

**For discussion  
on 26 November 2012**

**Legislative Council  
Panel on Environmental Affairs**

**382DS — Sewerage at Clear Water Bay Road, Pik Shui Sun Tsuen  
and west of Sai Kung town**

**PURPOSE**

This paper seeks Members' support for our proposal to increase the approved project estimate (APE) of **382DS** by \$68.4 million from \$290.6 million to \$359.0 million in money-of-the-day (MOD) prices.

**BACKGROUND**

2. We need to collect and properly handle sewage generated from the Port Shelter catchment by providing public sewerage and treatment facilities. In June 2012, the Finance Committee (FC) approved the upgrading of part of **272DS** – Port Shelter sewerage, stage 2 and part of **273DS** – Port Shelter sewerage, stage 3 to Category A as **382DS** at an estimated cost of \$290.6 million in MOD prices. The approved scope of **382DS** comprises the construction of –

- (a) about 12.8 kilometres (km) of sewers ranging from 150 millimetres (mm) to 300 mm in diameter for 11 unsewered areas, namely Kap Pin Long, Nam Shan, Pak Kong, San Uk, Sha Kok Mei, Tai Ping Village, Tai Shui Tseng, Wo Tong Kong, Lung Wo Tsuen, Pik Shui Sun Tsuen and in the vicinity of Fei Ngo Shan Road;
- (b) about 3.6 km of gravity trunk sewers ranging from 225 mm to 450 mm in diameter along Clear Water Bay Road from Shun Chi Street to Razor Hill Road and around Pik Shui Sun Tsuen;
- (c) one sewage pumping station (SPS) at Pik Shui Sun Tsuen;

- (d) about 900 metres (m) of twin rising mains ranging from 150 mm to 350 mm in diameter –
  - (i) at Pik Shui Sun Tsuen in association with construction of the SPS in (c) above;
  - (ii) along sections of Clear Water Bay Road near Tseng Lan Shue and Pak Shek Wo; and
- (e) ancillary works.

Site plans showing the proposed works are at **Enclosure 1**.

3. We consulted the Panel on Environmental Affairs in April 2012 on the upgrading of part of **272DS** and part of **273DS** to Category A. Please refer to LC Paper No. CB(1) 1594/11-12(03) for details. Members did not raise objection to the proposal. FC approved the proposal in June 2012.

4. Upon completion of the above proposed sewerage works, sewage collected will be conveyed to the Sai Kung sewage treatment works, the Tseung Kwan O preliminary treatment works (PTW) and the Kwun Tong PTW for proper treatment and disposal. This will minimise the release of pollutants into the environment and bring about sustained improvement to the water quality of Port Shelter.

## **LATEST POSITION**

5. The Drainage Services Department (DSD) is going to implement the project under two contracts. The first contract covers the construction of civil engineering works associated with (a), (b), part of works in (c), (d) and (e) in paragraph 2 whereas the second contract covers the electrical and mechanical (E&M) works of (c) in paragraph 2.

6. Tender assessment for the first contract has been completed in October 2012. DSD will tender the second contract for the E&M works in early 2015. Having reviewed the financial position of the project, we propose to increase the APE of **382DS** before recommending the award of the first contract. The justifications for the proposed increase in APE are set out in paragraphs 7 to 11 below.

## JUSTIFICATIONS

### *Higher-than-expected tender prices*

7. All returned tender prices for the works under the first contract are higher than expected. We understand that tenderers have included more risk allowance taking into account the severe site constraints such as the difficult access to the hilly and congested village areas in Sai Kung and the stringent traffic restrictions at Clear Water Bay Road, leading to higher-than-expected risk costs. Based on the returned tender prices, this has led to an increase in construction cost by \$59.7 million.

8. The sewer design has already chosen alignments along the optimised route and adopted open-trench construction method as far as possible. DSD has reviewed the design and construction method of works but found little room to reduce the construction costs. DSD has also carefully considered the option of re-tendering the contract with a view to securing a lower tender price. However, in view of the severe site constraints leading to higher cost as mentioned in paragraph 7 above, it is unlikely that the tender prices can be reduced by re-tendering. We have therefore decided not to pursue the option of re-tendering and propose to increase the APE for the project accordingly.

