

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 – WATERWORKS

Water Supplies – Combined fresh/salt water supplies

96WC – Water supply to Pak Shek Kok reclamation area, Tai Po – stage 2

Members are invited to recommend to the Finance Committee the upgrading of **96WC**, entitled “Water supply to Pak Shek Kok reclamation area, Tai Po – stage 2 phase 2”, to Category A at an estimated cost of \$162.7 million in money-of-the-day prices.

PROBLEM

The transfer capacity of the existing fresh water supply system to the Pak Shek Kok (PSK) reclamation area will not be adequate to meet the demand by late 2016.

PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Development, proposes to upgrade **96WC** to Category A at an estimated cost of \$162.7 million in money-of-the-day (MOD) prices for laying water mains to provide adequate fresh water supply to the developments in the PSK reclamation area.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of the proposed works comprises the laying of about 2.1 kilometres (km) of fresh water mains of 600 millimetres in diameter between Pun Chun Yuen and Shan Tong New Village in Tai Po. The location of the proposed works is shown on the plan at Enclosure.

4. The design of the proposed works has been completed. Subject to the funding approval of the Finance Committee (FC), we plan to commence the proposed works in November 2013 for completion in December 2016.

JUSTIFICATION

5. The major developments in the PSK reclamation area include the Science Park and private housing. In order to provide fresh water and salt water supply to the PSK reclamation area, DWS has undertaken works funded under **96WC** to extend the nearby water supply systems to cope with the anticipated demand arising from developments in the PSK reclamation area.

6. Taking into account the anticipated water demand arising from the expected population intake and other developments in the PSK reclamation area¹, we estimate that the daily fresh water demand will increase from 5 600 cubic meters (m³) in 2013 to 10 900 m³ in 2016 with an ultimate demand of 13 200 m³ at full development. As a result, the transfer capacity of the existing fresh water supply system between Pun Chun Yuen and CARE Village will not be adequate to meet the projected demand by late 2016. We need to carry out the proposed works to provide adequate fresh water supply to the developments in the PSK reclamation area.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be \$162.7 million in MOD prices (please see paragraph 8 below), broken down as follows –

/(a)

¹ According to the information provided by the Planning Department, the population of the PSK reclamation area and its nearby areas at full development will be 20 200.

		\$ million
(a)	Laying of fresh water mains by	115.9
	(i) conventional method ²	71.9
	(ii) trenchless method ³	44.0
(b)	Environmental mitigation measures	1.4
(c)	Contingencies	11.7
	Sub-total	129.0 (in September 2012 prices)
(d)	Provision for price adjustment	33.7
	Total	162.7 (in MOD prices)

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

Year	\$ million (Sept 2012)	Price adjustment factor	\$ million (MOD)
2013 – 2014	5.3	1.06225	5.6
2014 – 2015	16.7	1.12599	18.8
2015 – 2016	28.0	1.19354	33.4
2016 – 2017	34.0	1.26516	43.0

/2017

² Conventional method refers to laying of new water mains in trench. It involves opening up road surface for the whole lengths of the pipelines. For budgetary purpose, we have allowed around 88% of water mains to be laid by conventional method. The actual percentage will depend on site conditions.

³ Trenchless method (sometimes referred to as ‘minimum dig’ or ‘reduced dig’ methods) refers to the use of pipe jacking, micro-tunnelling or boring techniques to construct underground pipelines without opening up road surface/river bed for the whole lengths of the pipelines. For budgetary purpose, we have allowed around 12% of water mains to be laid by trenchless methods under river bed and at busy road junctions. The actual percentage will depend on site conditions.

Year	\$ million (Sept 2012)	Price adjustment factor	\$ million (MOD)
2017 – 2018	23.0	1.34107	30.8
2018 – 2019	22.0	1.41147	31.1
	129.0		162.7

9. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2013 to 2019. We will deliver the proposed works under a re-measurement contract because the quantities of works are subject to variation during construction to suit the actual site conditions. The contract will provide for price adjustments.

10. We estimate the additional annual recurrent expenditure arising from the proposed works to be \$140,000.

11. The project by itself will lead to an increase in the production cost of water by 0.03% in real terms by 2019⁴.

PUBLIC CONSULTATION

12. We consulted the Tai Po Rural Committee on 15 February 2011. Members supported the proposed works.

13. We also consulted the Environment, Housing and Works Committee of the Tai Po District Council on 13 March 2013. Members supported the proposed works.

14. We consulted the Legislative Council Panel on Development on the proposed works on 28 May 2013. Members raised no objection to the proposed works.

/ENVIRONMENTAL

⁴ The increase in production cost of water is calculated at the present price level and on the assumption that the water demand remains static during the period from 2013 to 2019.

ENVIRONMENTAL IMPLICATIONS

15. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have completed the Preliminary Environmental Review for the proposed works, which concluded that the works would not have any long-term environmental impact. We have included in paragraph 7(b) above a sum of \$1.4 million (in September 2012 prices) in the project estimates for the implementation of standard pollution control measures to mitigate short-term environmental impacts during construction stage. These measures include the use of movable noise barriers and silenced construction plant for noisy construction activities, frequent cleaning and watering of the site to prevent dust nuisance.

