

**For information**

**Legislative Council Panel on Development**

**334WF – Expansion of Tai Po water treatment works  
and ancillary raw water and fresh water transfer facilities – part 2 works**

**PURPOSE**

This paper briefs Members on the proposal to upgrade **334WF** “Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities – part 2 works” to Category A, at an estimated cost of \$6,176.7 million in money-of-the-day (MOD) prices, for increasing the output capacity of the existing Tai Po water treatment works (WTW), upgrading of two pumping stations serving the Tai Po WTW, expanding a fresh water service reservoir and laying water mains.

**PROPOSAL**

2. The scope of **334WF**, which we propose to upgrade to Category A, comprises –
  - (a) upgrading the existing water treatment facilities and constructing additional water treatment components at Tai Po WTW to increase its output capacity from 400 million litre per day (Mld) to 800 Mld;
  - (b) upgrading the capacities of the existing Tai Po Tau No. 4 raw water pumping station and Tai Po fresh water pumping station;
  - (c) expanding the storage capacity of the existing Butterfly Valley fresh water primary service reservoir (FWPSR) from 40 000 m<sup>3</sup> to 120 000 m<sup>3</sup>; and
  - (d) laying about 900 metres associated fresh water mains with diameters ranging from 1 200 millimetres (mm) to 1 800 mm in Sham Shui Po and Kowloon City.

———— The locations of the proposed works are shown on the plans at **Enclosure 1 and Enclosure 2**.

3. The design for the proposed work mentioned in paragraph 2 above has been completed. Subject to the funding approval of the Finance Committee (FC), we plan to commence the proposed works in February 2013 for completion in May 2017.

## **JUSTIFICATION**

4. Sha Tin WTW and Tai Po WTW are two major water treatment works in Hong Kong and have been put into service since 1964 and 2003 respectively. Currently, the total quantity of fresh water supplied by Sha Tin WTW and Tai Po WTW meets about 56% of the total demand of fresh water in Hong Kong. After more than 40 years of services, the plant and equipment of Sha Tin WTW have already approached the end of their service life. The present operation at Sha Tin WTW is also not efficient by modern day standard, particularly in treating raw water of variable quality. We consider it necessary to increase the output capacity of Tai Po WTW in order to take up part of the loading of Sha Tin WTW so that Sha Tin WTW could be partially shut down for reprovisioning works in stages. The proposed works are necessary for maintaining round-the-clock supply of fresh water.

5. We need to increase the output capacity of Tai Po WTW from 400 Mld to 800 Mld as detailed in paragraph 2(a) above. To match with the increased capacity of the Tai Po WTW, we also need to uprate the capacities of the two existing pumping stations serving the Tai Po WTW as detailed in paragraph 2(b) above and expand the storage capacity of the existing Butterfly Valley fresh water primary service reservoir as detailed in paragraph 2(c) above. We also propose to carry out main laying works as detailed in paragraph 2(d) above in order to enhance integration of the supply networks of Tai Po WTW and Sha Tin WTW. Upon completion of the proposed works, the increased output capacity of Tai Po WTW can take up the existing loading of Sha Tin WTW for supplying fresh water to a significant part of Kowloon, Central and Western districts of Hong Kong Island, thereby enhancing the overall resilience, flexibility and reliability of the water supply system.

## **FINANCIAL IMPLICATIONS**

6. We estimate the capital cost of the proposed works to be \$6,176.7 million in MOD prices, broken down as follows –

	<b>\$ million</b>	
(a) Civil works	2,615.6	
(b) Electrical and mechanical works	1,526.2	
(c) Environmental mitigation measures	19.3	
(d) Consultants' fee	60.9	
(i) contract administration	30.8	
(ii) management of resident site staff	30.1	
(e) Remuneration of resident site staff	323.8	
(f) Contingencies	454.5	
	Sub-total	5,000.3 (in September 2012 prices)
(g) Provision for price adjustment	1,176.4	
	Total	6,176.7 (in MOD prices)

7. We estimate the annual recurrent expenditure arising from the proposed works to be \$15.2 million.

## **PUBLIC CONSULTATION**

8. We consulted the Tai Po Rural Committee, the Lam Tsuen Valley Committee and the Environment, Housing and Works Committee of the Tai Po District Council on 12 April 2011, 25 April 2011 and 11 May 2011 respectively in respect of the proposed works at Tai Po WTW and the two pumping stations. Members of the Committees supported the proposed works.