### *Increase in the provision for price adjustment*

9. There are provisions for price adjustment to meet contract price fluctuations (CPF)<sup>1</sup> of the works of **382DS**. When we sought FC's approval for the original estimate of **382DS** in June 2012, we derived the provision for price adjustment on the basis of the forecast of trend rate of change in the prices of public sector building and construction output in March 2012, which assumed that the prices would increase by 5.5% per annum from 2012 onwards. A provision of \$52.8 million was allowed for price adjustment in the original APE based on the prevailing price adjustment factors and the projected cash flow. In the light of the increase in project cost and increase in the subsequent forecast on the trend rate of change in the prices of public sector building and construction output (the latest forecast is that there will be an increase of 7.0% in 2012, 6.0% per annum from 2013 to 2017 and 5.0% per annum from 2018 onwards), the

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<sup>1</sup> The CPF system allows for both upward and downward adjustment to contract payments in accordance with movements in the cost of labour and materials in Government civil engineering and building contracts. The CPF payment is calculated based on the difference between the indices of costs of construction labour and materials at the time of tendering and the current values of these indices at the time of payment in accordance with a predetermined relative proportion of each cost index.

provision for price adjustment will increase accordingly.

10. Based on the price adjustment factors adopted in October 2012, we anticipate that the provision for price adjustment will have to be increased by \$19.2 million from \$52.8 million to \$72.0 million. Detailed calculation on the proposed increase in provision for price adjustment is at **Enclosure 2**.

*Offset by contingencies*

11. After reviewing the financial position of **382DS** and the tendering results of the contract, we consider it necessary to increase the APE of the project by \$68.4 million from \$290.6 million to \$359.0 million in MOD prices to cover the additional costs arising from the higher-than-expected prices of the recommended tender and the associated increase in provision for price adjustment. The increase in cost is partly offset by a sum of \$10.5 million to be released from the project contingencies. Taking into account the need to cater for possible instances incurring additional costs throughout the remaining stages of the project, such as variations of works as necessary, possible claims and valuation of works during finalisation of the project account, we consider it necessary to retain \$10.0 million as contingencies.

## **FINANCIAL IMPLICATIONS**

12. The cost breakdown of the proposed increase in APE is as follows –

<b>Factors</b>	<b>Increase in estimate in MOD prices (\$ million)</b>
<i>Increase due to –</i>	
(a) Higher-than-expected tender prices	59.7
(b) Increase in provision of price adjustment	19.2
(c) Contingencies	(10.5)
<b>Total</b>	<b>68.4</b>

A comparison of the cost breakdowns of the APE and the latest project estimate of **382DS** is at **Enclosure 3**.

