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LegCo Panel on Environmental Affairs

Minutes of Special Meeting
held on Saturday, 27 May 2000 at 9:00 am
in the Chamber of the Legislative Council Building

Members Present	:	Hon Christine LOH (Chairman) Hon HUI Cheung-ching (Deputy Chairman) Ir Dr Hon Raymond HO Chung-tai, JP Hon Martine LEE Chu-ming, SC, JP Hon Fred LI Wah-ming, JP Prof Hon NG Ching-fai Hon CHAN Wing-chan Hon Mrs Sophie LEUNG LAU Yau-fun, JP Hon Emily LAU Wai-hing, JP Hon CHOY So-yuk Hon LAW Chi-kwong, JP
Members Absent	:	Hon Margaret NG Hon Ronald ARCULLI, JP Hon CHEUNG Man-kwong Dr Hon LEONG Che-hung, JP Hon WONG Yung-kan Hon LAU Kong-wah Hon Mrs Miriam LAU Kin-yee, JP Hon Andrew CHENG Kar-foo Dr Hon TANG Siu-tong, JP
Public Officers Attending	:	Mr Kim SALKELD Deputy Secretary for the Environment and Food

Mr Rob LAW
Director of Environmental Protection

Mr Benny Y K WONG
Assistant Director (Waste & Water)
Environmental Protection Department

Mr Edmond HO
Principal Environmental Protection Officer
(Sewage Infrastructure Planning)
Environmental Protection Department

Mr C H LAM
Assistant Director/Sewage Services
Drainage Services Department

Attendance by Invitation : Members of the International Review Panel

Professor QIAN Yi

Dr Albert KOENIG

Professor Donald HARLEMAN

Professor Sebastiano PELIZZA

Professor Rudolf WU

Professor Leonard CHENG

Clerk in Attendance : Mrs Constance LI
Chief Assistant Secretary (2)2

Staff in Attendance : Miss Mary SO
Senior Assistant Secretary (2)8

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I. Meeting with the International Review Panel on the Strategic Sewage Disposal Scheme

[Paper No. CB(1)201/99-00(01), CB(1)412/99-00(01), CB(1)531/99-00, CB(1)551/99-00, CB(1)622/99-00(05), CB(1)696/99-00, CB(1)1032/99-00, CB(2)1580/99-00(04), CB(2)2121/99-00(01)]

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The Chairman welcomed members of the international review panel on the Strategic Sewage Disposal Scheme (SSDS) and representatives of the Administration to the meeting.

2. Director of Environmental Protection (DEP) briefed members on the purpose and timetable of the international review panel. DEP said that the review panel had met the Advisory Council on the Environment (ACE) on 26 May 2000. After meeting with the Panel on Environmental Affairs, the review panel would receive public views and submissions at an open forum on 28 May 2000. During their short stay in Hong Kong, members of the review panel would collect information on and discuss with people matters relating to SSDS. The Administration would also provide the review panel with all relevant documents as required. The review panel would then meet again in Hong Kong around mid September 2000 to discuss amongst themselves the outcome of their own deliberations, before putting together a report by the end of October 2000. The review panel would meet in Hong Kong for the third time in November 2000 to present their report to the public, the ACE and the Legislative Council (LegCo). In the meantime, written submissions received after the deadline on 10 June 2000 would be forwarded to the review panel for evaluation. To ensure an open and participatory review process, DEP said that all written submissions received would be uploaded onto the Government website.

3. DEP then introduced members of the international review panel. He said that the review panel had elected amongst themselves Professor Donald HARLEMAN, a renowned expert in sewage treatment system from the Massachusetts Institute of Technology, to be the chief spokesperson, and Dr Albert KOENIG from the University of Hong Kong (nominated by the Hong Kong Institution of Engineers), as the secretary of the review panel. Other members of the review panel included:

- Professor QIAN Yi (expert in sewage treatment system from the Tsinghua University);

- Professor Rudolf WU (expert in marine biology from the City University of Hong Kong nominated by The Marine Biological Association of Hong Kong);

- Professor Sebastiano PELIZZA (a renowned tunnelling expert from the University of Turin) ;and

- Professor Leonard CHENG (expert in economics from the Hong Kong University of Science and Technology)

4. Mr CHAN Wing-chan expressed concern about the considerable delay in the completion of Stage I tunnelling works caused by engineering problems such as geological faults and surface settlement, and other problems leading to forfeiture of

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contracts. He enquired whether similar projects undertaken overseas had experienced such extensive problems especially in the engineering aspects.