16. At the planning and design stages, we have considered the alignment of the water mains to reduce the generation of construction waste where practicable. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities⁵. We will encourage the contractor to maximise the use of recycled / recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

17. At the construction stage, we will require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert and non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste at public fill reception facilities and landfills respectively through a trip-ticket system.

/18.

⁵ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

18. We estimate that the project will generate in total about 21 000 tonnes of construction waste. Of these, we will reuse about 18 600 tonnes (88.6%) of inert construction waste on site and deliver 2 000 tonnes (9.5%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 400 tonnes (1.9%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$104,000 for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne⁶ at landfills).

HERITAGE IMPLICATIONS

19. The proposed 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

20. The proposed works do not require any land acquisition.

TRAFFIC IMPLICATIONS

21. We have completed the Traffic Impact Assessments (TIA) for the proposed works. The TIA concluded that laying of the water mains will not cause significant traffic impact through implementation of appropriate temporary traffic management schemes. We will display information boards on site and set up telephone hotlines for public enquiries and complaints. Trenchless methods will be adopted as needed for laying of water mains at busy road junctions.

/BACKGROUND

⁶ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90 per m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

BACKGROUND INFORMATION

22. We upgraded **96WC** to Category B, entitled “Water supply to Pak Shek Kok reclamation area, Tai Po”, in October 1999. We engaged consultants to carry out the detailed design of the waterworks in PSK reclamation area at a total cost of \$200,000 under block allocation of **Subhead 9100WX** “Waterworks, studies and investigations for items in Category D of the Public Works Programme”. The consultancy contract was completed. Separately, the design of the mainlaying works between Pun Chun Yuen and CARE Village was undertaken by in-house staff resources.

23. In December 2001, FC approved the upgrading of part of **96WC** to Category A as **180WC** “Water supply to Pak Shek Kok reclamation area, Tai Po – stage 1” at an approved project estimate of \$47.3 million in MOD prices for the laying of 5.2 km of fresh water mains and 2.4 km of salt water mains between Shan Tong New Village and CARE Village and in the PSK reclamation area. The works under **180WC** were completed in December 2006.

24. In April 2010, we engaged consultants to undertake the traffic impact assessment study for the mainlaying works between Pun Chun Yuen and Shan Tong New Village at a total cost of \$350,000 under block allocation of **Subhead 9100WX** “Waterworks, studies and investigations for items in Category D of the Public Works Programme”. The consultancy contract has been substantially completed in April 2013.

25. In February 2011, we engaged consultants to carry out the landscape design for the PSK fresh water service reservoir (FWSR) extension and also for the mainlaying works between Pun Chun Yuen and Shan Tong New Village at a total cost of \$750,000 under block allocation of **Subhead 9100WX** “Waterworks, studies and investigations for items in Category D of the Public Works Programme”. The consultancy contract has been substantially completed in April 2013.

26. In July 2011, FC approved the upgrading of another part of **96WC** to Category A as **192WC** “Water supply to Pak Shek Kok reclamation area, Tai Po – stage 2 phase 1” at an approved project estimate of \$79.8 million in MOD prices for the construction of an extension to the existing PSK FWSR to serve the fresh water demand arising from developments in the PSK reclamation area. The works under **192WC** are anticipated to complete in December 2014.

