

**Confirmed Minutes of the 166th Meeting of
the Advisory Council on the Environment
held on 14 December 2009 at 2:30 pm**

Present:

Prof LAM Kin-che, SBS, JP (Chairman)
Prof Paul LAM, JP (Deputy Chairman)
Dr Dorothy CHAN, BBS
Prof CHAU Kwai-cheong
Mr Oscar CHOW
Mr Michael JEBSEN, BBS
Mr Edwin LAU, MH
Mr Michael LEE
Dr MAN Chi-sum, JP
Dr Alfred TAM
Mr TSANG Kam-lam
Prof WONG Ming-hung
Mr Simon WONG, JP
Prof Ignatius YU
Mr Carlson K S CHAN (Secretary)

Absent with Apologies:

Ms Teresa AU
Ms Betty HO
Prof Joseph LEE
Dr YAU Wing-kwong

In Attendance:

Ms Anissa WONG, JP	Permanent Secretary for the Environment
Mr C C LAY	Assistant Director (Conservation), Agriculture, Fisheries and Conservation Department (AFCD)
Mr P Y TAM	Assistant Director/Technical Services, Planning Department
Dr Tina MOK	Principal Medical and Health Officer, Department of Health (for agenda item 3)
Ms Eva WONG	Senior Information Officer, Environmental Protection Department (EPD)
Ms Josephine CHEUNG	Chief Executive Officer (CBD), EPD
Ms Loletta LAU	Executive Officer (CBD), EPD
Miss Kim KWAN	Executive Manager (CBD), EPD

In Attendance for Agenda Item 3:

Mr Elvis AU, JP	Assistant Director (Water Policy), EPD
Ms Greta TAM	Acting Senior Environmental Protection Officer (Water Policy & Science)2, EPD
Mr Louis LEUNG	Senior Administrative Officer (Water Policy Division), EPD
Dr Paul SHIN	Consultant, Hyder-CPS
Dr Jason YANG	Consultant, Hyder-CPS

In Attendance for Agenda Item 4:

Mr Albert LAM, JP	Deputy Director of Environmental Protection (2), EPD
Mr Vincent TANG	Assistant Director (Nature Conservation & Infrastructure Planning), EPD
Mr LUI Ping-hon	Principal Environmental Protection Officer (Infrastructure Planning), EPD
Dr Ken LUK	Regional Director, AECOM Asia Co. Ltd. (AECOM)
Ms Echo LEONG	Associate, AECOM
Dr Lee POTTS	Technical Specialist, AECOM

In Attendance for Agenda Items 5 & 6:

Mr C S LIU	Chief Engineer, Civil Engineering and Development Department (CEDD)
Mr Y P HUNG	Senior Engineer, CEDD
Ms Jacinta WOO	Acting Chief Town Planner, Planning Department
Mr Davis LEE	Project Manager, Ove Arup & Partners Hong Kong Ltd. (Arup)
Mr Joseph MA	Public Engagement Consultant, Arup
Mr Michael LEVEN	Ecologist, Arup
Mr Vincent CHENG	Carbon Appraisal Specialist, Arup
Mr Samuel CHAN	Environmental Specialist, Arup
Mr Geoff CAREY	Ecologist, Arup

Action

Agenda Item 1 : Confirmation of the draft minutes of the 165th meeting held on 9 November 2009

The draft minutes were confirmed without amendment.

Agenda Item 2 : Matters arising from the minutes of the 165th meeting held on 9 November 2009

2. There were no matters arising from the minutes of the last meeting.

Agenda Item 3 : Review and development of marine water quality objectives – First stage public engagement exercise
(ACE Paper 21/2009)

3. Mr Elvis AU briefed Members on the background and proposed approaches and methodologies of the review and development of marine water quality objectives (WQOs). The current set of WQOs had been established according to the water conditions and scientific knowledge of the 1980s. The objective of the Review was to develop a revised set of WQOs that would provide an objective and scientific basis for planning environmental protection programmes and initiatives. This was the first stage of the two-stage public engagement exercise.

4. A Member said that the fisheries sector had been complaining about the declining fish stock in Hong Kong waters which probably had a correlation with pollution of marine water. Priority should be given to re-establishing and enhancing the fisheries resource. Mr Elvis Au explained that fisheries resource was one of the key issues identified in the consultation paper. Overseas experts indicated that water quality improvement would help enhance fisheries resources. Marine biological health, including fisheries resource, was a key area being monitored. The Environmental Protection Department (EPD) had formed a study management group with representatives of the Agricultural, Fisheries and Conservation Department (AFCD) advising on fisheries matters. AFCD commissioned a study on the fisheries resource survey in 1999 and the situation was being closely monitored since then. Upon the advice of City University of Hong Kong following a study from 2001 to 2003, EPD had been conducting marine biological monitoring, including fisheries aspects. The Review would look into the possibility of including some biological indicators in the new set of WQOs, such as indicators to reflect the health of marine ecosystem and fisheries.

