

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 705 – CIVIL ENGINEERING

#### Environmental Protection – Sewerage and sewage treatment

#### 233DS – Sludge treatment facilities

Members are invited to recommend to the Finance Committee that the approved project estimate of **233DS** be increased by \$209.9 million from \$5,154.4 million to \$5,364.3 million in money-of-the-day (MOD) prices.

### PROBLEM

The approved project estimate (APE) of **233DS** is not sufficient to cover the costs of the works under the project.

### PROPOSAL

2. The Director of Environmental Protection, with the support of the Secretary for the Environment, proposes to increase the APE of **233DS** by \$209.9 million from \$5,154.4 million to \$5,364.3 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 **233DS** to Category A at an estimated cost of \$5,154.4 million in MOD prices. The approved scope of **233DS** comprises –

/(a) .....

- (a) design and construction of a sludge treatment facility (STF) of capacity of 2 000 tonnes per day;
- (b) provision of ancillary facilities<sup>1</sup>;
- (c) provision of environmental educational and associated facilities; and
- (d) environmental monitoring during the construction stage.

———— A layout plan showing the location of the STF is at Enclosure 1.

## **PROGRESS OF THE PROJECT**

4. The project is being implemented under a Design-Build-and-Operate contract arrangement. The contractual operation period is 15 years. We started the design and construction works in October 2010 and the first phase of construction works was substantially completed in October 2014, which have the treatment capacity of 1 600 tonnes per day. Testing and commissioning of the first phase was completed and operation is targeted to be in the first half of 2015. The construction and commissioning of the second phase of STF will complete in 2016-17.

## **JUSTIFICATION**

5. After reviewing the financial position of **233DS**, we consider it necessary to increase the APE of **233DS** by \$209.9 million from \$5,154.4 million to \$5,364.3 million in MOD prices to cover the additional costs arising from the increase in provision for price adjustment.

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

6. According to existing government practice, monthly payments to contractors for construction contracts are adjusted to cover market fluctuation in labour and material costs, which are known as Contract Price Fluctuation (CPF) payment. The payment for the works of **233DS** is subject to CPF, and a provision of \$423.6 million was included in the original APE of **233DS** for price adjustment. When the project estimate was prepared in 2009, we estimated the provision for price adjustment based on the prevailing Government's set of

/assumptions .....

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<sup>1</sup> Ancillary facilities include administration building, maintenance workshop, utility yard, gatehouse, chemical/fuel storage room, desalination plants, seawater pumping station and storage tank and sewage treatment plant.

assumptions on the trend rate of change in the prices of public sector building and construction output in March 2009, which was assumed to increase by 2% per annum for the period from 2009 to 2013 and by 3% per annum from 2014 to 2017.

7. Since the commencement of the design and construction of the STF in October 2010, there has been a significant increase in labour wages and construction material prices. The actual price deflators for 2009, 2010, 2011, 2012, 2013 and 2014 were 3.1%, 2.9%, 5.9%, 6.8%, 5.1% and 4.9% respectively. The latest estimate (as at March 2015) is that the prices for public sector building and construction output will increase by 6% per annum from 2015 to 2019. The actual and forecast price deflators are higher-than-expected.

8. Based on the latest assumptions on the trend rate of change in the prices of public sector building and construction output and the latest cash flow forecast, we estimate that the provision for price adjustment will increase by \$327.5 million from \$423.6 million to \$751.1 million. The latest cash flow of the project and the detailed assessment of the latest provision for price adjustment are at Enclosure 2.

### **Drawdown of project contingencies**

9. A provision of \$428.7 million has been made for project contingencies in the original APE. Due to the tender outcome, \$111.1 million has been deployed from the project contingencies to meet the higher-than-expected tender price. Of the remaining balance of \$317.6 million of project contingencies, \$200 million would be needed to meet costs arising from claims, valuation of works during finalisation of the project account and unforeseeable circumstances, etc. An amount of \$117.6 million of project contingencies can be released to partly offset the increase in price adjustment of \$327.5 million. A shortfall of \$209.9 million remains to be met.

10. A breakdown of the proposed increase in APE is as follows -

**/Factors .....**

<b>Factors</b>	<b>Proposed increased amount in MOD prices (\$ million)</b>
<b>Increase due to –</b>	
(a) Increase in provision of price adjustment	327.5
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<b>Partly offset by -</b>	
(b) Drawdown from contingencies	(117.6)
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(c) Proposed increase	
(c) = (a) – (b)	209.9
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11. A comparison of the cost breakdown of the original APE and the latest project estimate of **233DS** is at Enclosure 3.

#### **FINANCIAL IMPLICATIONS**

12. Subject to approval of the FC, we will revise the phased expenditure as follows –

<b>Year</b>	<b>\$ million (in MOD prices)</b>
Up to 31 March 2015	4,790.8
2015 – 16	368.6
2016 – 17	204.9
Total	<hr/> 5,364.3 <hr/>

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

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## **PUBLIC CONSULTATION**

14. As the proposed increase in the APE does not involve any change in project scope, further public consultation is not required.

