

立法會
Legislative Council

LC Paper No. CB(1) 1513/02-03
(These minutes have been seen
by the Administration)

Ref : CB1/PL/EA/1

Panel on Environmental Affairs

**Minutes of meeting held on
Thursday, 10 April 2003, at 10:45 am
in Conference Room A of the Legislative Council Building**

- Members present** : Hon CHOY So-yuk (Chairman)
Hon Cyd HO Sau-lan (Deputy Chairman)
Ir Dr Hon Raymond HO Chung-tai, JP
Hon Martin LEE Chu-ming, SC, JP
Hon SIN Chung-kai
Hon WONG Yung-kan
Hon LAU Kong-wah
Hon Miriam LAU Kin-yee, JP
Hon Emily LAU Wai-hing, JP
Dr Hon LAW Chi-kwong, JP
Hon Henry WU King-cheong, BBS, JP
Dr Hon LO Wing-lok
Hon Audrey EU Yuet-mee, SC, JP
- Members absent** : Dr Hon David CHU Yu-lin, JP
Hon LAU Ping-cheung
- Public officers attending** : **For item IV**
Environment, Transport and Works Bureau

Ms Doris CHEUNG
Deputy Secretary (Environment)1

Mr Raistlin LAU
Principal Assistant Secretary (Environment)1

Mr Samuel CHUI
Assistant Secretary (Environment)1A

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Drainage Services Department

Mr Keith R MURRELLS
Assistant Director/Projects & Development

Mr David Y T CHEUNG
Chief Engineer/Consultants Management

Mr Michael FONG
Engineer/Consultants Management 5

Environmental Protection Department

Mr David T W WONG
Principal Environmental Protection Officer/
Sewerage Infrastructure

Water Supplies Department

Mr P C MAK
Chief Engineer/Development (1)

Clerk in attendance : Miss Becky YU
Chief Assistant Secretary (1)1

Staff in attendance : Mrs Mary TANG
Senior Assistant Secretary (1)2

Miss Mandy POON
Legislative Assistant 4

I. Confirmation of minutes

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| (LC Paper No. CB(1) 1131/02-03 | — Minutes of the joint meeting with the Panel on Transport held on 23 January 2003 |
| LC Paper No. CB(1) 1137/02-03 | — Minutes of the joint meeting with the Panel on Transport held on 6 February 2003 |
| LC Paper No. CB(1) 1167/02-03 | — Minutes of the joint meeting with the Panel on Transport held on 24 February 2003 |

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LC Paper No. CB(1) 1201/02-03 — Minutes of the meeting held on 24 February 2003)

The minutes of the meeting held on 24 February 2003 and the minutes of the joint meetings with the Panel on Transport held on 23 January, 6 and 24 February 2003 were confirmed.

II. Information paper issued since last meeting

2. Members noted the following information papers which had been issued since the last meeting-

LC Paper No. CB(1) 994/02-03 — E-mail from a Mr Doug WOODRING enclosing with it his correspondence with the Environment, Transport and Works Bureau on some of the environmental issues

LC Paper No. CB(1) 1223/02-03 — A letter from Dr Hon LAW Chi-kwong requesting discussion on renewable energy in the context of energy policy at a joint meeting of the Panel on Environmental Affairs and the Panel on Economic Services

LC Paper No. CB(1) 1322/02-03 — A letter from the Friends of the Earth requesting an opportunity to exchange views with appointed members of the Council on Sustainable Development at a meeting of the Panel

III. Items for discussion at the next meeting

(LC Paper No. CB(1) 1202/02-03(01) — List of follow-up actions

LC Paper No. CB(1) 1202/02-03(02) — List of outstanding items for discussion)

3. Members agreed to discuss the following items at the next regular meeting scheduled for Monday, 28 April 2003, at 2:30 pm -

(a) Detailed proposals for the Landfill Charging Scheme; and

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- (b) Noise Control (Amendment) Ordinance 2002 - Code of Practice on good management practice.

(Post-meeting note : At the request of the Administration and with the concurrence of the Chairman, the agenda for the meeting on 28 April 2003 was revised to exclude (b).)