5. A Member learnt that the fisheries sector was concerned about the silt being washed from construction sites close to coastal waters as the silt could affect the gills of the fish. He wondered whether there were other parameters

outside the list in Appendix A of Enclosure 1 of the paper which would affect the fish yield. Mr Elvis Au explained that silt and suspended solids were some of the many factors affecting water quality and fish yield. The standard of assessing suspended solids adopted by overseas countries was listed in the Technical Note. A range of standards, including *E. coli*, pH, turbidity and toxic substances, were used. Reference would be made to overseas practices and experience in considering the standards most suitable for Hong Kong.

6. In respect of the quality of fish tank water for seafood, a Member said that the Food and Health Bureau had rolled out a voluntary Quality Seawater Assurance Scheme in 2007 for seawater suppliers and seafood traders to encourage them to exercise better control of the quality of fish tank water for compliance with prescribed legal standards for protection of public health. The Hong Kong Productivity Council was appointed as an independent body to develop and implement the scheme.

7. A Member suggested taking into account the development of marine parks and marine reserve areas when considering the new set of WQOs. Mr Elvis Au said that the protection of marine parks was one of the key areas in the Review. The need of including tailor-made parameters for marine parks would be explored. Moreover, the Marine Parks Committee of the Country and Marine Parks Board was consulted on the Review.

8. A Member referred to pages 22 and 23 of the Technical Note at Enclosure 2 of the paper. He considered that while some compounds were of low concentration, it did not mean that they were of low level of concern. Some toxic chemicals, such as methylmercury, flame retardant, chlorinated hydrocarbon and dichlorodiphenyltrichloroethane, were of concern to human health. For example, methylmercury was efficient in binding into aquatic organisms and could be biomagnified in the food chain which explained the reason for large fish having high concentration of methylmercury. It was necessary to have better protection in mariculture zones for protection of human health.

9. Mr Elvis Au explained that the study on toxic chemicals was one of the key issues identified in the Review. A total of 48 WQO parameters or indicators were listed out in Appendix A of Enclosure 1 of the paper and many of them were related to toxic chemicals. It was noted that toxic chemicals were

included in some overseas standards of mariculture for protection of public health. The applicability of these standards to Hong Kong would be explored. Since 2004, EPD had been monitoring the level of toxic substances in various marine zones and benthic community by using 33 parameters. The results indicated that the levels were comparable to or lower than other regions. Quantifying the toxic chemicals under the WQOs would help long-term monitoring and the Review would look into this area.

10. The Chairman noted that the World Health Organization (WHO) identified *intestinal enterococci* as the most suitable bacterial indicator for bathing waters whilst *E. coli* was adopted as a standard in Hong Kong. He enquired about studies conducted to facilitate consideration in reviewing the standard. Mr Elvis Au said that studies on *enterococci* had been conducted since early 1990s. Findings of local epidemiological studies showed that *E. coli* had a stronger correlation with bathing water diseases in Hong Kong and thus *E. coli* was adopted as a WQO for bathing waters. To provide more scientific data for the Review, the consultant would conduct an independent review having regard to the recommendations by the WHO and latest scientific findings while EPD would conduct surveys on some beaches. He pointed out that the recommendation of using *intestinal enterococci* in the WHO Guidelines issued in 2003 was based on an epidemiological study in the UK on the measurement of four beaches involving 1,100 participants in temperate climate. The WHO Guidelines indicated that the standard was based on temperate epidemiological study and application to tropical and sub-tropical regions would require more studies.

11. A Member enquired about the impact of *E. coli* discharged by the sewage of Pearl River Delta (PRD) on the Victoria Harbour. Mr Elvis Au explained that *E. coli* primarily came from untreated domestic sewage in Hong Kong and was not directly related to the discharge from PRD as *E. coli* would not survive over a long distance. The overall *E. coli* level in Hong Kong as a whole had decreased by 39% in the past 20 years. In the Victoria Harbour, the improvement was more significant due to the commissioning of the Harbour Area Treatment Scheme (HATS) Stage 1 in 2001. Since 2001, the *E. coli* level had dropped by 50% on average for the whole harbour and by 90% in the eastern waters. It was expected that *E. coli* level would continue to drop with the operation of the advance disinfection facilities and commissioning of HATS Stage 2A.

