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Panel on Development

Meeting on 24 February 2015

**Background brief on the in-situ reprovisioning of
Sha Tin water treatment works (South Works)**

Purpose

This paper provides background information on the in-situ reprovisioning of the Sha Tin water treatment works ("WTW") (South Works) and summarizes the views and concerns expressed by Members on the subject at the meetings of various committees of the Legislative Council.

Background

2. The Sha Tin WTW is the largest WTW in Hong Kong, supplying about 30% of the total water demand of the territory. The South Works were commissioned in 1964. To cope with the rapid increase in the territory's water demand, the Sha Tin WTW underwent three stages of expansion in 1973, 1976 and 1983 that are collectively called the North Works. According to the Administration¹, after several decades of services, the Sha Tin WTW has reached a stage of requiring substantial reprovisioning as its plant and equipment are approaching the end of their service life. The location of the Sha Tin WTW is shown in **Appendix I**.

3. In November 2003, the Administration commissioned a consultancy study on the feasibility of applying the public private partnership ("PPP") approach to the reprovisioning of the Sha Tin WTW on an in-situ basis. Subsequently, the Administration consulted the then Panel on Planning,

¹ Source: The Administration's paper on "181WF -- In-situ reprovisioning of Sha Tin water treatment works" (LC Paper No. CB(1)1942/09-10(01))

Lands and Works ("PLW Panel") on the key findings and recommendations of the consultancy study in May 2004. Members and representatives of the Water Supplies Department ("WSD") staff unions expressed strong reservation on adopting the PPP approach and raised concerns on the risks associated with such an approach².

The revised reprovisioning strategy

4. Between 2004 and 2007, WSD conducted more studies to compare different approaches to implement the reprovisioning project, including a review conducted in 2007 to bring in the reserved capacity of the Tai Po WTW. The review indicated that combining the Sha Tin WTW and the Tai Po WTW would result in a more balanced configuration of the water treatment and distribution network, which would enhance the overall reliability of water supply in Hong Kong in the long term.

5. As such, WSD has formulated a revised reprovisioning strategy by making use of the reserved capacity of the Tai Po WTW. The project is being carried out through the conventional public works route under the following two-stage process:

- (a) Stage 1 -- increasing the treatment capacity of the Tai Po WTW from 250 million litre per day ("Mld") to 800 Mld and upgrading the ancillary raw water and fresh water transfer facilities; and
- (b) Stage 2 -- implementing the in-situ reprovisioning of the Sha Tin WTW to a scale compatible with the forecast demand for treated water³.

² The details are available in (a) minutes of the PLW Panel meeting on 18 May 2004 (LC Paper No. CB(1)2365/03-04); (b) the Administration's paper on "Reprovisioning of Sha Tin Water Treatment Works" (LC Paper No. CB(1)86/07-08(01)); (c) question no. 5 raised at the Council meeting of 16 June 2004 (p.6853 -- p.6861) (<http://www.legco.gov.hk/yr03-04/english/counmtg/hansard/cm0616ti-translate-e.pdf>); and (d) question no. 1 raised at the Council meeting of 13 October 2004 (p.20 -- p.28) (<http://www.legco.gov.hk/yr04-05/english/counmtg/hansard/cm1013ti-translate-e.pdf>)

³ Source: The Administration's paper on "Reprovisioning of Sha Tin Water Treatment Works" (LC Paper No. CB(1)86/07-08(01))

Expansion of the Tai Po water treatment works and ancillary transfer facilities

6. Under the revised reprovisioning strategy, the Tai Po WTW will be uprated to take up part of the loading of the Sha Tin WTW⁴, so that the Sha Tin WTW can be partially shut down for the in-situ reprovisioning project to be undertaken. The arrangement can also reduce the risk of interrupting water supply to the public during the reprovisioning of the Sha Tin WTW.

7. The Administration has carried out the Tai Po WTW expansion works in phases. On 8 May 2009, the Finance Committee ("FC") approved a funding proposal for engaging consultants to carry out design and site investigation for the expansion of the Tai Po WTW and the ancillary raw water and fresh water transfer facilities. Upon completion of the works design, FC further approved two funding proposals for increasing the treatment capacity of the Tai Po WTW: (a) from 250 Mld to 400 Mld on 5 February 2010; and (b) from 400 Mld to 800 Mld on 11 January 2013. The expansion works are expected to be completed by May 2017.