9. We consulted the Housing and Infrastructure Committee of the Kowloon City District Council and the Environment and Hygiene Committee of the Sham Shui Po District Council on 19 May 2011 and 9 June 2011 respectively in respect of the proposed mainlaying works in Sham Shui Po and Kowloon City. Members of the Committees supported the proposed works.

10. We consulted the Community Affairs Committee of the Kwai Tsing District Council on 14 June 2011 in respect of the proposed construction of additional compartments at the existing Butterfly Valley FWPSR. Members of the Committee supported the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

11. The proposed expansion of Tai Po WTW is a designated project under the Environmental Impact Assessment (EIA) Ordinance, Cap. 499 (“the Ordinance”). We had completed an EIA study in 1996 to address the environmental impacts of Tai Po WTW and Tai Po FWPS. We also completed an Environmental Review (ER) in February 2009. The EIA report and ER concluded that, with the implementation of mitigation measures, the environmental impacts of the project could be controlled to within the established standards and criteria.

12. The proposed uprating of Tai Po Tau No. 4 RWPS is not a designated project under the Ordinance. We carried out a Preliminary Environmental Review (PER) in May 2009. The PER concluded that, with the implementation of mitigation measures, the environmental impacts of the project could be controlled to within the established standards and criteria.

13. During construction, we will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of appropriate mitigation measures in the relevant contracts. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities. We will implement an Environmental Monitoring and Audit programme during the course of construction to ensure that potential impacts are adequately addressed. We have included a sum of \$19.3 million (in September 2012 prices) in the project estimate for the implementation of the environmental mitigation measures.

14. At the planning and design stages, we have optimised the size of the sludge thickening tanks to reduce the generation of construction waste wherever practicable. In addition, we will require the contractor to reuse inert construction waste (e.g. demolished concrete and excavated soil and rock) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities<sup>1</sup>. 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.

15. At the construction stage, we will also 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 portion from 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.

16. We estimate that the project will generate in total about 551 900 tonnes of construction waste. Of these, we will reuse about 54 000 tonnes (10%) of inert construction waste on site and deliver 491 500 tonnes (89%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 6 400 tonnes (1%) 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 \$14 million for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne<sup>2</sup> at landfills).

## HERITAGE IMPLICATIONS

17. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of

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<sup>1</sup> 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.

<sup>2</sup> 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 m<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive), when the existing ones are filled.

archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

## LAND ACQUISITION

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

## TRAFFIC IMPLICATIONS

19. To minimise possible disruption to traffic during construction, we have completed a traffic impact assessment (TIA) for the proposed works. The TIA has concluded that the proposed works would not cause significant impact to the local traffic network.

## BACKGROUND INFORMATION

20. In October 2007, we submitted an information paper to the Legislative Council Panel on Development for briefing Members on our strategy on reprovisioning of Sha Tin WTW. In view of the considerable risk of interruption to the supply of fresh water due to difficulties in maintaining the operation of Sha Tin WTW during the reprovisioning works, we have proposed to adopt a two-stage approach in which Tai Po WTW and the associated transfer system would be upgraded first in order to enable the subsequent in-situ reprovisioning works of Sha Tin WTW.

21. We upgraded **334WF** to Category B in November 2007. In June 2008, we engaged consultants to carry out the investigation study for the proposed works under **334WF** at a cost of \$10.0 million under the block allocation of **Subhead 9100WX** “Waterworks, studies and investigations for items in Category D of the Public Works Programme”. The investigation study was substantially completed in March 2009 as scheduled.

22. On 8 May 2009, we upgraded part of **334WF** to Category A as **339WF** “Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities – design and site investigation” at an approved project estimate of \$43.4 million in MOD prices. We engaged consultants in June 2009 to undertake the

design and site investigation works. We have substantially completed the detailed design of the proposed works mentioned in paragraph 2 above.

23. On 2 February 2010, we upgraded part of **334WF** to Category A as **343WF** “Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities – part 1 works” at an approved project estimate of \$259.9 million in MOD prices. The works were substantially completed in December 2011 to increase the output capacity of Tai Po WTW from 250 Mld to 400 Mld. We have also engaged consultants to carry out detailed design for the in-situ reprovisioning of Sha Tin WTW in August 2010.