5. Professor HARLEMAN responded that it was not unusual that large-scale tunnelling projects undertaken overseas encountered problems which inevitably resulted in project delays or stoppages as in the case of Stage I of SSDS. The best way to deal with projects of such magnitude and complexity was to review and learn from the experience gained from the early stages of the projects, in order to assess whether changes were necessary for the later stages. This was precisely the objective of having a review panel for SSDS.

6. Professor PELIZZA supplemented that the use of deep tunnels to convey sewage was appropriate for a densely populated place such as Hong Kong, because deep tunnels could provide channels for transporting sewage without causing disturbances to the road surface in urban areas. As Stage I tunnels were built deep underground through solid rock, it was unavoidable that geological problems not previously anticipated might occur despite detailed ground investigation work before commencement of the tunnelling works. He further said that the problems surfaced during the construction of deep tunnels under Stage I of SSDS were not very much different from the usual problems encountered by deep tunnelling works undertaken overseas. Moreover, such problems could be tackled by applying the right technology. He also pointed out that Hong Kong was not the only place in the world to construct deep and long tunnels. For examples, two very long underground railway tunnels were under construction in Europe, and the longest underground tunnel in the world to transport fresh water was also being constructed in South Africa.

7. Mr CHAN Wing-chan expressed concern that the review panel might not have sufficient time for the review given the complexity of SSDS. He was worried that the review panel might tend to focus on the professional opinions but had less time to listen to views put forward by the general public and non-professional groups.

8. DEP referred members to the terms of reference of the review panel that the latter would meet with green groups and individuals in addition to sewage professionals to gauge their views on SSDS. He assured members that given the wide experience of members of the review panel, they would be able to appreciate and assimilate all views presented to the panel and decide on the best way forward.

9. Dr Raymond HO said that although he had no doubt about the engineering feasibility of deep tunnelling works, he nevertheless had reservation as to whether the use of deep tunnelling method and the centralized treatment approach as opposed to a distributed treatment approach were the best sewage strategy for Hong Kong. He further pointed out that some of the tunnels cited by Professor PELIZZA were not for transporting sewage and not as deep as some sections of the tunnels in Stage I of SSDS. He also inquired whether secondary treatment standards were the ideal standard for sewage treatment in Hong Kong. Professor HARLEMAN responded that

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these were relevant questions which would certainly be considered by the review panel.

10. Dr Raymond HO inquired whether it was possible at this stage for Stages II, III and IV of SSDS to switch to a different approach. Mr Martin LEE also said that some members of the community had doubts about using the deep tunnelling method for transporting sewage in view of the subsidence problems in Stage I of SSDS. Some people, including some LegCo Members, had suggested abandoning the deep tunnelling approach and exploring other alternatives. He noted that the two members of the previous review panel involved in the 1994/95 review of the SSDS had however supported the deep tunnelling strategy with regard to the fact that huge amount of money had already been spent on Stage I. Mr LEE hoped the international review panel would have a complete open mind this time without feeling the need to defend the Administration's previous decision or the recommendations of the previous review panel. Miss Emily LAU and Professor NG Ching-fai echoed Mr LEE's views.

11. Professor HARLEMAN assured members that the review panel would have an open mind but that depended very much on what they would see and receive in Hong Kong. He said that in the first review, the review panel only had the benefit of the experience of a small pilot plant to guide the panel in the assessment of the treatment strategy. Now that Hong Kong had more than two years operating experience with the Stonecutters Island Sewage Treatment Works (SCICTW) which currently treated about 25% of the total design flow from the whole SSDS Stage I catchment, the review panel would make use of such experience in examining the future direction of SSDS. Professor QIAN Yi agreed with Professor HARLEMAN. She pointed out that the scope of the first review referred to by Mr Martin LEE was on SSDS Stage II and at that time construction work for stage I had not started yet. She said that the international review panel now had more information on the actual experience of Hong Kong regarding the construction of Stage I of SSDS and the environmental impact assessment of the project. The international review panel would certainly take all these information into consideration in the review process.