Cost-effectiveness of the reprovisioning project

8. The proposals for expanding the Tai Po WTW and the ancillary transfer facilities were discussed at the meeting of the Panel on Development ("DEV Panel") on 27 November 2012 and the meetings of the Public Works Subcommittee ("PWSC") on 22 April 2009 and 17 December 2012 respectively. At these meetings, members enquired about the cost-effectiveness of the in-situ reprovisioning of the Sha Tin WTW and the feasibility of expanding the Tai Po WTW to take up the full loading of the Sha Tin WTW in one go. Some Members opined that if the latter was feasible, the site of the Sha Tin WTW could then be released for housing development to meet the pressing housing need of the public.

9. The Administration replied that the treatment capacity of the Tai Po WTW, when increased to 800 Mld as proposed, together with that of the Sha Tin WTW (North Works), could well meet the current demand. Due to site constraints and technical considerations, the treatment capacity of

⁴ Prior to the commencement of the expansion works, the Tai Po WTW supplied about 250 Mld of treated water. As for the Sha Tin WTW, it supplied about 1 060 Mld of treated water, with 700 Mld from the North Works and 360 Mld from the South Works. Source: The Administration's paper on "181WF -- In-situ reprovisioning of Sha Tin water treatment works" (LC Paper No. CB(1)1942/09-10(01))

the Tai Po WTW could at most be expanded to 1 200 Mld. As the total water demand of the areas served by the two WTWs would require a combined treatment capacity exceeding 1 200 Mld by 2016, it was not possible to meet the water demand of the areas concerned in the long term by merely expanding the Tai Po WTW. Moreover, it was undesirable to rely on a single WTW to meet over half of the total water demand in Hong Kong.

Cost overrun of the project

10. Considering the cost of the Tai Po WTW expansion works substantial, some Members enquired how the Administration could ensure that the project would be completed within budget. The Administration replied that the project comprised the construction of water treatment components, expansion of a service reservoir and laying of water mains. Among the three items, the largest cost item of the project was the water treatment components. As this item was to be undertaken under a design-and-build form of contract and the tendering exercise had already been conducted, the Administration was confident about keeping the project cost within budget.

In-situ reprovisioning of the Sha Tin water treatment works

11. According to the Administration⁵, the reprovisioning of the Sha Tin WTW (i.e. PWP Item No. 181WF) comprises (a) in-situ reprovisioning of the South Works, (b) conditional survey and improvement works for the existing North Works to ensure its smooth operation during the reprovisioning of the South Works, and (c) in-situ reprovisioning of the North Works. The Administration plans to reprovision the South Works to a treatment capacity of about 550 Mld to cope with the forecast demand. The North Works will continue to be in operation during the in-situ reprovisioning of the South Works.

12. An information paper (LC Paper No. CB(1)1942/09-10(01)) on the proposal to upgrade part of PWP Item No. 181WF⁶ to Category A, at an estimated cost of \$149.1 million, was circulated to DEV Panel on 18 May 2010. The aforesaid funding proposal was endorsed by PWSC on 9 June 2010 and approved by FC on 2 July 2010. Members raised no questions

⁵ Source: The Administration's paper on "181WF -- In-situ reprovisioning of Sha Tin water treatment works" (LC Paper No. CB(1)1942/09-10(01))

⁶ The part of PWP Item No. 181WF covered by the proposal comprises, among others, design and site investigation for the in-situ reprovisioning of the South Works, and conditional survey and improvement works for the existing North Works to ensure its smooth operation during the reprovisioning of the South Works.

on the proposal at the relevant PWSC and FC meetings. According to the Administration's paper to PWSC in June 2010⁷, the Administration will seek funding for the remaining parts of PWP Item No. 181WF (i.e. the in-situ reprovisioning of the South Works and the North Works) after completion of the detailed design for the reprovisioning of the South Works.

13. At the DEV Panel meeting on 27 November 2012 to discuss the expansion of the Tai Po WTW, responding to members' enquiries on the cost-effectiveness of reprovisioning the Sha Tin WTW, the Administration informed members that it intended to carry out the in-situ reprovisioning of the South Works only for the time being. The in-situ reprovisioning of the North Works would be considered after completing the reprovisioning of the South Works, taking into account the forecast demand for treated water.

Latest development

14. The Administration will seek DEV Panel's support for part-upgrading PWP Item No. 181WF to Category A for the advance works of the in-situ reprovisioning of the Sha Tin WTW (South Works) at the meeting to be held on 24 February 2015.