12. A Member said that as water bodies in Hong Kong, particularly the western waters, were subject to the discharge of PRD, any proposed standard or mitigation scheme had to take into account the policies to be adopted by the Mainland. Mr Elvis Au said that there was close collaboration with the Mainland on water quality management. In early December, the Secretary for the Environment and the Director of Guangdong Environmental Protection Department (GDEPD) had reached an agreement to conduct a joint study on the water quality management plan for the whole PRD by using an advanced water quality model developed jointly with the GDEPD. The initial study, to be commissioned in 2010, would assess the water quality of the Pearl River Estuary and the environmental capacity of the estuary for meeting various WQOs. Regarding the Deep Bay, an action plan was put in place in 2001 and the first review was completed in 2007. With the cooperation of the Shenzhen side, the pollution loading was reduced by 38% in the past nine years. The second round of action plan aimed to reduce the pollution loading by further 40% in the next 10 years. The plan was endorsed by the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection.

13. The Chairman asked the possibility of setting up a joint water quality monitoring programme with the Guangdong Authority for better understanding and monitoring of the Pearl River Estuary in the long run. Mr Elvis Au said that the joint study to be embarked in January 2010 would include not only water quality modelling, but also joint water quality monitoring. The study areas would cover two special administrative regions and nine PRD municipalities. Upon the completion of the study, a comprehensive set of water quality modelling as well as joint water quality monitoring programme would be worked out.

14. The Chairman noted that the Review would take into account the background concentration and enquired about the latest background concentration in the western waters. Mr Elvis Au explained that parameters which were not directly related to the PRD flow were on an improving trend. For example, unionized ammonia was on a decreasing trend over the past two decades. However, total inorganic nitrogen had increased by 35.6% from 1986 to 2008 which was related to the overall increase in pollution in the PRD. The sewage volume generated by the PRD region had increased by 50% over the last eight years, resulting an increase in pollution in the PRD region. For Hong Kong, over 70% of the nutrients in Hong Kong came from the PRD. Nonetheless, the

response of different water bodies to the increase in nutrient level was different. For example, the highest level of total inorganic nitrogen was recorded in Deep Bay but the incidences of red tide were very low which was probably due to high turbidity of the waters. The situation in the southern waters was very different. While the water bodies were quite stable and the nutrient level was much lower, the area was subject to higher incidences of red tides. Nonetheless, the number of red tides occurred in Hong Kong had significantly reduced from 88 times in 1988 to 15 times in 2008. The Review would study a comprehensive package of nutrient-related parameters, including total inorganic nitrogen, phosphate and silica as well as the hydrodynamic characteristics and stability of the water body.

15. A Member supported the proposed methodologies set out in the paper. He considered that public consultation was necessary for determining the beneficial use of each water body. Particular attention had to be paid to the beneficial use of the Victoria Harbour which was a unique resource for Hong Kong. Different people might have different expectations on its beneficial use. Mr Elvis Au explained that one of the objectives of the public engagement exercise was to gauge views on the beneficial use of different water bodies. Different stakeholders had been consulted and comments on the beneficial use of Victoria Harbour had been received, such as its leisure use and resumption of the cross-harbour swimming contest as well as the safety concern of busy marine traffic.

16. A Member was concerned about the problem of refuse in marine water and beaches and enquired about the responsible government departments and ways of tackling the problem. Mr Elvis Au said that similar concern had been raised by some Council Members and the concern had been referred to relevant departments, including the Marine Department, Food and Environmental Hygiene Department as well as Leisure and Cultural Services Department, which worked in collaboration to step up the collection of refuse. The Marine Department had an annual program on collection of marine refuse. In some areas such as Tsuen Wan Bay, an inter-departmental working group had also been set up to examine ways to tackle the problem, among other issues.

17. The Chairman summarized Members' views as follows –

- (a) the Council noted that the current set of WQOs had been in force for over two decades and considered that it was opportune to

review the set of standards in light of the latest advancement in water science and technology as well as increasing community aspiration for better quality of life and changes in the beneficial use of the water bodies;

- (b) the Council agreed with the proposed approaches and methodologies adopted in the Review and considered that the Review should be based on scientific and objective data and the WQOs had to take into account the specific water bodies in terms of its hydrodynamic characteristics, background trend in water quality and beneficial uses;
- (c) the Council considered that it was essential to examine the health aspects of WQOs, including the need to include other biological indicators in addition to *E. coli* for bathing waters, toxic chemicals in mariculture and biological indicators on the marine ecosystem and fisheries resource;
- (d) the Council considered that it was important to consult the public and specific stakeholders in considering the beneficial uses of water bodies, in particular the Victoria Harbour which was a valuable asset of Hong Kong; and
- (e) the Council looked forward to receiving more concrete proposal regarding the new set of WQOs in the second stage of consultation.