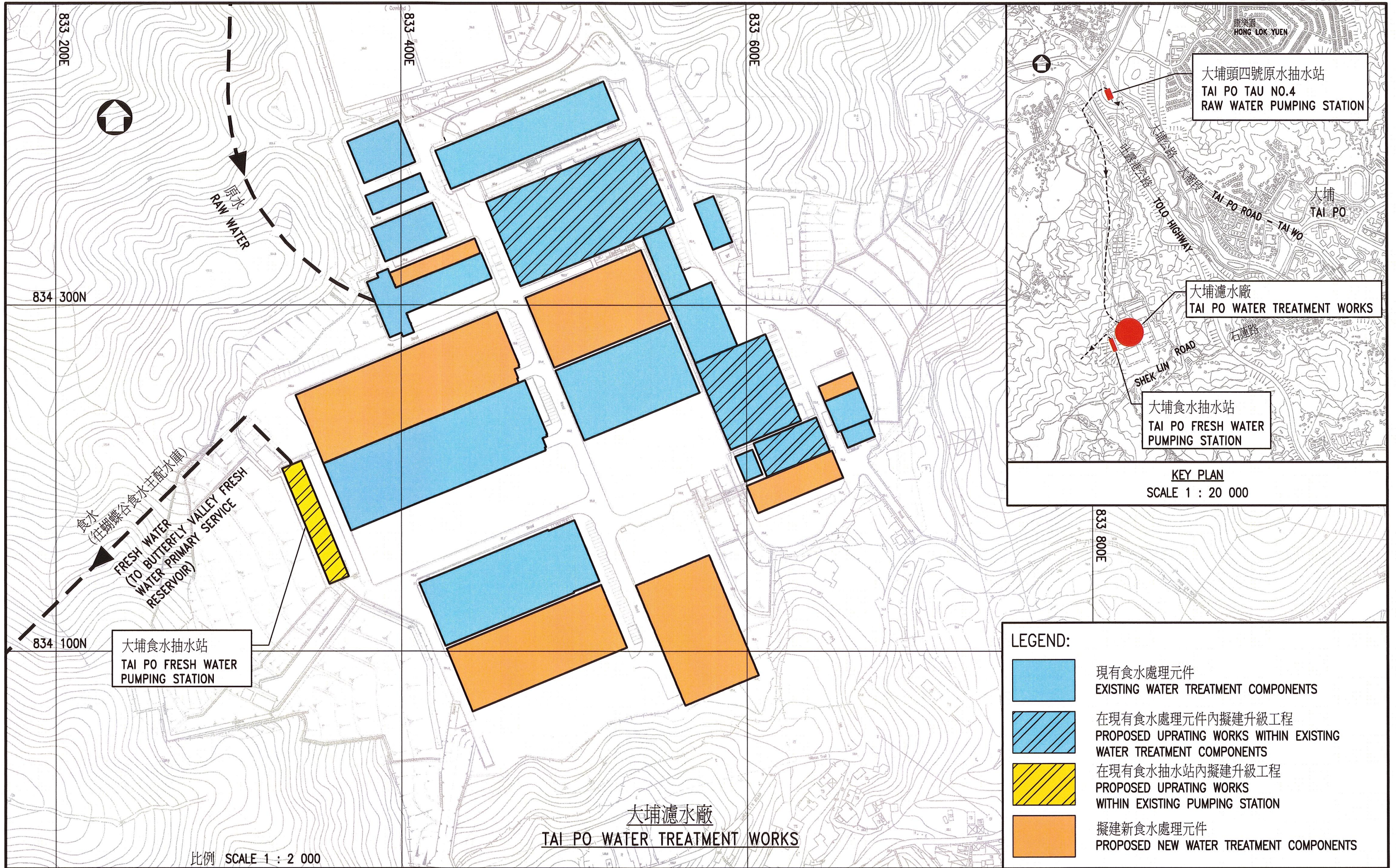
24. Of the 236 trees within the project boundary, 80 trees will be preserved. The proposed construction works will involve the removal of 156 trees, including 126 trees to be felled and 30 trees to be transplanted elsewhere. All trees to be removed are not important trees. We will incorporate planting proposals as part of the project, including estimated quantities of 316 trees and 17 000 m<sup>2</sup> of grassed area.

25. We estimate that the proposed works will create about 1 330 jobs (1 070 for labourers and another 260 for professional/technical staff) providing a total employment of 56 000 man-months.

## **WAY FORWARD**

26. We plan to seek the support of the Public Works Subcommittee in December 2012 for the proposed upgrading of **334WF** to Category A with a view to seeking funding approval from the Finance Committee in January 2013.

