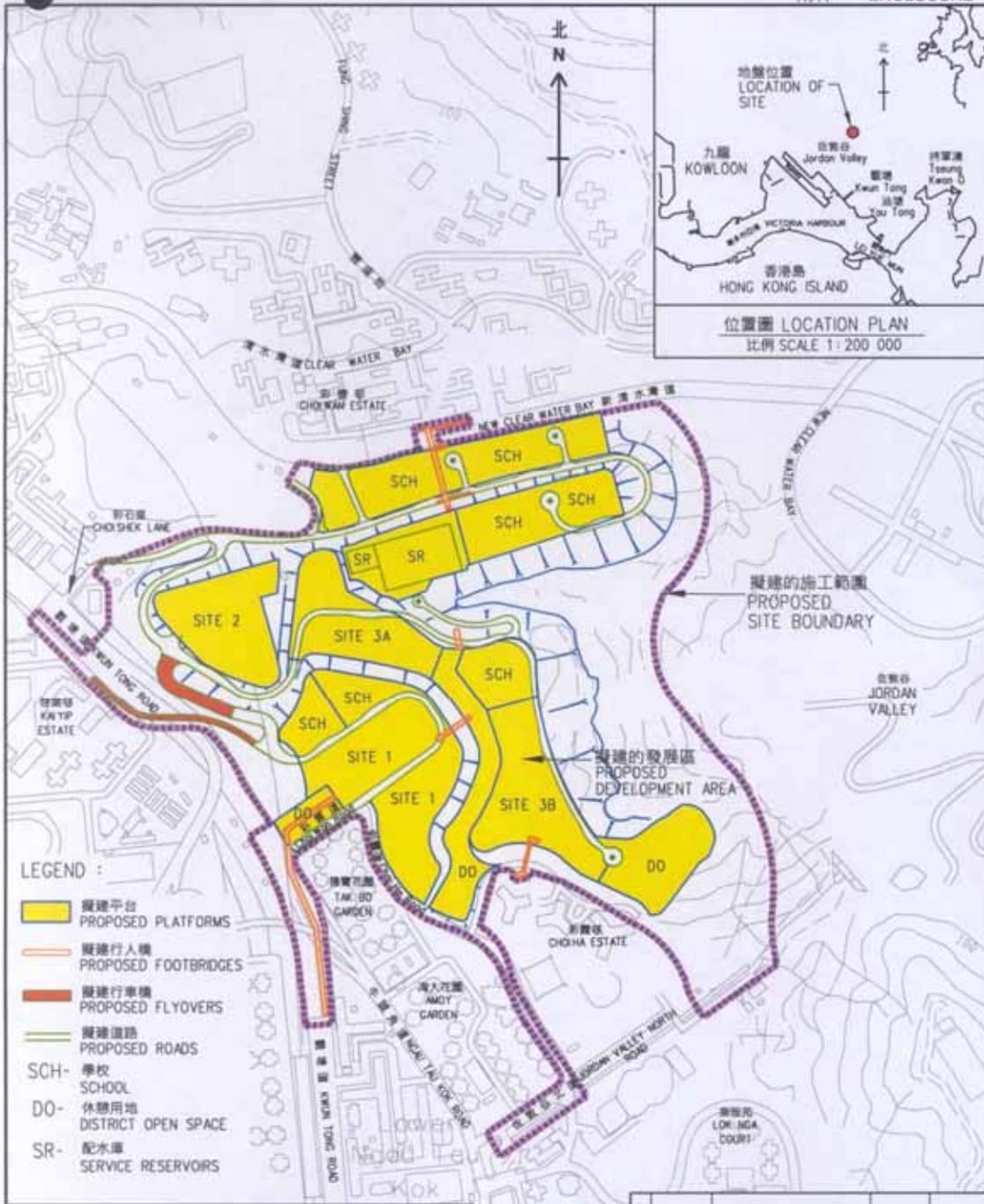
19. The project started in November 2001. The works under the first contract is anticipated to complete in 2006. Invitation of tenders for the remaining works will commence in September 2005 with a view to completion of the works in stages from 2008 to 2010.

20. The proposed increase in the APE will not involve any additional tree removal or planting proposals.

21. We estimate that the proposed increase in the APE enabling the remaining works to proceed will create about 250 jobs (190 labourers and another 60 professional/technical staff), providing a total of 11 000 man-months.