Agenda Item 4 : Integrated Waste Management Facilities – Technology review and associated facilities

(ACE Paper 22/2009)

18. Mr Albert Lam briefed Members on the background of the Integrated Waste Management Facilities (IWMF). The EPD planned to develop the first phase of the IWMF with a treatment capacity of about 3,000 tonnes per day (tpd) for municipal solid waste (MSW). Incineration with energy recovery would be adopted as the core technology and a demonstration scale sorting and recycling plant would be incorporated to recover resources from the MSW. Shek Kwu Chau and Tuen Mun Tsang Tsui Ash Lagoon were considered potential sites. Dr Lee Potts briefed Members on the results of the technology review carried out

under the Engineering Investigation and Environmental Impact Assessment Studies for the proposed development of the IW MF. For the thermal technologies, incineration by using moving grate technology was recommended. For the sorting and recycling technologies, mechanical and biological treatment (MBT) was proposed. Dr Ken Luk briefed Members on the initial views on the associated facilities that might be incorporated in the IW MF.

19. A Member enquired about information on health impacts of incineration facilities in overseas countries, such as Singapore, Taiwan and Japan, including information on whether there were higher incidences of diseases, including respiratory disease and cancer, for people living in the vicinity of the incineration facilities. The information would be useful for the general public in understanding the minimal health impacts brought about by advanced technology in incineration design and operation. Dr Lee Potts explained that according to the experience in UK, the incinerators were usually built in industrial areas and it was difficult to assess their health impacts in view of the siting of other facilities nearby, such as power stations and chemical plants. There was no evidence of adverse health impacts caused by emissions from incineration facilities. Among the industrial facilities, incineration was the most highly regulated combustion process and the design allowed flue gas treatment to achieve extremely low level of dioxin emission. For example, the incinerator in Köln of Germany operated with extremely low level of emissions because the flue gas treatment system was one of the best in the world.

20. A Member enquired about the types and levels of pollutants generated by different types of thermal treatment technology, such as in terms of per tonne of waste. Dr Lee Potts explained that it was difficult to establish which technology had a higher level of performance in terms of pollutant emissions as the plants operated according to the regulatory standards in the particular country. In general, fluidized bed technology normally generated less nitrogen oxide (NO_x) than a moving grate incinerator as the former operated at a more turbulent condition. Gasification and pyrolysis technologies sometimes also had the benefit of generating less NO_x as they operated at an oxygen deficient condition. As different types of technology applied different waste treatment processes, making direct comparison between them would be difficult. Upon the Chairman's request, the presentation team undertook to provide additional information in relation to the enquiries raised by the two Members.

(Post-meeting note: An Information Note providing the information requested was circulated to Members after the meeting.)

21. A Member gathered from the discussion that the amount of pollutants emitted from the incineration process was closely related to the effort made in treating the flue gas. He considered that extra effort should be made to the treatment of flue gas in order to ensure the protection of public health. Dr Lee Potts explained that the combustion process and the flue gas treatment system had to be optimized to minimize the formation and emission of pollutants.

22. The Chairman enquired about the emission standard to be adopted for dioxin related to thermal treatment and whether the adoption of the proposed moving grate incineration technology could comply with the standard. Dr Lee Potts said that the emission standard for dioxin would be 0.1 ng I-TEQ/m³ which was based on the European Union (EU) waste incineration standard. The moving grate was a proven technology around the world. It could achieve the stringent standard with a safe margin through various measures, including combustion control, design of the incinerator in terms of temperature and gas residence time, addition of activated carbon and utilization of filter to control dioxin.

23. A Member enquired about the waste to energy conversion ratio of incineration. Dr Lee Potts said that the modern technology could convert about 24% to 26% of the energy from the thermal treatment process to electricity. For one tonne of waste with a calorific value (CV) of around 10 megajoule/kg, 24% to 26% of the energy from the thermal treatment process could be converted to electricity. If the steam generated from the incineration process could also be utilized in addition to electricity generation, the overall energy efficiency could be as high as 75% to 80%. It was a common practice for European countries, such as Sweden, to locate the incineration facility at the centre of the city and utilize the heat generated for household or commercial uses.

24. A Member asked whether the moisture content of the waste feedstock would affect the incineration process by requiring more fuel to dry up the waste. Dr Lee Potts explained that to cater for variation in the composition and moisture content of waste feedstock, the facilities could be designed to operate within a firing diagram for a range of CV without the need for constant

addition of fuels. In the worst-case scenario, if the CV dropped to a very low level, fuel oil could be added to sustain the temperature as the furnaces needed to work at a high temperature to minimize formation of dioxin. However, this would not occur if proper assessment was conducted on the composition of waste and the facilities were designed according to the variation in composition of waste.