4. The Chairman reminded members that the joint meeting with the Panel on Economic Services to discuss the “Development of renewable energy in the context of the 2003 Scheme of Control Agreement Interim Review” would be held on Monday, 28 April 2003 at 10:00 am.

IV. 208DS “Outlying Islands sewerage, stage 1, phase 1 part 1 - Ngong Ping sewerage, sewage treatment and disposal”

(LC Paper No. CB(1) 1202/02-03(03) — Paper provided by the Administration)

5. The Deputy Secretary for the Environment, Transport and Works (Environment)1 (DS/ETW(E)1) highlighted the purpose and background of the Public Works Project item 208DS “Outlying Islands sewerage, stage 1 phase 1 part 1 - Ngong Ping sewerage, sewage treatment and disposal”. The Chief Engineer/Consultants Management (CE/CM) then gave a power-point presentation on the proposed project which provided for the construction of a tertiary sewage treatment plant, public sewers, and an effluent export pipeline at Ngong Ping, Lantau Island.

Justifications for providing a tertiary treatment plant at Ngong Ping

6. Ir Dr Raymond HO noted that the Ngong Ping Sewage Treatment Works (NPSTW) would be the first tertiary treatment plant in Hong Kong offering a much higher level of treatment than that adopted under the Harbour Area Treatment Scheme (HATS). While acknowledging the need to try out tertiary treatment in Hong Kong, he questioned the rationale for building the first tertiary treatment plant at Ngong Ping. As pointed out in the Administration’s reply to the submission of the Conservancy Association, the construction cost of NPSTW was higher because of the remoteness of the site, the specific ground conditions, and the need to cater for highly fluctuating sewage flows due to significantly more visitors being expected on holidays. The electrical and mechanical works for the installation of an extensive network of sewage pumps and other treatment equipment alone would cost \$57 million. Given the site constraints and the high construction/maintenance costs, he considered it not worthwhile to build a tertiary sewage treatment plant at Ngong Ping. Instead, a separate location with less constraints should be identified for trying out tertiary treatment facilities.

7. DS/ETW explained that NPSTW was needed to cope with the substantial increase in sewage flow upon the commissioning of the cable car project and its related developments by August 2005. As NPSTW was located within the water gathering grounds of Shek Pik Reservoir, which was the sole source of water supply in

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Lantau, a higher level of treatment was necessary to protect the water quality within the area. CE/CM added that the choice of site was made after thorough considerations. The high cost was mainly due to the unique geographical and geological conditions of the site and the need to protect the water quality of Shek Pik Reservoir against accidental spillage and that of Tung Wan against routine discharge. Ir Dr HO said that he had no doubt on the need for a sewage treatment plant at Ngong Ping, but failed to see the justifications for the proposed high-level treatment to protect Shek Pik Reservoir, which was very old and small with diminishing function given the abundant supply of Dongjiang water. Moreover, the same degree of protection had not been accorded to other reservoirs in Hong Kong.

8. The Chairman however took a different view and opined that Hong Kong should have its own reservoirs and water sources to reduce the reliance on Dongjiang water. She pointed out that it was the unanimous view of the Panel that tertiary treatment should be applied in new sewage facilities as members had earlier expressed dissatisfaction at the use of Chemically Enhanced Primary Treatment under HATS. She also supported the decision to build an independent tertiary treatment facility at Ngong Ping as it was a remote and isolated area not covered under HATS, adding that NPSTW was a permanent treatment facility and the pilot project only covered the reuse of part of treated effluent.

9. The Principal Assistant Secretary for the Environment, Transport and Works (Environment)1 (PAS/ETW(E)1) reiterated that the need for a higher level of treatment for NPSTW arose from the surge in number of tourists visiting the area upon the commissioning of the cable car project in August 2005 as well as the proximity of the plant to Shek Pik Reservoir, which was the sole source of water supply for more than 100 000 residents in Lantau and other outlying islands. He clarified that Shek Pik Reservoir was not small and unimportant. Instead, it was the most important water source for the population of Lantau and therefore any pollution of its water gathering grounds would affect many people. He also advised that it would be very costly and time consuming to construct an extensive water supply network to replace the function of Shek Pik Reservoir. Taking into account the risk posed to the water gathering grounds for Shek Pik Reservoir and the outcome of the Environment Impact Assessment report, it was considered appropriate that a tertiary treatment plant should be provided in Ngong Ping.