12. On the question about abandoning the remaining Stage I tunnelling works, Professor HARLEMAN said that the international review panel had been asked by the Administration to advise as soon as possible if, after assessing the Stage I experience, there was any strong likelihood that its recommendation might have significant impact upon the remaining Stage I works, to the extent that it would be necessary to consider stopping or altering these works. To this end, the review panel would make every effort to provide an early opinion on Stage I as to whether it should continue, stop or be changed. The review panel would have an internal discussion on the matter after this meeting.

13. Professor PELIZZA said that the remaining excavation of tunnels under Stage I of SSDS might continue in the meantime. As far as he was aware, apart from the ground settlement occurred in Tseung Kwan O which was currently under

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investigation, the cause of similar occurrences at different sections of the tunnels under Stage I had been identified and satisfactorily dealt with. Nevertheless, the review panel would carefully consider all information and views/proposals received before recommending on the future direction. In reply to the Chairman, Professor HARLEMAN said that the review panel hoped to come to a view on the matter during their second visit to Hong Kong around mid September 2000.

14. In reply to Miss Emily LAU on the current position of Stage I of SSDS, Assistant Director/Sewage Services, Drainage Services Department advised that about 90% (about 23.6 km) of Stage I tunnelling works had been completed and all works in Stage I should be completed in the latter half of 2001 and put in operation. The Administration was hopeful that Stage I works would be completed within the original estimated cost of about $8.3 billion.

15. Referring to the terms of reference of the review panel which required the latter to make recommendations on the most sustainable way forward for development of the sewage system for the main urban areas, Miss Emily LAU inquired whether the review panel would, apart from setting out the pros and cons of various options, also make a recommendation on the preferred option in its report.

16. Professor CHENG responded that the review panel would provide options which could meet the standards by eliminating those technically infeasible, but Hong Kong would have to decide its preferred option with regard to the economic costs the community was willing to pay. He said that a higher treatment level would invariably mean higher cost and vice versa, and ultimately it would be a matter of trade-off. The Chairman advised that the review panel could list out in its report all feasible options, the time and technology required and the environmental benefits of each of these options.

Review panel

17. DEP noted Miss Emily LAU's concern and conceded that the Administration had placed a very difficult task upon the review panel to recommend the most sustainable way forward for SSDS. He said that the process was very complicated involving balancing judgments with regard to the desired treatment level. He hoped that the review panel, with their combined experience, could come up with views that might on balance be the best approach. However, if the review panel found it too difficult in the end to recommend on the best approach, it could just provide the options.

18. Professor NG Ching-fai said that before commencement of Stage I of SSDS, there was the problem of treating waste water from industrial premises in Hong Kong and no centralised treatment system existed at that time. Now that the situation had changed, he hoped the review panel could have an open mind in recommending the best treatment approach.

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19. Mrs Sophie LEUNG said that the Panel was concerned about untreated sewage passing through the city underground in massive tunnels. She requested the review panel to consider whether a distributed treatment system would be a better option to a centralised treatment system.

20. Professor PELIZZA responded that if waste water had to be conveyed to other places, the best way to convey sewage was by deep tunnels, regardless of whether a distributed treatment approach or a centralized treatment approach was used. He further said that as the tunnels were completely lined with concrete, it was not possible for the sewage to seep through the tunnels and invade the underground rock mass. Moreover, the pressure of the groundwater was higher than flowing through the tunnels, not to mention that Hong Kong's rock mass was a very good one.

21. Mrs LEUNG said that she had no doubt about the engineering feasibility of deep tunnelling. The question was whether it was the best method to transport sewage in Hong Kong. She enquired whether the review panel would consider the practice adopted in cities like Tokyo where sewage treatment facilities were provided within residential developments, so that sewage could be treated at the source of pollution before going down into the deep tunnels.