25. A Member enquired about the technologies adopted and experience learnt from the old type incinerators in Hong Kong. Mr P H Lui said that Hong Kong used to have three old type of incinerators in Lai Chi Kok, Kennedy Town and Kwai Chung in 1960s to 1970s and all of them had been demolished. The three incineration plants employed old thermal treatment technologies and could not meet the current emission standards and generate electricity for use off-site. For example, rotary kiln plus combustion chamber were used for the Kwai Chung incinerator.

26. A Member referred to the Figure in paragraph 8 of the paper regarding “Trend of Thermal Treatment of MSW of selected countries” and asked the ways South Korea, EU and Germany managed the waste load while keeping a low percentage of treatment by incineration. Dr Lee Potts explained that these countries managed the waste by maintaining a high level of recycling, such as about 60% in Germany. Other countries, such as the Netherlands, Singapore and Japan, were increasing efforts in recycling. Nonetheless, thermal treatment was still the backbone technology for treating residual waste in countries with high recycling rate. Another Member added that recycling was a mandatory waste treatment process in Germany. The Member requested the presentation team to provide the exact percentages of MSW treated by incineration from 2000 to 2007 by the selected countries in the Figure, if available.

(Post-meeting note: The information requested was included in the Information Note circulated to Members after the meeting.)

27. Regarding the eco-co-combustion system proposed by a local cement production company, a Member asked whether the technology was technically feasible, environmentally friendly and cost-effective for treating MSW, while putting aside the issue on demand of cement. Dr Lee Potts explained that the eco-co-combustion system had to be designed to allow total

waste management even in the event of no cement production. In the proposed eco-co-combustion model, some of the operation processes had to be bypassed if there was no cement production and this might result in exceedances of emission standards. More importantly, the proposed technology was different from the co-combustion process adopted worldwide and there had not been any similar operation at a commercial scale in Hong Kong or any other parts of the world.

28. A Member enquired about the benefits of having thermal treatment to operate with cement production, such as eco-co-combustion. Dr Lee Potts explained that the cement production process used limestone which could help remove acidic gases like hydrogen chloride. Moreover, the system utilized the bottom ash as raw material for cement production and it would reduce ash disposal to landfill.

29. A Member enquired about comparison of the emission level of eco-co-combustion system and moving grate incineration technology. Ms Echo Leong explained that the pilot plant trial run showed that emissions from the eco-co-combustion system could meet the emission standards. Nonetheless, direct comparison could not be made as eco-co-combustion system included a flue gas treatment process after the thermal treatment process. Dr Lee Potts added that it was difficult to assess the data as it was based on a two-month trial run and no full scale eco-co-combustion plant was in operation in other countries.

30. A Member asked whether the eco-cement plant in Japan was similar to the proposed eco-co-combustion system. Ms Echo Leong explained that they were totally different. The eco-cement plant in Japan made use of fly ash and bottom ash as raw materials and mixed them with other raw materials in the rotary kiln for cement production and it was similar to a normal cement production process.

31. Regarding the sorting and recycling technologies, the Chairman asked the reasons for developing only a demonstration scale plant given MBT was a well proven technology. Mr Vincent Tang explained that the plan was to develop the first phase of the IWMF with a treatment capacity of 3,000 tpd with incineration as the core technology. An incineration facility with a treatment capacity of about 2,800 tonnes plus a demonstration scale sorting and recycling facility by using MBT for treating about 200 tpd were proposed to maximize the capacity. Consideration of adopting MBT would be given to the second phase of

the IWWMF should it prove to be effective. Dr Ken Luk added that one of the key considerations was the requirement of land space for MBT plant. With the provision of 10 hectare of land for the IWWMF, it was more suitable to have a thermal treatment plant as the core process plus a MBT plant at demonstration scale.

32. Dr Lee Potts explained that MBT could serve as a pre-treatment process of thermal treatment when more recycling was required. A thermal treatment process was necessary to manage the residual waste. During the MBT sorting and recycling process, different types of wastes, such as paper cardboards, plastics, metal cans and organic food waste were sorted out. In UK, metal cans were normally recycled. However, the residual wastes, including dirty plastics, paper cardboards and compost, were normally treated by other means, such as thermal treatment or disposal at landfills.

33. The Chairman considered that the public would expect the IWWMF to include technologies other than thermal technology to make it a truly integrated one. He considered that there was scope for further expanding the scale and scope of sorting and recycling. Dr Lee Potts explained that the expansion could be made possible if outlets of the waste from the MBT plant could be expanded. For example, the combustible rich fraction of waste could be further refined by chopping up plastics and papers to produce refuse-derived fuel. The end products could then be fed into a cement plant or power station as an alternative fuel. The digested residue from a MBT plant could be used for landfill restoration.

