Information Paper for Legislative Council
Panel on Planning, Lands, and Works

Water Supply to the Remaining Remote Villages in the New Territories

Introduction

During the discussion at the Panel meeting on 2 April 2001 relating to provision of water supply to 6 remote villages in the New Territories, under PWP Item No. 239WF (viz., Wu Kau Tang, Kau Tam Tso, Lai Chi Wo, Kat O, Ap Chau and Mong Tung Wan), members queried whether it would be more cost effective to treat water from local sources for these remote villages. The Administration advised members then that it would be most economical to extend the distribution system for providing supply to these 6 remote villages. The Administration further advised that in the detailed study for provision of water supply to the other remaining remote villages, the Administration would study the alternative modes of water supply to these remote villages. This paper reports to members on the findings of the study.

Remaining Remote Villages

2. There are still 19 remote villages in the New Territories not yet provided with metered water supply. Of these, 7 have been included in PWP Item No. 253WF and 12 are not included in the PWP. These villages are scattered in Lantau, Sai Kung, Tai Po and outlying islands. A plan showing the locations of these 19 villages is at Enclosure 1. Water Supplies Department has completed a detailed study on the water supply schemes to these 19 remote villages with due consideration to alternative approaches where applicable.

Remote Villages in Outlying Islands - Po Toi and Tung Lung

3. A more focused study was conducted on these two villages locating on two remote islands, namely, Po Toi and Tung Lung, because it will enable the thorough examination of various alternative modes of water supply as committed at the Panel meeting mentioned above.

4. The study has identified and examined the following alternatives for providing treated water supply:

i) local treatment of stream water;
ii) local desalination plant;
iii) water boat supply;
iv) extension of water supply by submarine pipeline laid on the seabed; and
v) extension of water supply by submarine pipeline installed by horizontal directional drilling techniques.

5. A comparison of the total costs (capital cost and operating cost) of these five options is given at Enclosure 2. It can be seen that for these two villages, the use of water boat for supplying water is the least expensive option among the five in terms of the total cost. However, in absolute term, the costs are still high. The construction costs per capita alone are $282,000 and $352,000 for Po Toi and Tung Lung respectively.

Other Remote Villages

6. The detailed study has also covered the water supply schemes to the other remote villages in the New Territories and Lantau Island. All of them are located very far away from the existing distribution network. Besides extending the existing supply system to them, a feasible alternative is to collect and treat the stream water locally and subsequently distribute the treated water. Where the remote villages are located near the coastline, there will be an additional option of using desalination plants. For all these villages, the preferred option is still the conventional approach of extending the existing supply system and the associated construction costs are worked out accordingly.

Cost Summary for Providing Treated Water Supply

7. In the course of the detailed study, Home Affairs Department (HAD) has been consulted with regard to the latest planned population figures in these remote villages. Taking Po Toi and Tung Lung as an example, the information from HAD and site observation indicated that the number of residents were in the order of 20 and 15 respectively.

However, during the weekends and holidays, these two remote villages may be frequented by holiday-goers whose number fluctuates greatly with the season. At present, there are only a total of about 470 villagers residing in these 19 remaining remote villages.

8. The cost-effectiveness of the water supply schemes is summarised in Enclosure 3 with reference to their population and the total estimated construction cost.

Conclusion and Recommendation

9. While it is technically feasible to provide treated water supply to the remaining 19 remote villages, the summary in Enclosure 3 shows that the construction costs alone are already at a high level of $455,000 per capita on the average. This is because of the long distances from the distribution system and the very low population in these villages.

10. From a cost-benefit analysis viewpoint, it is recommended that the implementation programme for supplying water to these remote villages be postponed to a more favourable time when there is development near these villages rendering the provision of treated water supply more economical or other new circumstances warrant reconsideration of the schemes.

11. These remote villages will continue to rely on the local streamcourses as their water sources. The Food and Environmental Hygiene Department will continue to monitor the water quality by collecting water samples from the streamcourses for testing regularly. Under the extreme event that the streamcourses dry out during the drought, Water Supplies Department will provide necessary assistance to overcome the short-term hardship of the villagers. The Administration will also keep the situation under close vigilance and review the need for these water supply schemes at the appropriate time.