22. Professor HARLEMAN said that he knew of no city which had undertaken the very localized treatment that Mrs LEUNG had described. The reason why this had never been done was because the volume of local effluent was overwhelming and the need remained for transporting the effluent to some other places for disposal. Nevertheless, he reiterated that the review panel would consider all views and proposals put forward to them, including the option of a distributed treatment approach for SSDS.

23. Dr KOENIG pointed out that the deep tunnels were only a central collection system and the 23.6 km of tunnels in Stage I of SSDS was less than 1% of the total length of underground sewers (2,500 km) already present in Hong Kong. He noted that there were not many complaints about the existing underground sewers in Hong Kong. He said that sewerage was a necessity in every civilized city and huge costs were put into the construction of sewage collection and treatment system in most countries. In his view, a sewage collection system was unavoidable, and the concern was more on the efficiency of such system and the risks on public health.

24. Mr Martin LEE enquired whether there was any successful case of large-scale underground sewage system operating elsewhere in the world. Dr KOENIG replied that the first large-scale underground sewage tunnel system under the sea was built in Stockholm in the 1950s and 1960s. The system was still in use. To his knowledge, no problem had ever been reported on the tunnels except at the associated treatment plant.

25. Mr LEE further enquired whether the review panel could give an assurance that there would be no possibility of blockage happening to tunnels when they were

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completed and in operation. Professor PELIZZA responded that they could not see how such a problem could happen to sewage tunnels which could even sustain in the event of an earthquake.

26. Miss CHOY So-yuk expressed concern about the adverse impact of chemically treated effluent on the marine ecology of the surrounding waters of Hong Kong and the South China Sea. Miss CHOY said that as the SCICTW was designed to treat sewage from the whole SSDS Stage I catchment, it was of paramount importance that its operation would not be disrupted by breakdowns and maintenance works. In this connection, she enquired about the measures taken to avoid disruption of service.

27. Professor HARLEMAN responded that sewage treated at SCICTW would not have adverse impact on the marine ecology of the surrounding waters of Hong Kong and the South China Sea. This was because the chemical used in treating sewage at SCICTW was identical to that used in treating water for drinking purpose but was of a lesser amount. As regards the concern on maintenance, Professor HARLEMAN said that SCICTW had been built with extra tanks so that normal operation could still be maintained if a certain number of tanks were taken out of service for repairs or maintenance works.

28. Professor WU acknowledged the public concern about the impact of the effluent on general marine ecology. He noted that Government had already produced an EIA report in this respect. He said that the review panel would study various options of disinfection and their cost-effectiveness. As chemical enhanced treatment would also remove some of the chemicals in the effluent, the review panel might also look at the composition of nutrients and evaluate the impact.

29. Miss CHOY said that some countries such as China had already abandoned the use of chemically enhanced process to treat sewage, and she enquired why such process was still in use at SCICTW. Professor HARLEMAN responded that he was not aware of abandonment of chemically enhanced process in any country. On the contrary, chemically enhanced process was widely recognized as the first stage effluent treatment which, if added to biological treatment, would make the latter more efficient. He pointed out that chemically treated effluent from SCICTW would not undermine the quality of seawater because the chemical (ferric chloride) used was very similar to sodium chloride which was a major content of seawater at present. Moreover, only a small amount of ferric chloride was used in treating sewage, i.e. only ten liters of ferric chloride was used to treat one million liters of raw sewage. Dr KOENIG supplemented that Hong Kong was a bit late in starting treatment of all its sewage when compared to other cities in the world and that chemically enhanced process had been in use in many European and North American cities for some 30 or 40 more years. To meet the increasingly stringent effluent standards for better protection of the marine ecology of seawater, new and improved technology had been introduced to the treatment process over the past 40 years.

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30. Referring to Miss CHOY's comments, Professor QIAN said that China was a developing country and was only treating 13.8 % of its waste water due to lack of funds. If China raised the treatment level, a lesser amount of waste water could be treated and vice versa. She considered that the best treatment level and technology should be based on the local condition, the quality of receiving water and other conditions.

