For discussion
on 17 April 2012

Legislative Council Panel on Development

345WF – Planning and investigation study of desalination plant at Tseung Kwan O

PURPOSE

This paper seeks Members' support on the proposal to upgrade 345WF "Planning and investigation study of desalination plant at Tseung Kwan O" to Category A, at an estimated cost of $34.3 million in money-of-the-day (MOD) prices, to carry out a planning and investigation study for the construction of a desalination plant at Tseung Kwan O Area 137.

PROJECT SCOPE AND NATURE

2. The scope of **345WF**, which we propose to upgrade to Category A in June 2012, comprises –

(a) a consultancy for conducting a planning and investigation study (the Study) for a desalination plant at Tseung Kwan O Area 137 and the associated fresh water transfer facilities[1], which includes –

(i) detailed investigation on the feasibility and cost effectiveness of the proposed works, and preliminary design of the works;

(ii) planning and formulation of implementation strategy and programme; and

(iii) impact assessment on environment, traffic, drainage and other relevant aspects[2].

(b) associated site investigation works and site supervision.

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[1] The associated fresh water transfer facilities would comprise a pumping station within the site of the desalination plant and fresh water mains linking the proposed desalination plant and the existing Tseung Kwan O primary fresh water service reservoir at Tsui Lam.

[2] Impact assessment on other relevant aspects would include natural terrain hazard assessment, landfill gas hazard assessment in view of the proximity of the proposed plant site with the Southeast New Territories Landfill, hazard assessment on the transportation, use and storage of chlorine which will be used during the desalination process, ecological impact assessment and other areas found necessary during the Study.

3. We have earmarked a site of about 10 hectares at Tseung Kwan O Area 137 for the construction of a desalination plant with an output capacity of 50 million cubic metres (mcm) per annum with provisions for future expansion to 90 mcm per annum. A plan showing the location of the proposed desalination plant and fresh water transfer facilities is at **Enclosure**.

4. Subject to the funding approval of the Finance Committee (FC), we plan to engage consultants to carry out the Study and the associated site investigation works in December 2012 for completion in December 2014.

JUSTIFICATION

5. Fresh water is a precious resource and its supply is not unlimited. At present, local fresh water mainly comes from natural precipitation but the quantity collected can only provide on average 20% to 30% of our total demand. Fresh water is imported from Dongjiang of Guangdong to make up the shortfall. With the fast pace of economic development of other cities in the Guangdong region including Heyuan, Huizhou, Dongguan, Shenzhen and Guangzhou, Hong Kong has to compete with these cities for the scarce fresh water resources of Dongjiang.

6. As a responsible member of the Pearl River Delta Economic Zone, we endeavour to introduce appropriate measures to keep our water demand and supply in balance. Under the Total Water Management (TWM) Strategy promulgated in 2008, we have already embarked on various water demand and supply management measures to minimise the risk of water shortage. On water demand management, we have been promoting water conservation through public education, encouraging the use of water saving devices, taking steps to increase the use of sea water for flushing and undertaking preventive measures to reduce water main bursts and leaks. On water supply management, we are investigating the use of reclaimed water[3] for flushing and other non-potable use in the northeastern part of the New Territories where sea water for flushing is not supplied.

7. Sea water is abundantly available in Hong Kong. Under the TWM Strategy, seawater desalination is considered to be a promising alternative supply of fresh water to support the sustainable development of Hong Kong. We completed a pilot study in 2007 which confirmed the technical feasibility of desalination using reverse osmosis[4] technology under local conditions to produce potable water complying with the World Health Organisation guidelines for drinking water quality. To better prepare Hong Kong for uncertainties such as acute climate changes and low rainfall, we need to carry out the Study and the associated site investigation works so that such an alternative water source can be readily tapped in good time when needed.

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[3] Reclaimed water is highly treated wastewater which is clear in appearance, odourless and is safe for use.

[4] Reverse osmosis is a process in which hydraulic pressure is used to separate relatively pure water from seawater through a semi-permeable membrane.

8. Owing to the lack of in-house resource and expertise, we propose to engage consultants to conduct the Study and supervise the associated site investigation works.