34. A Member said that his understanding of the IWWMF included an organic waste treatment plant plus a thermal treatment plant or a MBT plant. A delegation of the Council paid a study visit to the Netherlands and Germany in 2006 to acquire information on management of MSW. In view of the unsatisfactory operation of the MBT plant which the delegation visited in Germany, the delegation recommended that the MBT method for un-sorted and mixed MSW should not be used. Mr Albert Lam clarified that a separate organic waste treatment facility to be located at Siu Ho Wan was proposed for treating organic waste.

35. In reply to a Member's enquiry about the purpose of setting up a demonstration scale of sorting and recycling MBT plant, Mr P H Lui explained that the proposal of the IWWMF with incineration as the core technology plus a sorting and recycling plant as a component of the IWWMF was based on the advice of the Advisory Group on Waste Management Facilities (AG). For the current technology review, the main purpose was to identify the most appropriate thermal treatment technology as well as sorting and recycling technology. The review recommended that moving grate incineration technology be adopted as the core technology while MBT was proposed for the sorting and recycling plant as a component of the IWWMF. MBT was a popular technology in Europe in recent years. It should be noted that if no thermal or biological treatment was conducted on the mixed MSW, the organic residual would not be stabilized and when disposed of at landfills it would generate leachate with high pollutant levels as well as methane which was a strong greenhouse gas.

36. A Member considered that while incineration technology was necessary in view of the land problem in Hong Kong, the resources devoted to the MBT plant could be deployed to strengthening public education on household recycling. He recalled that the MBT technology was not included in the recommendation of the AG. Mr Vincent Tang said that the AG recommended that the IWWMF should adopt a multi-technology approach with incineration as the major component of the IWWMF strategy. Application of MBT technologies could be considered at suitable scale under particular circumstances and as a component of the overall IWWMF strategy. Based on the recommendations of the AG, moving grate incineration technology was proposed as the core technology and MBT was proposed to be tested out in small scale to explore how far it could be applied in the future phases of the IWWMF.

37. The Chairman considered that the intention of having an integrated waste management approach comprising different technologies was to allow maximum opportunity for recycling before the waste was treated by combustion. Thus, a sorting and recycling facility as well as an organic waste treatment plant were recommended.

38. A Member enquired about operation of the MBT plant as a sorting and recycling facility. Dr Lee Potts explained that the process employed mechanical treatment to pre-treat the waste by reducing the size of waste and removing contaminants before the waste entered into the later biological treatment

stage for generation of biogas by anaerobic digestion and/or treatment by composting. For example, magnetic separator was used to sort out metal cans, current separator to sort out non-ferrous metals like aluminum and infra-red separator to sort out plastic bottles. MBT could help maximize the amount of recyclables to be captured from the MSW. In Europe, MBT served as a half-way house and allowed recovery of more waste for recycling and digestion of the organic part.

39. A Member asked whether the MBT would enable the increase in the amount of recyclable waste and hence reduce the amount of waste for incineration. Dr Lee Potts explained that MBT could reduce the amount of waste for incineration if the recyclables, such as dirty plastics, paper cardboards and organic waste could be sorted out and consumed by the market, thus reducing the mass of waste for incineration.

40. The Chairman drew Members' attention to the recommendations of the delegation after the study visit to the Netherlands and Germany in 2006 as recorded in ACE Paper 11/2006. One of the recommendations was that for the treatment of waste, mechanical sorting and recycling plants could be used for source-separated mixed recyclable waste. Based on the German experience, the MBT method for un-sorted and mixed MSW should not be used. Given the importance of the IWWMF and the need to consider the issue in context and from a holistic point of view, the Chairman suggested that the Council would not make a recommendation regarding the sorting and recycling facilities at this stage and the issue be further examined by the Waste Management Subcommittee by taking into account previous discussions and recommendations of the Council and further information provided by the Administration. The Subcommittee would then report its findings and recommendations to the full Council for consideration. The meeting agreed to the approach.

41. On the associated facilities of the IWWMF, the Chairman enquired about the funding arrangement and long-term management of the facilities. Mr Albert Lam explained that it would depend very much on the type of facilities to be built. The construction cost would be included as part of the project cost and the facilities would probably be run by the contractor of the IWWMF. Ms Anissa Wong said that the purpose of the associated facilities was to make good use of the energy generated from the incinerator for the benefit of the community. The facilities set out in the paper were only preliminary options

proposed by the consultants having regard to the amount of energy level and overseas experience. Whether the associated facilities should be operated as part of the overall project of the incinerator or operated separately was yet to be determined in light of the facilities selected. The District Councils and public concerned would be consulted on the facilities and design.

42. A Member considered that the Government should cooperate with local universities in training the required expertise in developing waste treatment technologies and establishing research centres and laboratories for the purpose. Another Member considered that more options for associated facilities should be explored for consideration by the stakeholders and public. Based on the few proposed preliminary options, it might give an impression that the location of the IWMF had been pre-determined.