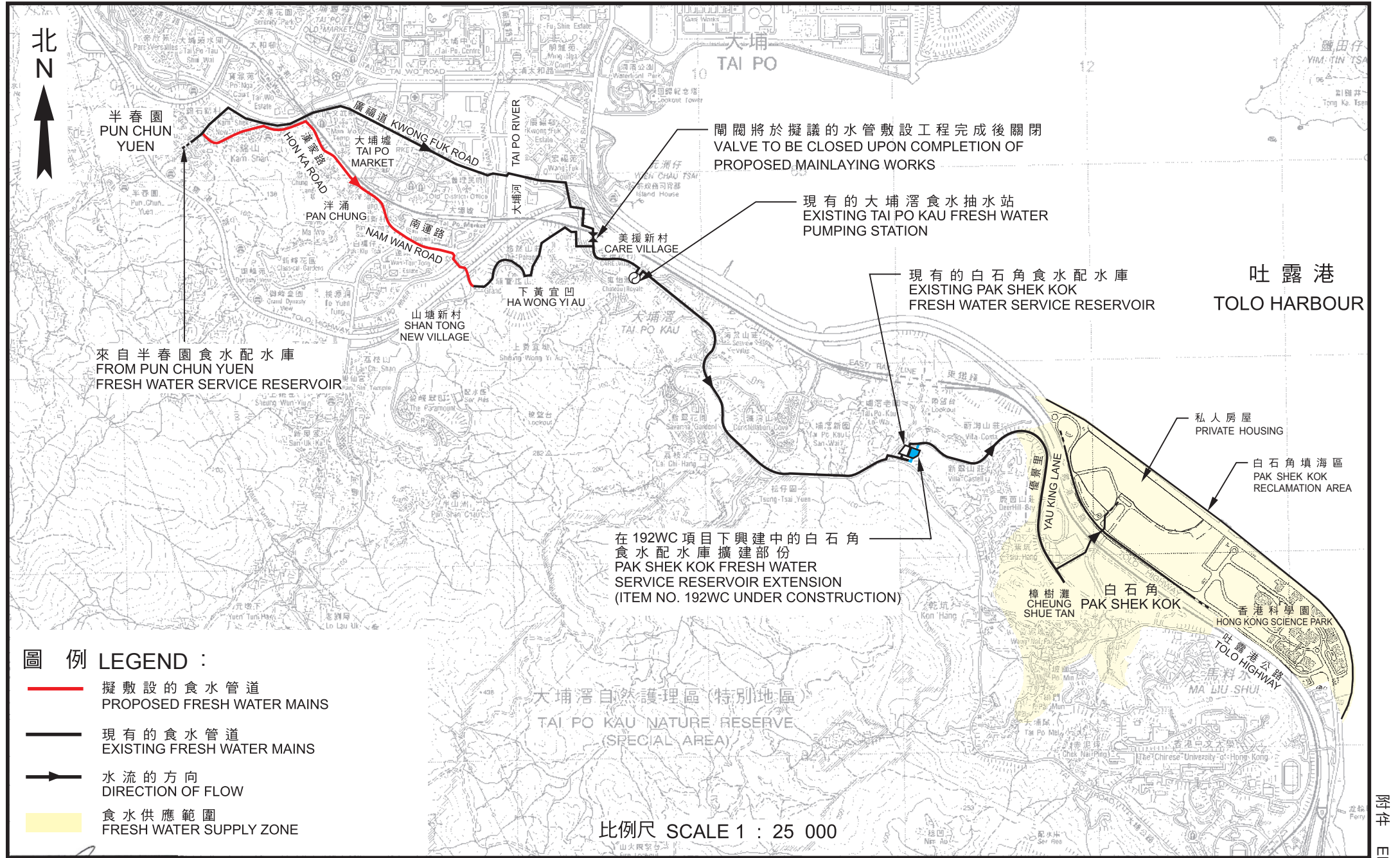
27. Of the 210 trees within the project boundary, 202 trees will be preserved. The proposed works will involve the felling of eight trees, none of which are important trees⁷. The trees to be felled are in poor form. We will incorporate planting proposals as part of the project, including estimated quantities of eight trees.

28. We estimate that the proposed works will create about 50 jobs (43 for labourers and another seven for professional/technical staff) providing a total employment of 1 670 man-months.

Development Bureau
June 2013

⁷ “Important trees” refers to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria:

- (a) trees of 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or events;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (m) (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



半春園
PUN CHUN
YUEN

大埔
TAI PO

吐露港
TOLO HARBOUR

來自半春園食水配水庫
FROM PUN CHUN YUEN
FRESH WATER SERVICE RESERVOIR

閘閘將於擬議的水管敷設工程完成後關閉
VALVE TO BE CLOSED UPON COMPLETION OF
PROPOSED MAINLAYING WORKS

現有的大埔滘食水抽水站
EXISTING TAI PO KAU FRESH WATER
PUMPING STATION

現有的白石角食水配水庫
EXISTING PAK SHEK KOK
FRESH WATER SERVICE RESERVOIR

在 192WC 項目下興建中的白石角
食水配水庫擴建部份
PAK SHEK KOK FRESH WATER
SERVICE RESERVOIR EXTENSION
(ITEM NO. 192WC UNDER CONSTRUCTION)

私人房屋
PRIVATE HOUSING

白石角填海區
PAK SHEK KOK
RECLAMATION AREA

樟樹灘
CHEUNG SHUE TAN

白石角
PAK SHEK KOK

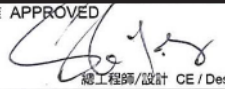
香港科學園
HONG KONG SCIENCE PARK

圖例 LEGEND :

- 擬敷設的食水管
PROPOSED FRESH WATER MAINS
- 現有的食水管
EXISTING FRESH WATER MAINS
- 水流的方向
DIRECTION OF FLOW
- 食水供應範圍
FRESH WATER SUPPLY ZONE

大埔滘自然護理區 (特別地區)
TAI PO KAU NATURE RESERVE
(SPECIAL AREA)

比例尺 SCALE 1 : 25 000

核准 APPROVED

總工程師/設計 CE / Des

2013 / 2013

工務計劃項目第96WC號 — 大埔白石角填海區供水計劃 - 第2階段
P.W.P. Item No. 96WC — Water supply to Pak Shek Kok reclamation area, Tai Po - stage 2

(甲級工程)
(CAT 'A' Submission)

 水務署
WATER SUPPLIES DEPARTMENT

草圖編號 SK 62013 / 007
SKETCH NO.