**Development Bureau**  
**Water Supplies Department**  
**November 2012**



核准 APPROVED

總工程師/顧問工程管理 CE/CM

12/11/2012

工務計劃項目第 334WF 號 -  
大埔濾水廠及附屬原水和食水輸送設施擴展工程 - 第二期工程 - 位置圖

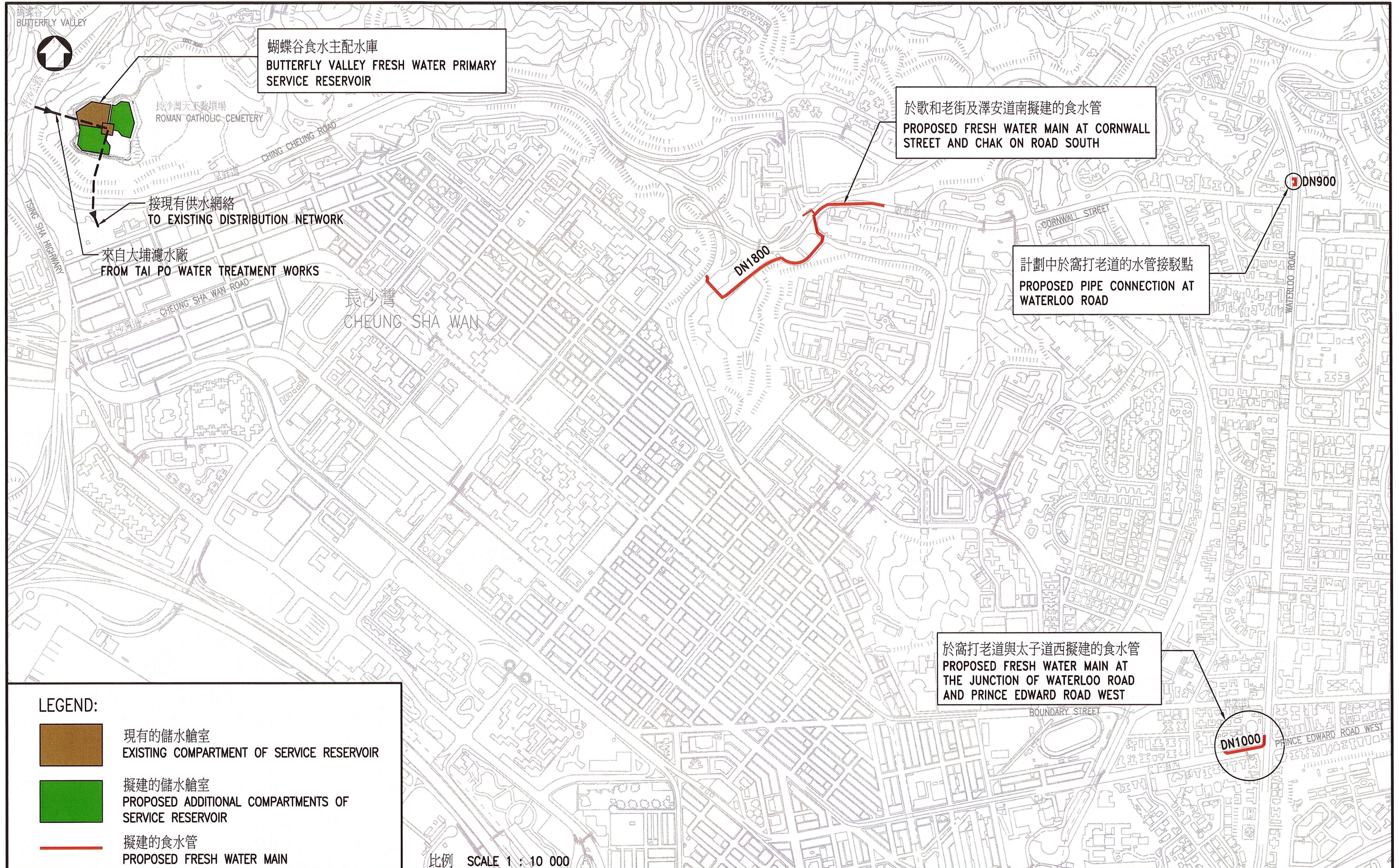
P.W.P. ITEM NO. 334WF -  
EXPANSION OF TAI PO WATER TREATMENT WORKS AND ANCILLARY RAW WATER AND FRESH WATER TRANSFER FACILITIES - PART 2 WORKS - LOCATION PLAN

水務署  
Water Supplies Department

草圖編號  
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