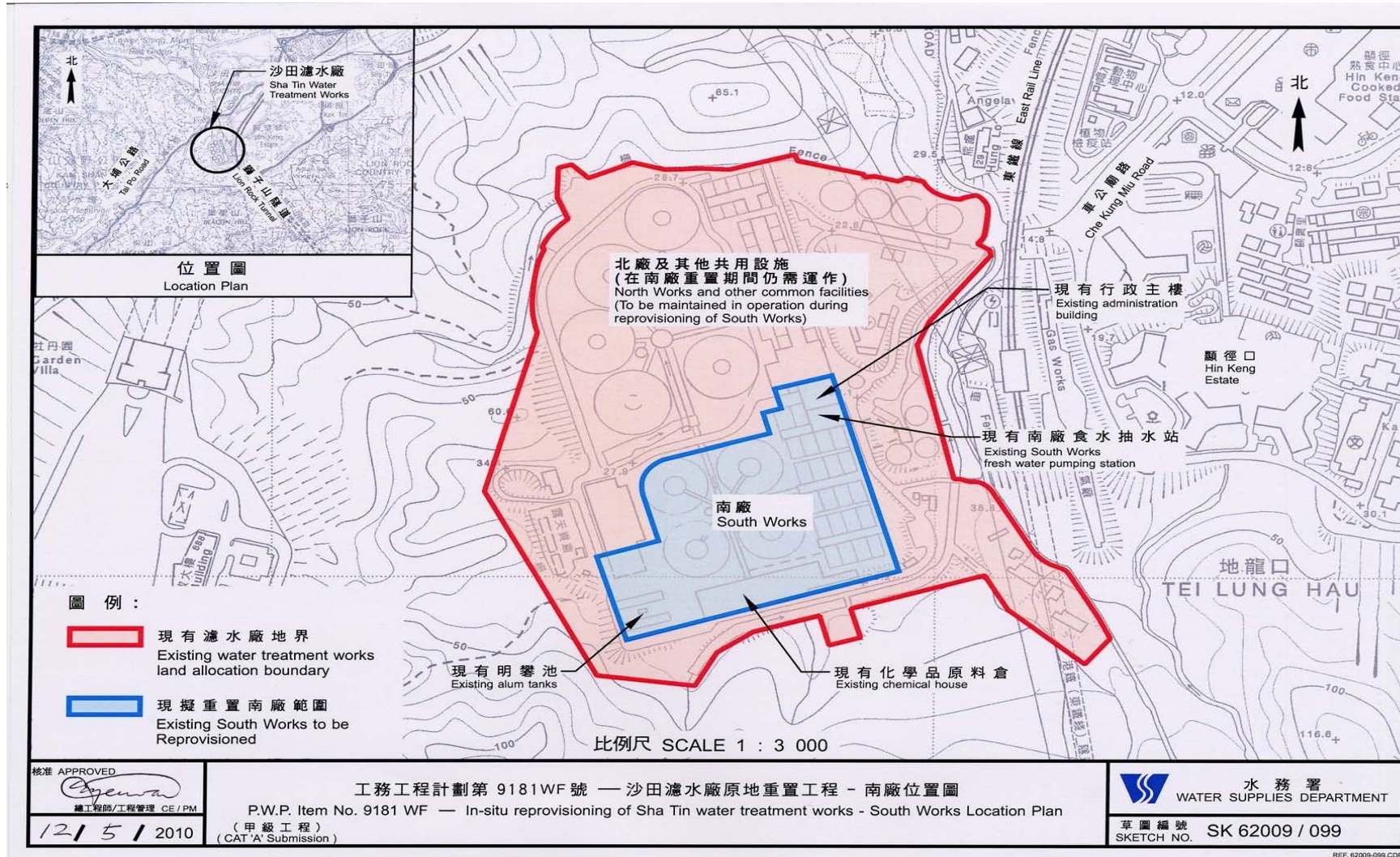
Relevant papers

15. A list of relevant papers with their hyperlinks is in **Appendix II**.

Council Business Division 1
Legislative Council Secretariat
13 February 2015

⁷ The Administration's paper on "Head 709 -- Waterworks 181WF -- In-situ reprovisioning of Sha Tin water treatment works" (LC Paper No. PWSC(2010-11)15)

沙田濾水廠位置圖
Location plan of the Sha Tin water treatment works



資料來源：政府當局就"181WF -- 沙田濾水廠原地重置工程"提交的文件(立法會CB(1)1942/09-10(01)號文件)
Source: The Administration's paper on "181WF -- In-situ reprovisioning of Sha Tin water treatment works" (LC Paper No. CB(1)1942/09-10(01))

Appendix II

In-situ reprovisioning of Sha Tin water treatment works (South Works)