15. We consulted the Legislative Council Panel on Environmental Affairs on the proposed increase in APE on 15 December 2014. The Panel agreed to the submission of the funding proposal to the Public Works Subcommittee by the Government. Supplementary information on details on the price index of the project, latest project estimate and scope of project contingencies requested by the Members was provided to the Panel on 6 March 2015.

## **ENVIRONMENTAL IMPLICATIONS**

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

## **HERITAGE IMPLICATIONS**

17. The proposed increase in the APE will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites or buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

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

## **BACKGROUND INFORMATION**

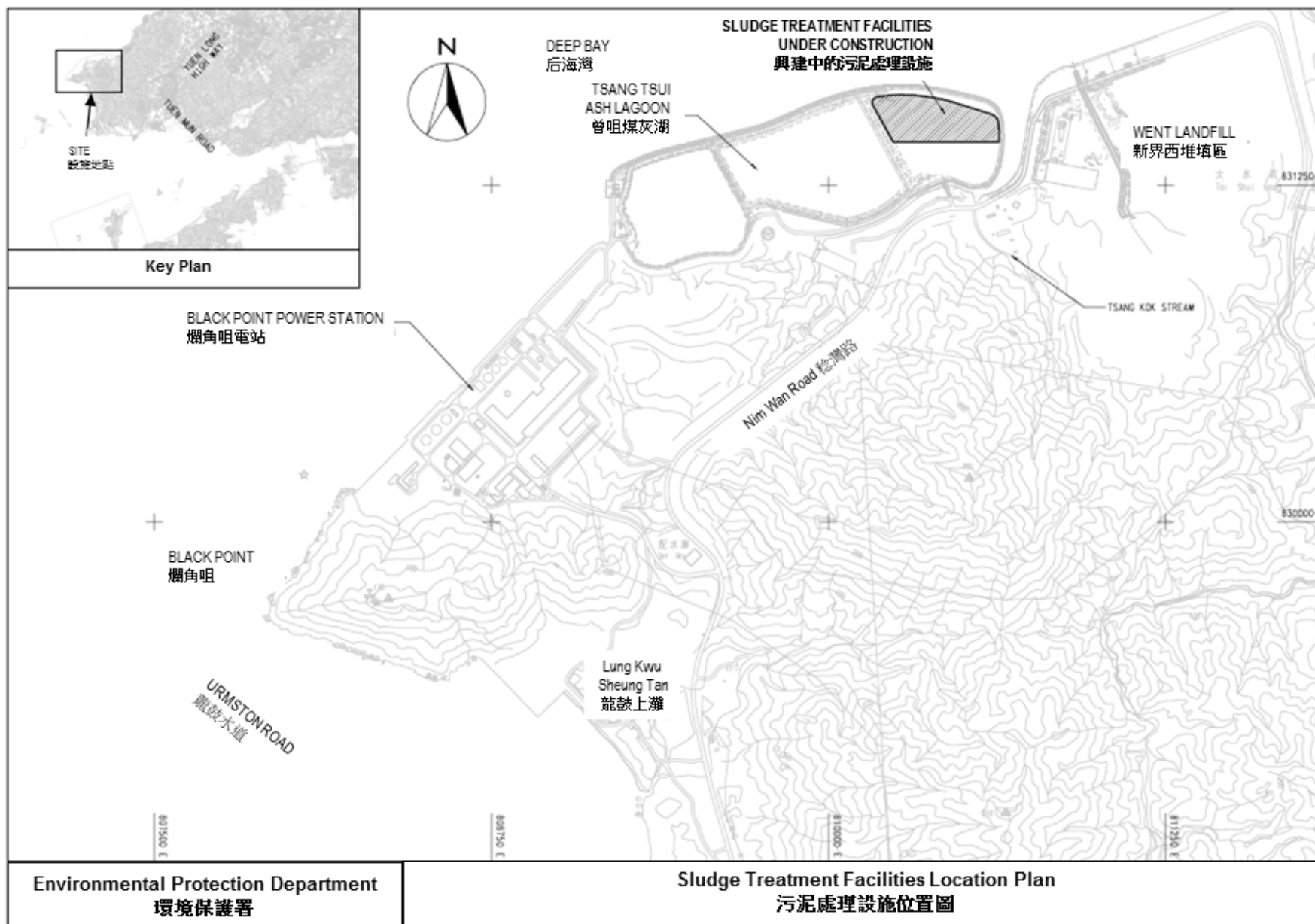
19. In June 2009, the FC approved the upgrading of **233DS** to Category A with an APE of \$5,154.4 million in MOD prices. The design and construction works commenced in October 2010 and the operation is targeted to be commencing in phases in the first half of 2015.

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

21. The proposed increase in the APE will not involve the creation of any additional professional and technical posts or job opportunities.

