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24 June 2016

Ms Sharon CHUNG  
Clerk to Public Works Subcommittee  
Legislative Council Secretariat  
Legislative Council Complex  
1 Legislative Council Road, Central  
Hong Kong

Dear Ms Chung,

**Public Works Subcommittee  
Follow-up to meeting on 11 June 2016**

**Supplementary information pertaining to item PWSC(2016-17)30**

The Public Works Subcommittee at its meeting on 11 June 2016 has requested the Government to provide supplementary information on PWP Item **381DS** before submission of PWSC (2016-17)30 to the Finance Committee for consideration of funding approval. The Government's response is as follows:

**Supplementary information requested by Hon Albert CHAN Wai-yip:**

**(a) Further Justifications for the Project**

2. Further justifications for the project, including the current sewage flow, the projected sewage flow from the Tung Chung New Town Extension (TCNTE) and the three-runway system (3RS) of the Hong Kong International Airport (HKIA), specifically the determining and contributing factors, are presented below –

**The determining factors**

**Service life of existing sewage rising main**

3. The construction of an additional sewage rising main and rehabilitation



of the existing sewage rising main is proposed based on assessment of the condition of the existing sewage rising main and the need to ensure the reliability of the sewerage system in order to cope with development of the area. If we are to specify the determining and contributing factors for the proposed works, firstly, in accordance with Drainage Services Department's Sewage Design Manual, the existing sewage rising main between Tung Chung and Siu Ho Wan (the existing sewage rising main) was designed with 25 years' service life. Since the existing sewage rising main was commissioned in 1997, it has been in operation under pressure for 20 years and its design service life will expire in 2022 with growing risk of structural failure. Considering that it takes about six years to construct an additional sewage rising main, there is an urgent need to commence the proposed works from a risk management perspective, such that the additional sewage rising main is completed before the existing sewage rising main reaches the end of its design service life.

### **Maintenance need**

4. The existing sewage rising main is the only pipe for conveying sewage collected from Tung Chung Town and Airport Island to the Siu Ho Wan sewage treatment works. This rising main was designed with 25 years' service life, but has been operating for 20 years. It is anticipated that the rising main has an increasing need for maintenance. Given the need of its operation round the clock, it is not possible to shut down the rising main or divert the sewage away. It is thus necessary to provide an additional rising main to enable inspection or maintenance work to be carried out.

### **Increasing sewage flow from Tung Chung New Town Extension**

5. The current sewage flow from the existing development areas of Tung Chung and HKIA is 42 000 cubic metre per day ( $\text{m}^3/\text{day}$ ). There are still five housing developments under design and construction in Tung Chung. The total sewage flow from the existing development areas is expected to increase to 58 000  $\text{m}^3/\text{day}$  in 2023. The planned housing development of TCNTE (including the new development areas of Tung Chung East and West) is scheduled to commence population intake in late 2023. By then, the projected sewage flow will increase by 14 000  $\text{m}^3/\text{day}$  to about 72 000  $\text{m}^3/\text{day}$ . The projected sewage flow will already exceed the maximum handling capacity of 60 000  $\text{m}^3/\text{day}$  of the existing sewage rising main, leaving aside the sewage arising from the expansion of the HKIA into a 3RS. The projected sewage flow will increase further as the population intake continues. Hence, the proposed additional sewage rising main with a capacity of 60 000  $\text{m}^3/\text{day}$ <sup>1</sup> should be completed by

<sup>1</sup> Under normal pressure. If operated under elevated pressure on a short-term basis, the capacity could increase to 120 000  $\text{m}^3$  per day.



2023 to meet the projected sewage flow. The flow figures are set out in the following table –

**Sewage flow from the existing development areas (Tung Chung and HKIA)  
and new development areas (TCNTE and 3RS)**

Year	Existing Development Areas	New Development Areas		Total Projected Sewage Flow
	Tung Chung <sup>#</sup> and HKIA (m <sup>3</sup> /day) (a)	TCNTE (m <sup>3</sup> /day) (b)	3RS (m <sup>3</sup> /day) (c)	(m <sup>3</sup> /day) (a)+(b)+(c)
Current	42,000	-	-	42,000
2023	58,000	14,000	4,500	76,500
2038	60,600	39,000	20,400	120,000

# Including five housing developments under design and construction in Tung Chung Areas 27, 39, 54, 55B and 56.

### **The contributing factors**

#### **Signs of corrosion**

6. As the existing trunk sewer upstream of the Tung Chung sewage pumping station had shown signs of serious corrosion, although the situation has been rectified, it is anticipated that the existing sewage rising main would experience a similar corrosion problem, giving rise to a growing risk of structural failure. If the existing sewage rising main bursts, raw sewage will spill onto Cheung Tung Road and the adjacent North Lantau Highway. This would create severe disruption to road traffic and affect the transportation of airport users and goods, and therefore the operation of HKIA. The spillage may also cause detrimental environmental impacts to the nearby coastal water.

#### **Enhancing reliability**

7. The use of twin rising mains can enhance the reliability of the sewage conveyance system as it would allow one of the rising mains to be shut down for routine maintenance or emergency repair.

#### **Increasing sewage flow from HKIA**

8. The capacity of the proposed twin rising mains can also cater for the sewage flow from the expansion of HKIA into a 3RS, which contributes a relatively small portion of the total sewage flow of the rising main system (about 4 500 m<sup>3</sup>/day at around 6 % to the total projected sewage flow by 2023).

**(b) Whether properties in HKIA need to pay rates and government rent**

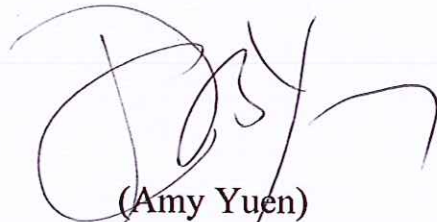
9. All properties in the HKIA are liable for rates and Government rent in accordance with the Rating Ordinance and the Government Rent (Assessment and Collection) Ordinance.

**Supplementary information requested by Hon IP Kwok-him:**

**Design service life of the existing sewage rising main**

10. The existing sewage rising main was designed with 25 years' service life. Its design service life will expire in 2022 as mentioned in paragraph 3. With proper and regular maintenance after the proposed rehabilitation by 2025, the service life of the existing sewage rising main can be extended for another 25 years, similar to the expected service life of other rising mains with regular maintenance.

Yours sincerely,



(Amy Yuen)

for Director of Environmental Protection

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