## **IMPLEMENTATION PLAN**

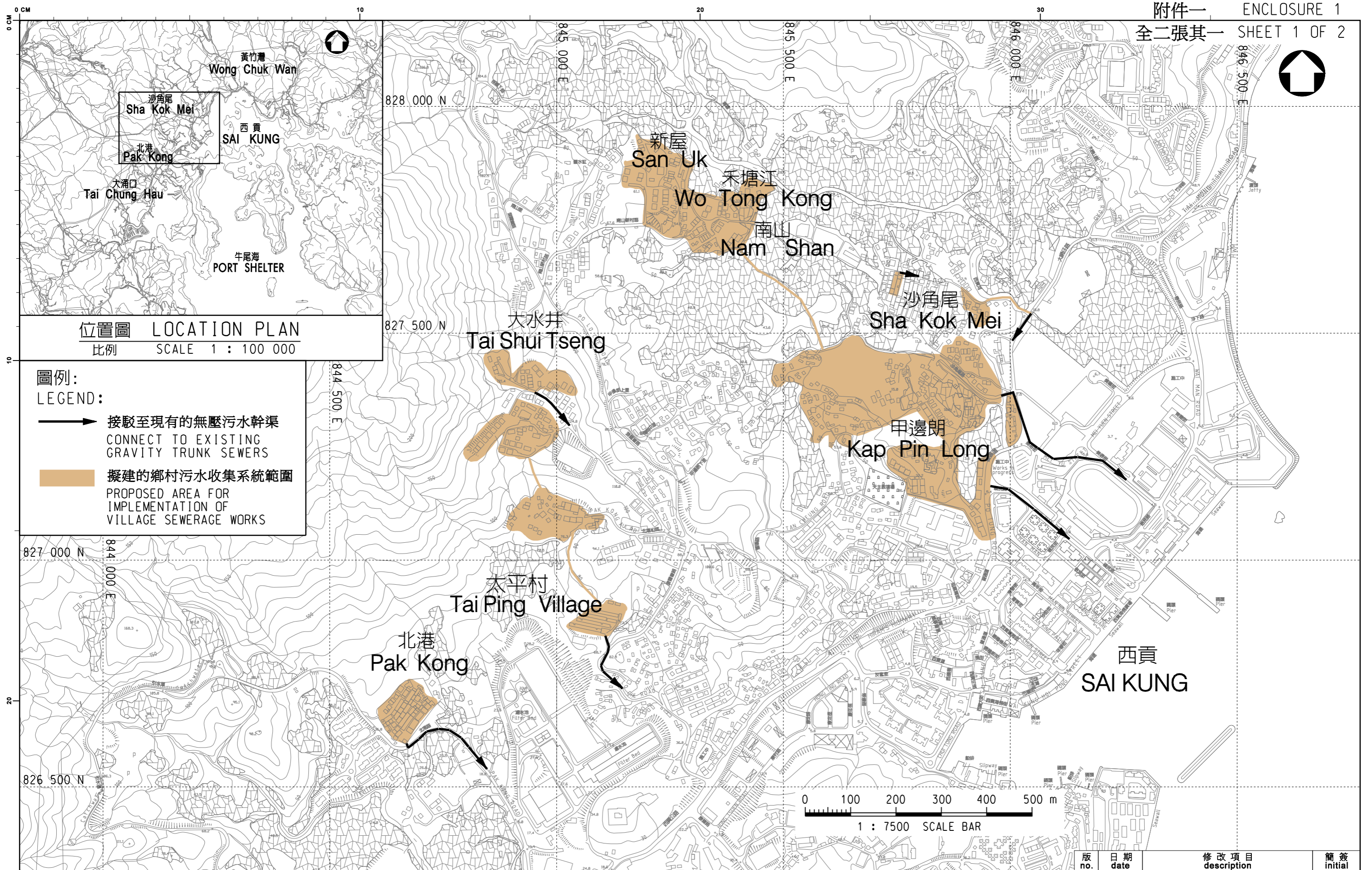
13. Subject to funding approval by the FC, we plan to award the contract and commence the construction of the proposed sewerage works in January 2013 for completion in January 2017.

## **ADVICE SOUGHT**

14. Members are invited to support our proposal for increasing the APE of **382DS** by \$68.4 million from \$290.6 million to \$359.0 million in MOD prices. Subject to Members' advice, we plan to submit our proposal for consideration by the Public Works Subcommittee in December 2012 and seek FC's approval in January 2013.

**Environmental Protection Department  
Drainage Services Department  
November 2012**





位置圖 LOCATION PLAN  
比例 SCALE 1 : 100 000

圖例:  
LEGEND:

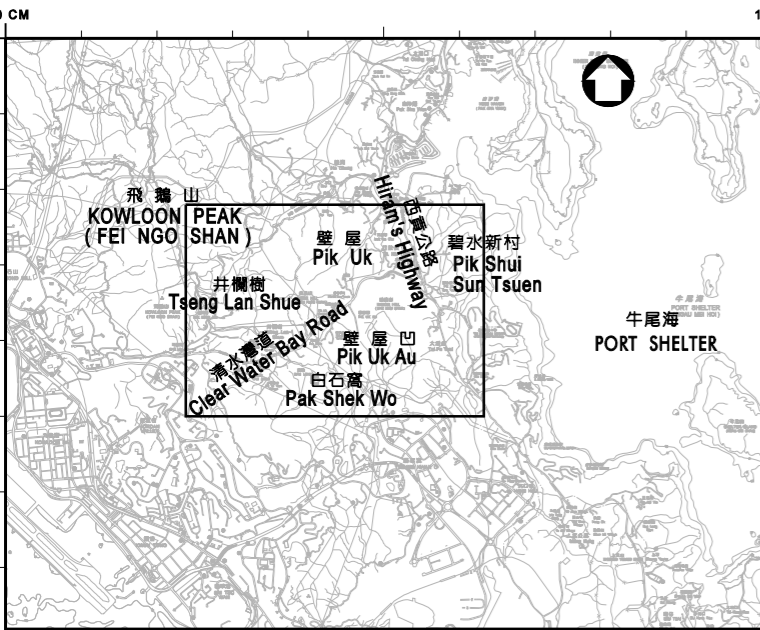
- 接駁至現有的無壓污水幹渠  
CONNECT TO EXISTING GRAVITY TRUNK SEWERS
- 擬建的鄉村污水收集系統範圍  
PROPOSED AREA FOR IMPLEMENTATION OF VILLAGE SEWERAGE WORKS

圖則名稱 drawing title  
工務計劃項目第 382DS 號 - 清水灣道、碧水新村及西貢西郊污水收集系統  
PWP ITEM NO.382DS - SEWERAGE AT CLEAR WATER BAY ROAD,  
PIK SHUI SUN TSUEN AND WEST OF SAI KUNG TOWN

繪畫 drawn SIGNED C. C. CHAN	日期 date 13 NOV 2012
核對 checked SIGNED Ir S. P. CHOW	日期 date 13 NOV 2012
批核 approved SIGNED Ir C. C. YEUNG	日期 date 13 NOV 2012
部門 office 污水工程部 SEWERAGE PROJECTS DIVISION	

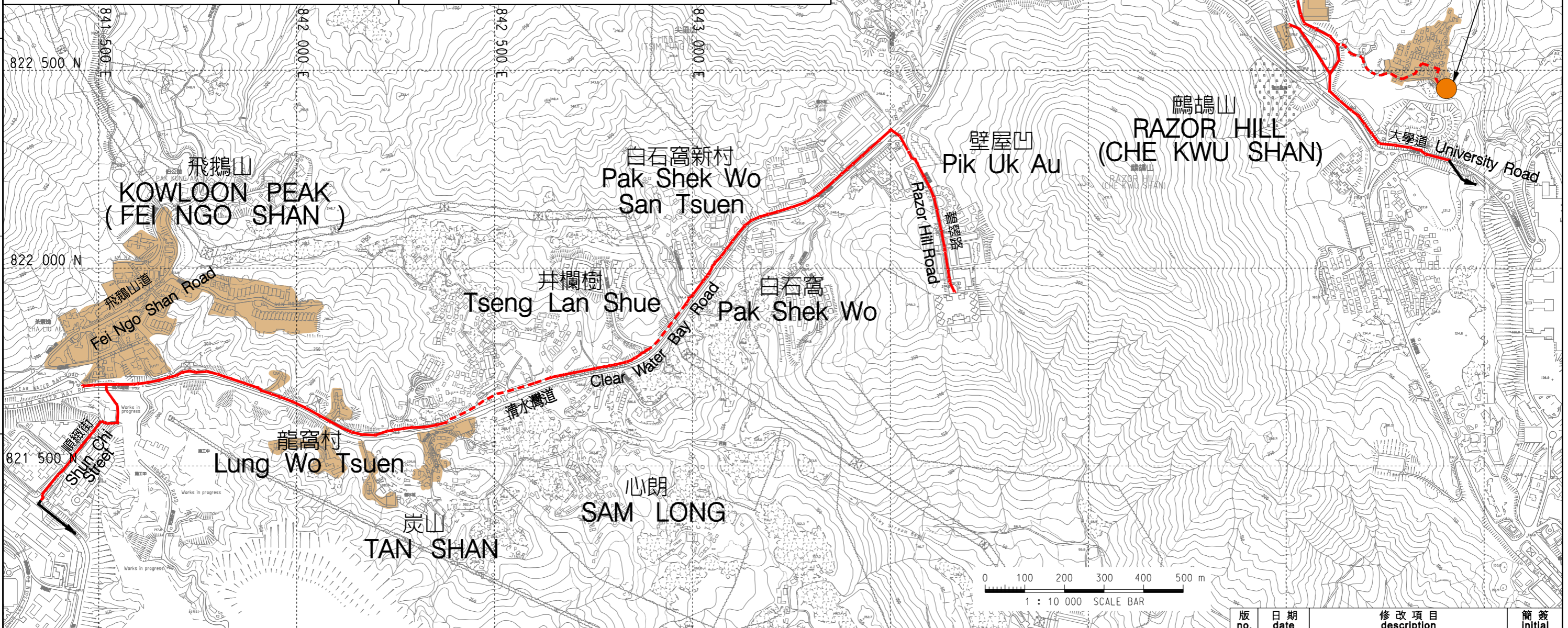
修改項目 description	簡簽 initial
圖則編號 drawing no. DSP/382DS1/11023	比例 scale AS SHOWN
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位置圖 LOCATION PLAN  
比例 SCALE 1 : 100 000