43. A Member suggested making use of the creativity of the private sector to come up with good ideas of utilizing the energy generated and meeting the needs of the community in developing the associated community facilities. It would be a waste for providing some community facilities which were not used. A Member made some suggestions on the associated community facilities, such as setting up barbeque sites with free electric stoves to attract visitors similar to those in Australia, allowing social enterprises in the district to utilize the hot water for laundry service to create job opportunities, and utilizing the excessive carbon dioxide (CO₂) generated from the incinerator for community farms as increase in CO₂ concentration in green houses could increase crop yield. Another Member suggested providing free electricity to the nearby households. Dr Ken Luk thanked for the suggestions and would explore the feasibility of the ideas under the project.

44. The Chairman summarized Members' views as follows –

- (a) on the basis of the information provided, the Council had no objection to employing moving grate incineration technology as the thermal treatment technology for further consideration;
- (b) given the importance of the IWMF and the need to consider the issue in context and from a holistic point of view, the Waste Management Subcommittee would examine the proposal on the sorting and recycling facilities in greater detail taking into account

previous discussions and recommendations of the Council, and report the findings and recommendations to the full Council for consideration;

- (c) the Council welcomed the proposal of setting up associated community facilities to make good use of the energy generated from the incineration facility. More creative ideas would be necessary on the type of facilities to be selected as the facilities should be meaningful and welcome by the community. Views of the community and stakeholders concerned should be seriously considered on the proposal and detailed design; and
- (d) the Council considered that it was essential to put the IWMF in the context of an integrated waste management framework set out in the “Policy Framework for the Management of Municipal Solid Waste (2005-2014)”. For the IWMF, the public would expect a host of “integrated” technologies other than the thermal technology in order to maximize the recycling rate.

Agenda Item 5 : Study on land use planning for the Closed Area – Draft Development Plan

(ACE Paper 23/2009)

Agenda Item 6 : North East New Territories New Development Areas – Planning and Engineering Study – Stage Two Public Engagement

(ACE Paper 24/2009)

45. The Chairman informed Members that the Planning Department (PlanD) would seek Members’ views on the land use planning for the Closed Area (FCA Study) under agenda item 5. The PlanD consulted the Council on the Draft Concept Plan under Stage 1 Community Engagement in June 2008. This was the second stage of the two-stage community engagement. For the North East New Territories (NENT) New Development Areas (NDAs) planning and engineering study (NDA Study) under agenda item 6, the PlanD and Civil Engineering and Development Department consulted the Council on the planning and development framework for the NDAs in January 2009. This was the second stage of the three-stage Public Engagement. As the two agenda items were closely related and would be presented by the same consultancy team, the

meeting agreed to combine the presentation and discussion of the two items for a more efficient and fruitful discussion. The Chairman also informed Members that the Council received a written submission from the Hong Kong Bird Watching Society expressing objection to the development zoning for Long Valley, Hoo Hok Wai and San Tin. The submission had been circulated to Members before the meeting for information.

46. Mr C S Liu briefed Members on the background of the two Studies. The purpose of the paper on FCA Study was to seek Members' views on the Draft Development Plan which would guide the conservation and development of the land to be released from the Frontier Closed Area. The plan focused on conservation with sustainable development. The purpose of the paper on NDA Study was to seek Members' views on the Preliminary Outline Development Plans formulated for the proposed Kwu Tung North, Fanling North and Ping Che/Ta Kwu Ling NDAs which focused on sustainable development with conservation element. Mr Joseph Ma briefed Members on the details of the two Studies.

47. A Member supported the approach of conserving the Closed Area with some minor development and developing the NDAs with conservation element. He was pleased to note the Government's commitment to preserve the area along the Closed Area despite the rapid development in Shenzhen. He suggested combining the design of the Closed Area and NDAs by avoiding large structures or supporting infrastructures in the Closed Area and moved them to the NDAs. He also suggested making efforts to revitalizing Fanling old town and Luen Wo Hui instead of only developing Fanling North which would help developing Fanling as a whole and boost the local economy.

48. A Member considered that the Closed Area was a unique and extremely sensitive area with wetland conservation area, ecological corridor and Lok Ma Chau Loop. Caution should be exercised in planning any development in the area in different aspects. Firstly, there was uncertainty on the behaviour of the natural environment in facing development in view of the lack of sufficient baseline information. Secondly, the term "eco" was often used, such as eco-lodge and eco-tourism, but they were not well-defined. It was necessary to have a clear specification as it would mean different footprints and different degrees of development. Thirdly, care should be exercised and feasibility studies should be conducted for the implementation of public-private partnership (PPP) conservation scheme. Fourthly, there were serious problems of illegal dumping

and landfilling in the New Territories in the past years, causing degradation of the environment. This problem might deteriorate with the opening up of land for development. Policing was important to guard against the change of land use. Finally, given the large scale of the two projects, more time had to be taken for careful planning and implementation of details to avoid the problems brought about by the rapid development of new towns in the 1970s and 1980s. Aesthetic design was important to blend the structures into the natural scenery.