Treatment technology for NPSTW

10. The Chairman enquired about the basis upon which the use of Sequencing Batch Reactor (SBR) technology for NPSTW was arrived at and how this compared with Biological Aerated Filter (BAF) technology in terms of quality of treated effluent, construction costs and recurrent expenditure. CE/CM said that the Administration had looked into a number of tertiary treatment options, including Membrane Biological Reactor, Extended Aeration, Rotating Biological Contactor, SBR and BAF. Taking into account land requirement, local experience, maintenance costs, adaptability to fluctuating sewage flows and availability of equipment, it was concluded that SBR would be the most appropriate treatment option to be adopted for NPSTW. While SBR and BAF were comparable in respect of quality of treated

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effluent, SBR was more effective in dealing with fluctuations in sewage flows. It was also slightly cheaper than BAF in terms of construction and operating costs. Moreover, as BAF was only proven in countries with cooler climate, its application in warmer climate had yet to be tried out since the rate of biomass growth on the filter media would likely be faster in warm weather, resulting in the need for more frequent backwash to avoid clogging. PAS/ETW(E)1 added that both tertiary treatment options were able to treat the effluent to meet the required water quality objective. A trial scheme in using BAF technology in Hong Kong was being conducted under HATS and it would take some time before a conclusion could be drawn on its suitability for Hong Kong's climatic conditions. Owing to the tight programme of NPSTW, it was decided that SBR which was a well-proven and reliable technology with adequate local performance record should be adopted instead of BAF which was still being tried out in Hong Kong.

11. Given the ready availability of local expertise and equipment for SBR, the Chairman queried the high capital and recurrent costs incurred, particularly after land cost was discounted. CE/CM said that the provision would include disinfection using ultra violet light, sludge treatment and dual media sand filters. It was worked out based on the estimates from suppliers. The Assistant Secretary for the Environment, Transport and Works (Environment)1A (AS/ETW(E)1A) added that the high cost was partly attributed to remoteness of the site and the need to aerate the sewage during the course of tertiary treatment.

Effluent reuse

12. Ms Cyd HO enquired whether the pilot scheme on effluent reuse was meant to provide a self-sufficient water system for Lantau and if so, how the treated effluent would be stored and utilized. She also asked if consideration would be given to using the treated effluent in other areas. The Chief Engineer/Development(1) (CE/D(1)) said that as the pilot scheme would be the first reuse trial in Hong Kong, the Water Supplies Department would await the outcome of the scheme before deciding on the way forward. If the scheme was found to be successful, consideration would be given to introducing it to sewage treatment plants in other areas. CE/CM added that an inter-departmental working group had been set up to ensure the successful implementation of the pilot scheme. It was expected that 30% to 40% of the treated effluent could be reused for toilet flushing and landscape irrigation purposes. The low reusable rate was due to the low demand for irrigation during the rainy seasons. While efforts would be made to identifying more possible outlets for effluent reuse, sensitive uses such as bathing and drinking were not considered appropriate.

13. The Chairman opined that the target reusable rate of 30% to 40% was too low given the high quality of treated effluent after tertiary treatment at NPSTW. Apart from toilet flushing and landscape irrigation in the cable car terminal and related developments, more should be done to make better use of the treated effluent. Discharging the treated effluent into marine waters was at variance with the principle of water conservation and not justified for the need of the more costly tertiary treatment. She expressed reservations at the effluent reuse pilot scheme unless more outlets for effluent reuse could be identified.