- 圖例:  
LEGEND:
- 接駁至現有的無壓污水幹渠  
CONNECT TO EXISTING GRAVITY TRUNK SEWERS
  - 擬建的無壓污水幹渠  
PROPOSED GRAVITY TRUNK SEWERS
  - 擬建的雙管壓力污水管  
PROPOSED TWIN RISING MAINS
  - 擬建的鄉村污水收集系統範圍  
PROPOSED AREA FOR IMPLEMENTATION OF VILLAGE SEWERAGE WORKS
  - 擬建污水泵房  
PROPOSED SEWAGE PUMPING STATION



圖則名稱 drawing title  
工務計劃項目第 382DS 號 - 清水灣道、碧水新村及西貢西郊污水收集系統  
PWP ITEM NO.382DS - SEWERAGE AT CLEAR WATER BAY ROAD,  
PIK SHUI SUN TSUEN AND WEST OF SAI KUNG TOWN

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SIGNED C. C. CHAN	13 NOV 2012	圖則編號 drawing no.	AS SHOWN
核對 checked	日期 date	DSP/382DS1/11024	
SIGNED Ir S. P. CHOW	13 NOV 2012	保留版權 COPYRIGHT RESERVED	
批核 approved	日期 date	香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	
SIGNED Ir C. C. YEUNG	13 NOV 2012		
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**Table 1 – Cash flow and provisions for price adjustment in PWSC(2012-13)13**

Year	Original project estimate (\$ million in September 2011 prices)  <i>X</i>	Original price adjustment factor  (March 2012) <sup>#</sup>  <i>Y</i>	Approved project estimate (\$ million, in MOD prices)  <i>Z</i>	Provision for price adjustment (\$ million)  <i>A = Z - X</i>
2012 – 2013	21.2	1.05325	22.3	1.1
2013 – 2014	34.6	1.11118	38.4	3.8
2014 – 2015	49.7	1.17229	58.3	8.6
2015 – 2016	52.1	1.23677	64.4	12.3
2016 – 2017	53.4	1.30479	69.7	16.3
2017 – 2018	18.4	1.37656	25.3	6.9
2018 – 2019	8.4	1.45227	12.2	3.8
<b>Total</b>	<b>237.8</b>	–	<b>290.6</b>	<b>52.8</b>

<sup>#</sup> Price adjustment factors adopted in March 2012 are based on the projected movement of prices for public sector building and construction output at that time, which are assumed to increase by 5.5% per annum from 2012 onwards.