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Housing, Planning and Lands Bureau  
May 2005



2005年-2006年年度工務小組委員會文件  
PWSC Submission 2005-2006

圖則名稱 Drawing title  
彩雲道及佐敦谷毗鄰的發展計劃 - 工地平面圖  
DEVELOPMENT NEAR CHOI WAN ROAD  
AND JORDAN VALLEY - SITE PLAN

繪圖 Drawn	簽署 Initial	日期 Date	項目編號 Item no.
W.L. Leung	signed	10.5.2005	B564CL
核對 Checked	簽署 Initial	日期 Date	比例尺 Scale
W.Y. Leung	signed	10.5.2005	1:7 500 or As shown
核准 Approved	簽署 Initial	日期 Date	圖則編號 Drawing no.
K.M. Leung	signed	10.5.2005	K 173

no.	date	description	checked	approved

辦事處 Office  
九龍拓展處  
KOWLOON DEVELOPMENT OFFICE

CEDD 土木工程發展處  
CIVIL ENGINEERING  
AND DEVELOPMENT  
DEPARTMENT

**Enclosure 2 to PWSC(2005-06)9**

**B564CL – Development near Choi Wan Road and Jordan Valley**

1. A comparison of the APE and the revised project estimate in MOD prices is as follows –

	(i) Approved Estimate <sup>1</sup>  (\$M)	(ii) First Contract		(iii) Latest Estimate for Remaining Works  (\$M)	(iv) Total Latest Estimate (ii)(b)+(iii)  (\$M)	(v) Difference (iv) – (i)  (\$M)
		(a) Revised Estimate (based on tender sum)  (\$M)	(b) Latest Estimate  (\$M)			
(a) Site formation and associated slope works	1,148.3	811.8	1,001.80	106.9	1,108.7	-39.6
(b) Roadworks	62.8	69.5	69.5	25.0	94.5	+31.7
(c) Bridgeworks	176.9	0.0	0.0	234.9	234.9	+58.0
(d) Drainage and sewerage works	86.9	254.4	277.4	15.0	292.4	+205.5
(e) Landscaping works	23.1	11.3	11.3	3.0	14.3	-8.8
(f) Environmental mitigation measures	33.2	35.4	35.4	2.0	37.4	+4.2
Sub-total	1,531.2	1,182.4 <sup>2</sup>	1,395.4 <sup>4</sup>	386.8	1,782.2	251.0
(g) Consultants' fees	86.5	73.5	102.5	23.0	125.5	+39.0
(i) for construction stage	10.0	7.0	7.0	3.0	10.0	
(ii) site staff cost	76.5	66.5	95.5	20.0	115.5	
(h) Contingencies	161.6	148.0 <sup>3</sup>	60.0	41.6	101.6	-60.0 <sup>5</sup>
<b>Total</b>	<b>1,779.3</b>	<b>1,403.9</b>	<b>1,557.9</b>	<b>451.4</b>	<b>2,009.3</b>	<b>230.0</b>

<sup>1</sup> This is inclusive of the inflation allowance, which is spread over on different items of works and contingencies.

<sup>2</sup> This represents a tender sum of the first contract of \$1,276.0 million, excluding the contract contingencies of \$93.6 million.

<sup>3</sup> This comprises the contract contingencies of \$93.6 million, project contingencies of \$34.4 million and a surplus fund of \$20.0 million arising from the lower tender sum of the first contract.

<sup>4</sup> This represents an increase from \$1,182.4 million to \$1,395.4 million by \$213.0 million as referred to in paragraph 6 of the paper.

<sup>5</sup> This represents a sum of \$60 million of the original contingencies being part of the drawdown of \$80.0 million from contingencies indicated in paragraph 11(f). The remaining \$20.0 million is the surplus fund arising from the lower tender sum of the first contract.

## Enclosure 2 to PWSC(2005-06)9

2. **As regards 1(a) (Site formation and associated slope works)**, the total increase arising from variations of bulk excavation and additional slope improvement work is \$190.0 million (see paragraphs 6(a) and 6(c) of the paper). Due to the lower tender prices of the accepted tender for this particular item in the first contract, the overall cost is decreased by \$39.6 million.
  
3. **As regards 1(b) (Roadworks)**, the increase of \$31.7 million is due to higher tender prices of the accepted tender for this particular item in the first contract.
  
4. **As regards 1(c) (Bridgeworks)**, the increase of \$58.0 million comprises-
  - (a) an increase of \$32.0 million due to the revised design of foundation works for the bridges (see paragraph 7 of paper); and
  - (b) an increase of \$26.0 million due to the revised design to install lifts for a footbridge (see paragraph 8 of paper).
  
5. **As regards 1(d) (Drainage and sewerage works)**, coupled with the higher tender prices of the accepted tender for this particular item in the first contract and the additional cost for trench excavation in rock of \$23.0 million (see paragraph 6(b) of the paper), the total increase is \$205.5 million.
  
6. **As regards 1(e) (Landscaping works)**, the decrease of \$8.8 million is due to lower tender prices of the accepted tender for this particular item in the first contract.
  
7. **As regards 1(f) (Environmental mitigation measures)**, the increase of \$4.2 million is due to higher tender prices of the accepted tender for this particular item.

## Enclosure 2 to PWSC(2005-06)9

8. **As regards 1(g) (Consultants' fees)**, the increase of \$39.0 million is due to additional expenditure on resident site staff as a result of the increase of the site staff establishment to strengthen supervision and the revised construction periods arising from the change of housing development programmes (see paragraphs 9 and 10 of the paper).

9. **As regards 1(h) (Contingencies)**, a sum of \$101.6 million is retained as contingencies associated with outstanding works of the first contract and the remaining works.