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Environment Bureau  
April 2015



## 233DS – Sludge Treatment Facilities

**Table 1 – Cash flow and provisions for price adjustment provided in PWSC(2009-10)16**

Year	Original project estimate (\$ million, in September 2008 prices) X	Original price adjustment factors (March 2009)# Y	Approved project estimate (\$ million, in MOD prices) Z	Provision for price adjustment (\$ million) A = Z-X
2009 - 2010	112.0	1.03500	115.9	3.9
2010 - 2011	1,221.5	1.05570	1,289.5	68.0
2011 - 2012	1,442.2	1.07681	1,553.0	110.8
2012 - 2013	1,245.3	1.09835	1,367.8	122.5
2013 - 2014	208.2	1.12032	233.3	25.1
2014 - 2015	167.2	1.15113	192.5	25.3
2015 - 2016	167.2	1.18566	198.2	31.0
2016 - 2017	167.2	1.22123	204.2	37.0
<b>Total</b>	<b>4,730.8</b>		<b>5,154.4</b>	<b>423.6</b>

**Table 2 – Latest cash flow and provision for price adjustment for 233DS**

Year	Latest Project Estimate (PE) (\$ million, in September 2008 prices) a	Latest PE (\$ million, in September 2014 prices) @ b	Latest price adjustment factors (March 2015) ## 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 2015	4,215.2^	4,790.8^	1.00000	4,790.8^	e = d – a	f = e – A
2015 - 2016	261.1	348.6	1.05725	368.6		
2016 - 2017	136.9	182.8	1.12069	204.9		
<b>Total</b>	<b>4,613.2</b>	<b>5,322.2</b>		<b>5,364.3</b>	<b>751.1</b>	<b>327.5</b>

**Notes:**

- # Price adjustment factors promulgated 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 increase by 2% per annum from 2009 to 2013, and by 3% per annum from 2014 to 2017.
- @ The latest project estimate (in September 2008 prices) is multiplied by 1.33520 for conversion to September 2014 prices. The figure of 1.33520 represented the changes in price movement for public sector building and construction output between September 2008 and September 2014.
- ## Price adjustment factors promulgated in March 2015 were based on the latest movement of prices for public sector building and construction output, which are assumed to increase by 6% per annum from 2015 to 2017.
- ^ \$4,215.2 million was the actual expenditure excluding price adjustment up to March 2015, whereas \$4,790.8 million was the actual expenditure including price adjustment.



**233DS – Sludge Treatment Facilities**

**Comparison between original APE and the latest project estimate**

A comparison of the original APE and the latest project estimate is as follows:

	<b>(A)</b> <b>Approved Project</b> <b>Estimate</b> <b>(\$ million)</b>	<b>(B)</b> <b>Latest Project</b> <b>Estimate</b> <b>(\$ million)</b>	<b>(B) – (A)</b> <b>Difference</b> <b>(\$ million)</b>
(a) Civil and site formation works	79.0	456.5	377.5
(b) Building and architectural works	705.5	1,007.7	302.2
(c) Incineration system	3,386.3	2,732.0	(654.3)
(i) Sludge receiving facilities	706.9	247.0	(459.9)
(ii) Sludge incinerators	795.8	1,238.6	442.8
(iii) Waste heat recovery system	956.6	402.7	(553.9)
(iv) Flue gas treatment system	795.8	631.1	(164.7)
(v) Associated electrical and mechanical installations and pipeworks	131.2	212.6	81.4
(d) Ancillary facilities	25.3	58.7	33.4
(e) Environmental educational and associated facilities	20.4	24.0	3.6
(f) Environmental monitoring during the construction stage	10.2	58.9	48.7
(g) Consultants' fees for contract administration	17.4	17.4	0.0
(h) Resident site staff costs	58.0	58.0	0.0
(i) Contingencies	428.7	200.0	(228.7)
Sub-total	4,730.8 (in September 2008 prices)	4,613.2 (in September 2008 prices)	(117.6)
(j) Provision for price adjustment	423.6	751.1	327.5
Total	5,154.4 (in MOD prices)	5,364.3 (in MOD prices)	209.9

2. As regards **items 1(a), 1(b), 1(d), 1(e) and 1(f) (civil and site formation works, building and architectural works, ancillary facilities, environmental educational and associated facilities, and environmental monitoring during the construction stage)**, the variations reflect the differences between the awarded tender and the APE in pricing these items. In comparison with the original APE, the awarded tender price for **items (a), (b), (d), (e) and (f)** are \$765.4 million higher than that estimated in the APE.

3. As regards **item 1(c) (incineration system)**, the variation reflects the difference between the awarded tender and the APE in pricing this item. In comparison with the original APE, the awarded tender price is \$654.3 million lower than that estimated in the APE.

4. As regards **item 1(i) (contingencies)**, we have drawn \$117.6 million and \$111.1 million from the contingencies allowed in the APE to partly offset the increase in the provision for price adjustment and cover the higher-than-expected awarded tender price (as explained in paragraph 9 of the paper) respectively. The remaining sum \$200 million has to be retained as contingencies for meeting costs arising from claims, valuation of works during finalisation of the project account and unforeseeable circumstances, etc.

5. As regards **item 1(j) (provision for price adjustment)**, the increase of \$327.5 million is based on the latest assumptions on the trend rate of change in the prices of public sector building and construction output and the latest cash flow forecast.

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