Environmental, Transport and Works Bureau
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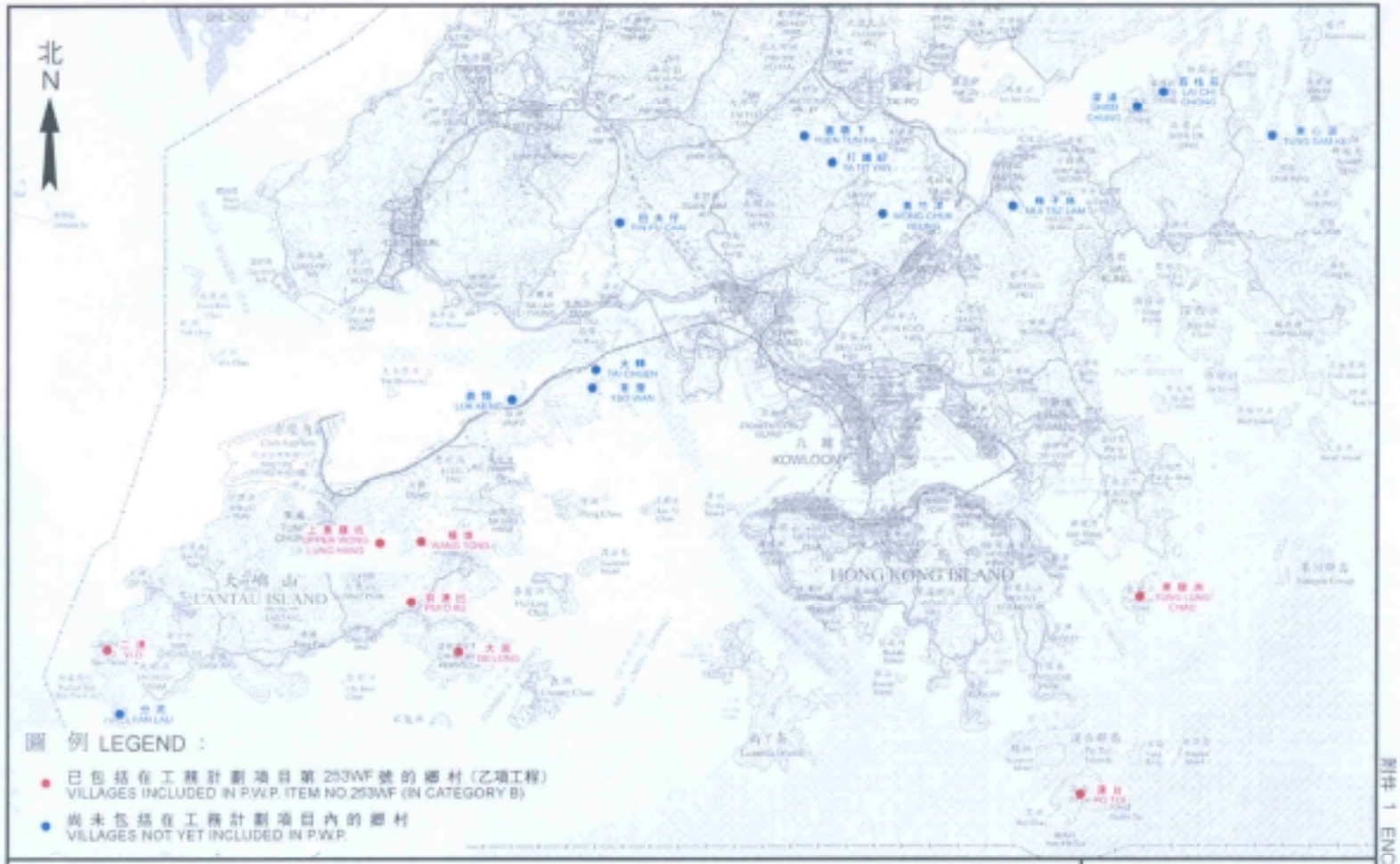

新界十九條餘下偏遠鄉村供水計劃 — 位置圖
WATER SUPPLY TO THE NINETEEN REMAINING REMOTE VILLAGES - LOCATION PLAN

水務署
WATER SUPPLIES DEPT.

附圖 FIGURE 1

附件 1 ENCLOSURE 1

Enclosure 2

Water Supply to Po Toi and Tung Lung

Cost comparison of different modes of supply

Modes		**Net Present Value Po Toi**	**Net Present Value Tung Lung**
Local system with treatment facilities	Capital Cost	$22,130,000	$19,020,000
	Recurrent Cost	$15,880,000	$13,520,000
	Total	***$38,010,000***	***$32,540,000***
Desalination plant	Capital Cost	$12,220,000	$11,210,000
	Recurrent Cost	$17,590,000	$16,180,000
	Total	***$29,810,000***	***$27,390,000***
Water boat supply	Capital Cost	**$5,640,000**	**$5,280,000**
	Recurrent Cost	$23,500,000	$12,080,000
	Total	***$29,140,000***	***$17,360,000***
Conventional submarine pipeline	Capital Cost	$63,750,000	$17,450,000
	Recurrent Cost	$3,180,000	$970,000
	Total	***$66,930,000***	***$18,420,000***
Submarine pipeline by horizontal directional drilling	Capital Cost	$52,450,000	$18,000,000
	Recurrent Cost	$570,000	$340,000
	Total	***$53,020,000***	***$18,340,000***

Notes
1. An operation period of 50 years has been adopted for comparisons.
2. Based on a discount rate of 4% p.a., net present value of recurrent cost for 50 years = Annual Recurrent Cost x 21.482.
3. Water boat supply is the least expensive option.
4. Population for Po Toi is 20 and Tung Lung is 15.
5. Capital cost per capita for Po Toi : $5,640,000/20 = $282,000
   Tung Lung : $5,280,000/15 = $352,000

Enclosure 3

Nineteen Remaining Remote Villages

Summary of Population and Estimated Construction Cost for the Provision of Treated Water Supply

No.	Remote Village	Total Population	Total Estimated Construction Cost ($ Million)	Construction Cost per Capita
1-7	Yi O, Wang Tong, Pui O Au, Upper Wong Lung Hang, Tai Long, Po Toi, Tung Lung ***(under PWP Item No. 253WF)***	361	66	= $66 M/361 $183,000
8-19	Ta Tit Yan, Yuen Tun Ha, Wong Chuk Yeung, Mui Tsz Lam, Tung Sam Kei, Sham Chung, Lai Chi Chong, Tai Chuen, Tso Wan, Luk Keng, Fan Lau, Tin Fu Tsai ***(not yet under any PWP Item)***	112	149	= $149 M/112 $1,330,000
	Total	473	215	= $215 M/473 $455,000