FINANCIAL IMPLICATIONS

9. We estimate the cost of the Study and the associated site investigation works to be $34.3 million in MOD prices, made up as follows

			$ million		
(a)	Consultants' fees for			20.8	
	(i)	detailed investigation on the feasibility and cost effectiveness and preliminary design	9.4		
	(ii)	planning and formulation of implementation strategy and programme	2.0		
	(iii)	impact assessments on environment, traffic and other relevant aspects	8.7		
	(iv)	supervision of site investigation works	0.7		
(b)	Site investigation works			6.5	
(c)	Contingencies			2.7	
		Sub-total		30.0	(in September 2011 prices)
(d)	Provision for price adjustment			4.3	
		Total		34.3	(in MOD prices)

10. Subject to approval, we will phase the expenditure as follows –

Year	$ million (Sept 2011)	Price adjustment factor	$ million (MOD)
2012 – 2013	2.3	1.05325	2.4
2013 – 2014	12.0	1.11118	13.3
2014 – 2015	12.3	1.17229	14.4
2015 – 2016	3.4	1.23677	4.2
	30.0		34.3

PUBLIC CONSULTATION

11. We consulted the Housing and Environmental Hygiene Committee of the Sai Kung District Council on 23 February 2012 in respect of the proposal to carry out the Study and the associated site investigation works. Members of the Committee supported the proposal.

ENVIRONMENTAL IMPLICATIONS

12. The Study and the associated site investigation works are not designated projects under the Environmental Impact Assessment Ordinance (Cap. 499). The Study will not cause any adverse environmental impacts. We will implement suitable mitigation measures to control short-term environmental impacts from the site investigation works.

13. The site investigation works will only generate very little construction waste. We will require the consultants to fully consider measures to minimize the generation of construction waste and to reuse/recycle construction waste as much as possible in the future implementation of the construction projects.

HERITAGE IMPLICATIONS

14. The Study and the associated site investigation works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

15. The Study and the associated site investigation works will not require any land acquisition.

TRAFFIC IMPLICATIONS

16. The Study and the associated site investigation works will not have significant impact on traffic.

BACKGROUND INFORMATION

17. We included **345WF** in Category B in September 2010.

18. In 2007, we completed a pilot study on development of desalination facilities in Hong Kong with pilot plants located in Ap Lei Chau and Tuen Mun. The pilot study confirmed the technical feasibility of desalination using reverse osmosis under local conditions to produce potable water complying with the World Health Organisation guidelines for drinking water quality. We have since kept abreast of the latest developments in desalination technology and prepared for undertaking related planning and engineering study so that such water source can be tapped in good time.

19. We promulgated the TWM Strategy in 2008 which maps out the strategy for a balanced supply and demand of raw water to support the sustainable development in Hong Kong.

20. In the 2011-12 Policy Address, the Chief Executive announced that a detailed planning and investigation study would be conducted to investigate the feasibility and cost effectiveness for the construction of a medium size desalination plant in Tseung Kwan O.

21. We briefed the LegCo Panel on Development in October 2011 on various issues in respect of management of water resources, including our intention to carry out the Study.