List of relevant papers

Council/Committee	Date of meeting	Paper
Panel on Development	23 October 2007	Administration's paper on "Reprovisioning of Sha Tin Water Treatment Works" [LC Paper No. CB(1)86/07-08(01)] http://www.legco.gov.hk/yr07-08/english/panels/plw/papers/devcb1-86-1-e.pdf
Public Works Subcommittee	20 January 2010	Administration's paper on "Head 709 -- Waterworks 334WF -- Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities" [LC Paper No. PWSC(2009-10)88] http://www.legco.gov.hk/yr09-10/english/fc/pwsc/papers/p09-88e.pdf Minutes of meeting [LC Paper No. PWSC46/09-10] http://www.legco.gov.hk/yr09-10/english/fc/pwsc/minutes/pwsc20100120.pdf
Panel on Development	26 January 2010	Administration's paper on "334WF -- Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities -- part 1 works" [LC Paper No. CB(1)621/09-10(01)] http://www.legco.gov.hk/yr09-10/english/panels/dev/papers/devcb1-621-1-e.pdf
Finance Committee	5 February 2010	Administration's paper on "Recommendations of the Public Works Subcommittee made on 7 January 2009 and 20 January 2010" [LC Paper No. FCR(2009-10)51]

Council/Committee	Date of meeting	Paper
		<p>http://www.legco.gov.hk/yr09-10/english/fc/fc/papers/f09-51e.pdf</p> <p>Minutes of meeting at 3:00 pm [LC Paper No. FC158/09-10]</p> <p>http://www.legco.gov.hk/yr09-10/english/fc/fc/minutes/fc20100205.pdf</p>
Panel on Development	25 May 2010	<p>Administration's paper on "181WF -- In-situ reprovisioning of Sha Tin water treatment works" [LC Paper No. CB(1)1942/09-10(01)]</p> <p>http://www.legco.gov.hk/yr09-10/english/panels/dev/papers/devcb1-1942-1-e.pdf</p>
Public Works Subcommittee	9 June 2010	<p>Administration's paper on "Head 709 -- Waterworks 181WF -- In-situ reprovisioning of Sha Tin water treatment works" [LC Paper No. PWSC(2010-11)15]</p> <p>http://www.legco.gov.hk/yr09-10/english/fc/pwsc/papers/p10-15e.pdf</p> <p>Minutes of meeting [LC Paper No. PWSC77/09-10]</p> <p>http://www.legco.gov.hk/yr09-10/english/fc/pwsc/minutes/pwsc20100609.pdf</p>
Finance Committee	2 July 2010	<p>Administration's paper on "Recommendations of the Public Works Subcommittee made on 9 June 2010" [LC Paper No. FCR(2010-11)30]</p> <p>http://www.legco.gov.hk/yr09-10/english/fc/fc/papers/f10-30e.pdf</p> <p>Minutes of meeting at 3:30 pm [LC Paper No. FC166/09-10]</p> <p>http://www.legco.gov.hk/yr09-10/english/fc/fc/minutes/fc20100702.pdf</p>

Council/Committee	Date of meeting	Paper
Panel on Development	27 November 2012	<p>Administration's paper on "334WF -- Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities -- part 2 works" [LC Paper No. CB(1)168/12-13(01)] http://www.legco.gov.hk/yr12-13/english/panels/dev/papers/devcb1-168-1-e.pdf</p> <p>Administration's follow-up paper on "334WF -- Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities -- part 2 works" [LC Paper No. CB(1)289/12-13(01)] http://www.legco.gov.hk/yr12-13/english/panels/dev/papers/dev1127cb1-289-1-e.pdf</p> <p>Minutes of meeting [LC Paper No. CB(1)429/12-13] http://www.legco.gov.hk/yr12-13/english/panels/dev/minutes/dev20121127.pdf</p>
Public Works Subcommittee	17 December 2012	<p>Administration's paper on "Head 709 -- Waterworks 334WF -- Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities -- part 2 works" [LC Paper No. PWSC(2012-13)44] http://www.legco.gov.hk/yr12-13/english/fc/pwsc/papers/p12-44e.pdf</p> <p>Minutes of meeting [LC Paper No. PWSC24/12-13] http://www.legco.gov.hk/yr12-13/english/fc/pwsc/minutes/pwsc20121217.pdf</p>

Council/Committee	Date of meeting	Paper
Finance Committee	11 January 2013	<p>Administration's paper on "Recommendations of the Public Works Subcommittee made on 28 November and 17 December 2012" [LC Paper No. FCR(2012-13)64] http://www.legco.gov.hk/yr12-13/english/fc/fc/papers/f12-64e.pdf</p> <p>Minutes of meeting [LC Paper No. FC183/12-13] http://www.legco.gov.hk/yr12-13/english/fc/fc/minutes/fc20130111.pdf</p>