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14. In response, PAS/ETW(E)1 said that as the pilot scheme on effluent reuse was the first formal reuse trial in Hong Kong, there was a need to adopt a more prudent approach to ascertain the implications of effluent reuse. As it would take time for the public to accept such a concept, the Administration intended to confine the initial scope of effluent reuse to non-sensitive purposes such as toilet flushing and landscape irrigation which comprised 30% to 40% of the water usage. Part of the effluent from NPSTW would be fed into a separate “flushing and other non-potable” reclaimed water supply system for reuse at the public toilets at Ngong Ping and potentially the cable car terminal and the related developments. Consideration would be given to including the Shek Pik Prison in the pilot scheme. The remainder of the treated effluent would be discharged through the effluent export pipeline into the Southern Marine Waters at Tung Wan. It was expected that the valuable data obtained and the experience gained through the pilot scheme would enable the Administration to examine the feasibility of extending effluent reuse. While the completion date of NPSTW had to tie in with that of the commissioning of the cable car system, there was ample time for the implementation of the pilot scheme for effluent reuse and separate funding had already been approved for the scheme. He welcomed members’ views on the scheme and suggestions on the possible outlets for effluent reuse.

15. Mr Martin LEE asked whether the treated effluent could never meet the standard of potable water or else it could be mixed with Dongjiang water for potable use after further treatment. CE/D(1) said that apart from one area in South Africa which treated effluent to a standard fit for drinking purpose, he was not aware that there were other countries in the world which utilized treated effluent as potable water. Treated effluent was mostly used for non-sensitive purposes such as toilet flushing and landscape irrigation. Mr LEE opined that there was no point in assessing public acceptance of effluent reuse if the Administration had no intention to use the treated effluent for sensitive purposes. Efforts should then be focused on identifying other non-potable outlets for the treated effluent such as car washing.

16. PAS/ETW(E)1 said that while effluent would be treated to tertiary level, this did not mean that it was fit for drinking. To meet the standards of potable water, a much higher level of treatment was required to remove bacteria and other pollutants. Besides, the public might have difficulty in accepting the use of treated effluent for drinking purpose even if vast resources were invested to bring the treated effluent to standards comparable to potable water. AS/ETW(E)1A added that as sewage was 100% used water, it contained a lot of bacteria and pollutants. Although the tertiary treatment process should be able to remove 95% of suspended solids/organic materials and 99.999% of bacteria, the effluent would still have to undergo a series of treatment processes which included sedimentation, ultra filtration, reverse osmosis etc before it could be mixed with other potable water sources. He pointed out Singapore had been exploring effluent reuse for potable purpose for years, but it was still at the pilot trial stage. It was unlikely that the pilot scheme at NPSTW would aim at such high level of treatment. Mr LEE however pointed out that while both Singapore and Hong Kong had to rely on Malaysia and the Mainland respectively for their water supply, the former involved political issues which were not applicable in the case of Hong Kong. As such, there might not be a need for Hong Kong to invest heavily on effluent reuse.

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17. Ms Cyd HO asked how the Administration would evaluate the outcome of the pilot scheme. PAS/ETW(E)1 said that it would take into account users' acceptability, environmental impact on the surrounding and cost effectiveness in assessing the scheme. Boreholes would be sunk into the ground to assess the effect of using treated effluent for irrigation on the underground water and the surrounding soil. Environmental monitoring and mitigating measures would be implemented as part of the Environmental Impact Assessment process. The Chairman then enquired about the time frame for the studies on effluent reuse to be conducted by the inter-departmental working group. CE/CM said that as the working group could only collect data on effluent reuse after the completion of NPSTW in July 2005, the outcome of the studies was expected to be available by 2006-07. The Chairman however opined that the working group should already have in mind the possible outlets for the treated effluent without awaiting the completion of NPSTW.

18. Before concluding the discussion, the Chairman requested the Administration to provide the presentation materials as well as a comparison between BAF and SBR, in particular the difference in capital and recurrent costs between the two technologies before submitting the funding proposal to the Public Works Subcommittee. Mr Martin LEE said that Members of the Democratic Party were prepared to support the funding for NPSTW but the Administration had to provide a clearer explanation to justify its cost.

V. Any other business

19. There being no other business, the meeting ended at 12:05 pm.

Council Business Division 1
Legislative Council Secretariat
25 April 2003