22. The Study and the associated site investigation works will not involve any tree removal or planting proposal.

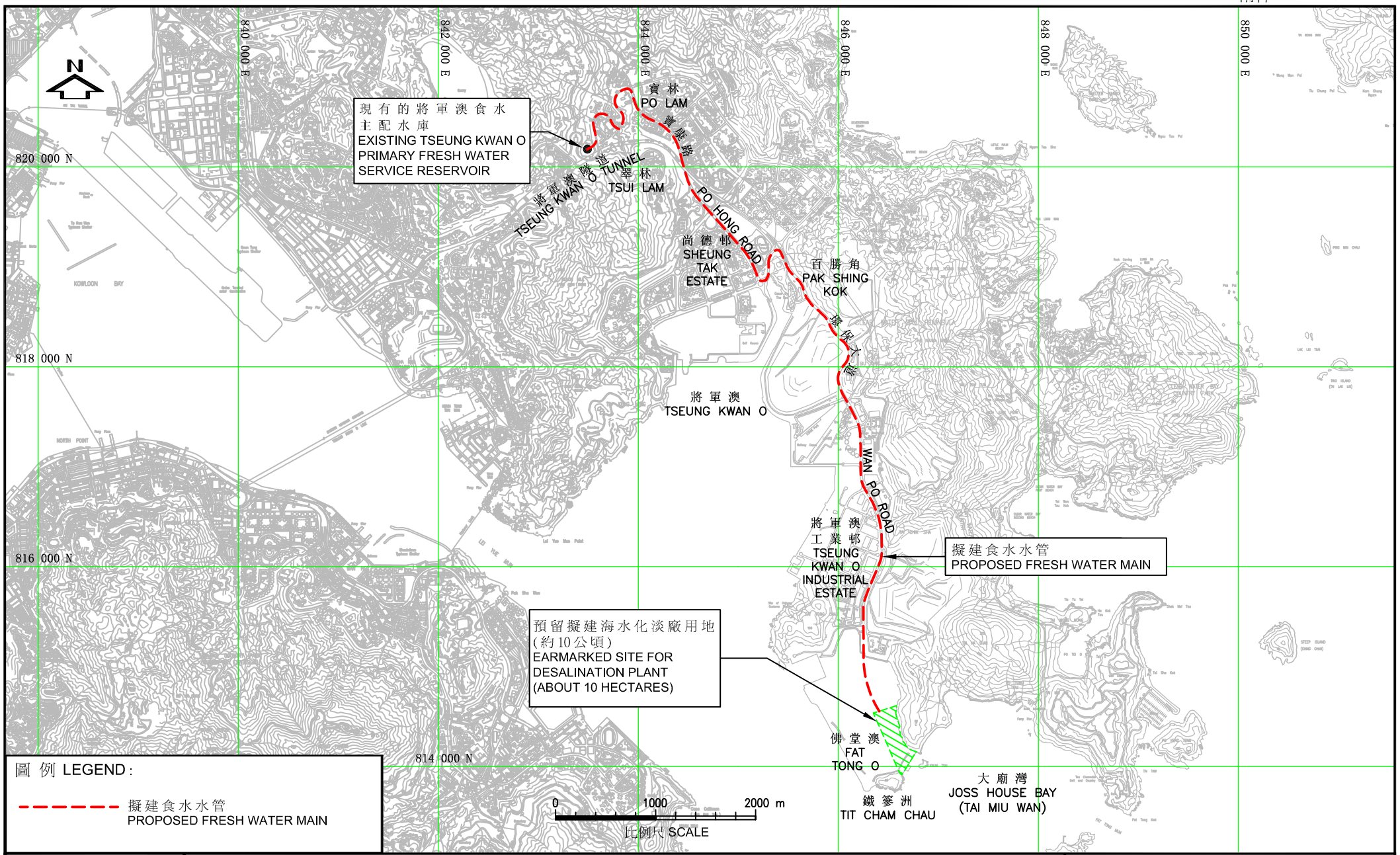
23. We estimate that the Study and the associated site investigation works will create about 23 jobs (4 for labourer and another 19 for professional/technical staff) providing a total employment of 440 man-months.

WAY FORWARD

24. We plan to seek the support of the Public Works Subcommittee in May 2012 for the proposed upgrading of **345WF** to Category A with a view to seeking funding approval from the FC in June 2012.

Development Bureau
Water Supplies Department
April 2012

附件 ENCLOSURE



圖例 LEGEND:

擬建食水水管
PROPOSED FRESH WATER MAIN

核准 APPROVED

總工程師/環境及工程管理 CE / CM

3 / 4 / 2012

工務計劃項目第345WF號---將軍澳海水化淡廠工程策劃及勘查研究

P.W.P. ITEM NO. 345WF --- PLANNING AND INVESTIGATION STUDY OF DESALINATION PLANT AT TSEUNG KWAN O

水務署
WATER SUPPLIES DEPTMENT

草圖編號
SKETCH NO. SK 62011 / 500

REF. 62011_500.DWG