31. Professor CHENG pointed out that sea water quality in Hong Kong depended on both the effluent quality and water from the Pearl River Delta. In his view, water treatment level should be comparable to the water received. It would not be value for money to upgrade the treatment process if the problem of receiving polluting water from neighbouring places remained unresolved. He suggested that perhaps Hong Kong could save some of the resources for sewage treatment for treating the waters received from the Pearl River Delta region in order to have a better overall water quality.

32. Miss Emily LAU said that this was an interesting point worth pursuing and she would like to know the costs involved in helping the neighbouring cities to treat their waste water. However, she considered that the matter might be outside the ambit of the review panel which was tasked to review SSDS within a limited timeframe.

33. DEP responded that the Administration had been liaising with Guangdong Province on the latter's plan to improve their treatment level. The current sewage situation of and future plans for the Pearl River Delta region had been taken into account in the environmental impact assessment of SSDS. While the current chemically enhanced treatment process was already more than adequate for the waters to the south of Hong Kong, the Administration would add a disinfection process in the near future. If the quality of water flowing from the Pearl River Delta region to the surrounding waters of Hong Kong should improve, consideration would also be given to upgrading the treatment level using biological nutrient removal processes.

34. The Chairman said that as the proposal of providing financial assistance to neighbouring cities to upgrade their treatment facilities involved political, financial and economic considerations, she suggested that the matter be followed up by the same Panel in the next legislative session. Members agreed.

Clerk

35. Mr HUI Cheung-ching queried whether the review panel, given the tight timeframe, would have sufficient time to complete the review on SSDS. Professor HARLEMAN responded that the review panel would strive to adhere to the timetable as far as practicable. However, if the review panel subsequently considered that more time or additional meetings were necessary for the review, he was confident that the Administration would make the arrangements. DEP said that the review period could be extended if necessary. The Administration had assured the review panel that every assistance would be provided in the arrangements for additional meetings and provision of information and supporting facilities.

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36. The Chairman stressed that the review panel should be provided with all relevant information to enable the review panel to do its best job. Professor WU responded that the Administration had provided very useful information to the review panel which had also presented the Administration with a shopping list for additional information. Assistant Director (Waste and Water), Environmental Protection Department said that the Administration had provided substantial information to the review panel including the background information of SSDS, the timetable for the project, 37 reports and other technical data related to SSDS. DEP added that all information presented to the review panel would be uploaded onto the Government website for public information as well.

37. Miss Emily LAU enquired about the latest position on the search for a South African expert on biological nutrient removal processes to occupy the remaining vacancy on the review panel.

38. Assistant Director of Environmental Protection replied that following the last Panel meeting on 7 April 2000, the Administration had written to the South African Water Research Commission inviting them to nominate an expert in biological nutrient removal processes to serve on the review panel. The Commission subsequently put forward a nomination to the Administration. Although the nominee was very interested in joining the review panel, he unfortunately could not attend the current visit to Hong Kong because of family commitment. As the Panel had indicated at the last meeting that members of the review panel should be present at all meetings of the review panel, the Administration adopted the alternative approach by requesting the South African expert to submit a report on biological nutrient removal processes instead. The review panel therefore consisted of six members and one outside expert. If members of the review panel felt there was a need to discuss or correspond with the South African expert after studying his report, the Administration would facilitate such arrangement.

39. Noting that the Administration had requested the review panel to give early advice on Stage I of the SSDS in mid September 2000, the Chairman asked the Administration to brief LegCo Members on the matter as soon as the next legislative session commenced. Miss Emily LAU suggested that given the wide public interest on SSDS, the Administration should give a briefing to all LegCo Members-designate on the review panel's recommendation on Stage I as soon as possible, even before the commencement of the new legislative term. DEP noted the suggestions.

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40. The Chairman added that to facilitate LegCo Members and the public to understand the review panel's report on SSDS, it would be useful if the report could contain a section to serve as a guide to read some of the technical sections of the report.

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41. The Chairman thanked members of the review panel and the Administration for attending the discussion. There being no other business, the meeting ended at 10:45 am.

Legislative Council Secretariat
12 October 2000