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

<b>Year</b>	<b>Latest project estimate</b>  (\$ million in September 2011 prices)  <i>a</i>	<b>Latest project estimate</b>  (\$ million in September 2012 prices) <sup>^</sup>  <i>b</i>	<b>Latest price adjustment factor</b>  (October 2012) <sup>##</sup>  <i>c</i>	<b>Latest project estimate</b>  (\$ million in MOD prices)  <i>d</i>	<b>Latest provision for price adjustment</b>  (\$ million)  <i>e</i>	<b>Net increase in provision for price adjustment</b>  (\$ million)  <i>f</i>
2012 – 2013	0.8	0.9	1.00000	0.9	<i>e = d - a</i>	<i>f = e - A<sup>^^</sup></i>
2013 – 2014	71.1	75.8	1.06250	80.5		
2014 – 2015	71.1	75.8	1.12625	85.4		
2015 – 2016	64.2	68.5	1.19383	81.8		
2016 – 2017	54.9	58.6	1.26545	74.2		
2017 – 2018	17.9	19.1	1.34138	25.6		
2018 – 2019	7.0	7.5	1.41180	10.6		
<b>Total</b>	<b>287.0</b>	<b>306.2</b>	–	<b>359.0</b>	<b>72.0</b>	<b>19.2</b>

<sup>##</sup> Price adjustment factors adopted in October 2012 are based on the latest movement of prices for public sector building and construction output, and are assumed to increase by 7.0% in 2012, 6.0% per annum from 2013 to 2017 and 5.0% per annum from 2018 onwards.

<sup>^</sup> The latest project estimate (in September 2011 prices) is multiplied by 1.06675 for conversion to September 2012 prices. The figure of 1.06675 represents the changes in price movement for public sector building and construction output between September 2011 and September 2012.

<sup>^^</sup> “A” refers to the provision for price adjustment in PWSC(2012-13)13.

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A comparison of the approved project estimate and the latest project estimate is as follows –

	<b>(A)</b> <b>Approved Project Estimate</b> <b>(\$ million)</b>	<b>(B)</b> <b>Latest Project Estimate</b> <b>(\$ million)</b>	<b>(B) - (A)</b> <b>Difference</b> <b>(\$ million)</b>
(a) Construction of sewers within villages	81.6	110.2	28.6
(b) Construction of gravity trunk sewers	69.0	93.1	24.1
(c) Construction of rising mains	15.7	21.2	5.5
(d) Construction of sewage pumping station	12.9	14.3	1.4
(i) civil engineering works	4.5	5.9	1.4
(ii) electrical and mechanical works	8.4	8.4	0
(e) Ancillary works	0.5	0.6	0.1
(f) Environmental mitigation measures	4.3	4.3	0
(g) Consultants' fees for	3.0	3.0	0
(i) contract administration	0.8	0.8	0

	(A) Approved Project Estimate (\$ million)	(B) Latest Project Estimate (\$ million)	(B) - (A) Difference (\$ million)
(ii) management of resident site staff	1.7	1.7	0
(iii) environmental monitoring and audit	0.5	0.5	0
(h) Remuneration of resident site staff	30.3	30.3	0
(i) Contingencies	20.5	10.0	(10.5)
<b>Sub-total</b>	<b>237.8</b>	<b>287.0</b>	<b>49.2</b>
(j) Provision for price adjustment	52.8	72.0	19.2
<b>Total</b>	<b>290.6</b>	<b>359.0</b>	<b>68.4</b>

2. As regards **1(a) (Construction of sewers within villages)**, the increase of \$28.6 million is due to higher-than-expected tender prices.

3. As regards **1(b) (Construction of gravity trunk sewers)**, the increase of \$24.1 million is due to higher-than-expected tender prices.

4. As regards **1(c) (Construction of rising mains)**, the increase of \$5.5 million is due to higher-than-expected tender prices.

5. As regards **1(d)(i) (Construction of sewage pumping station – civil engineering works)**, the increase of \$1.4 million is due to higher-than-expected tender prices.

6. As regards **1(e) (Ancillary works)**, the increase of \$0.1 million is due to higher-than-expected tender prices.



7. As regards **1(i) (Contingencies)**, after review we consider that smaller contingencies of \$10.0 million would be adequate to cater for variations of works as necessary, possible claims and valuation of works during finalisation of the project account.

8. As regards **1(j) (Provision for price adjustment)**, the increase of \$19.2 million is due to an increase in payment for projected contract price fluctuation.