49. The Chairman shared the view that the areas affected were ecologically important and Government should be very cautious on the instruments to be used to achieve the planning intentions. Alternative instruments should be considered in the event that PPP could not work.

50. A Member enquired about the proportion of the Closed Area being developed. Mr Joseph Ma said that over 70% of the area in the Closed Area would be for conservation purpose. The proposed development, mainly for recreational and very low density residential uses in the central portion with villages and flat land, accounted for about 30% of the area. Mr Davis Lee added that development in the Closed Area was mainly very small scale type for enhancing conservation and recreational purpose while residential development was very limited.

51. A Member did not agree to opening up the Closed Area until there was effective mechanism to deal with problems of illegal dumping and development, especially on agricultural land. He did not support designating the Hoo Hok Wai wetland as “Other Specified Uses (Comprehensive Development and Wetland Enhancement Area)” (“OU(CDWEA)”) as it meant that a certain degree of development would be allowed in the area. He asked whether Hoo Hok Wai was within the Wetland Buffer Area (WBA) as small-scale development outside WBA would not be covered by the Environmental Impact Assessment Ordinance (EIAO). Another Member asked whether San Tin would also be zoned as “OU(CDWEA)” as Hoo Hok Wai and San Tin should be preserved. He also asked whether housing development would be allowed in areas zoned as “OU(CDWEA)” as it would bring about disastrous impacts.

52. Ms Jacinta Woo explained that Hoo Hok Wai was not within the WBA of Deep Bay. The proposed designation of Hoo Hok Wai as “OU(CDWEA)” was similar to the existing zoning of the fish ponds in the San

Tin Outline Zoning Plan. The intention of the proposal was to preserve the wetland area and at the same time to provide some incentives to the landowners to come forward with a long-term management plan for the area. Under the “OU(CDWEA)” zoning, small-scale development might be permitted upon planning application. Through the planning application system, the project proponents would be required to carry out impact assessments, including an ecological impact assessment, for consideration by the Town Planning Board. The project proponents would also be required to submit a long-term management scheme including the long-term maintenance and management plan as well as monitoring and implementation mechanism.

53. A Member was concerned about the proposed zoning as small-scale development outside the WBA would not fall under the scope of EIAO and thus there was no means for the Council to scrutinize the environmental impacts of the development. He suggested including Hoo Hok Wai wetland into the WBA so that any development in the area would be subject to the EIAO.

54. The Chairman noted that there was a proposal of preserving the Long Valley as a Nature Park in the previous NENT NDA Study. Ms Jacinta Woo explained that a separate ecological survey for the Long Valley had been conducted during the current NDA Study. The current proposal in the Preliminary Outline Development Plans was to designate it as “Other Specified Uses (Comprehensive Development and Nature Conservation Enhancement Area)” (“OU(CDNCEA)”) which was slightly different from the proposal of Nature Park and with a similar planning intention as the proposal for Hoo Hok Wai. The intention was to preserve the area while allowing some small-scale development in order to provide some incentives to the land owners to come forward with a long-term management plans for the wetland area. A majority of the area was under private ownership.

55. A Member expressed grave concern over the development zoning for the Long Valley. In view of the heated debate over the development in the Long Valley in 2000, the Government committed to zone the area as a nature reserve for preservation and conservation purpose. By changing the zoning of the Long Valley, it would open up opportunities and expectations for private sectors to develop the areas. He queried why the Government would need to depend on private sectors to preserve the unique and highly ecologically important areas. It was worthwhile for the Government to preserve the nature reserve with

public financial resources in the interest of the public. He raised objection to changing the zoning of the Long Valley, Hoo Hok Wai and San Tin by mixing the element of development into nature conservation. The proposed zoning would also cause confusion to the public and developers. Another Member agreed that the proposed zoning would create hurdles for preserving the area. With the bitter experience of the Spur Line case in the Long Valley, the definition of the zoning should be clear and well-defined.

56. A Member made a comparison between the proposed plan and a map of the AFCD in 2004 and noted a substantial change on the demarcating line between the Long Valley and Ho Sheung Heung. He agreed with another Member that the natural treasure of the Long Valley, Hoo Hok Wai and San Tin would be endangered with the proposed change in zoning. He did not support the proposed rezoning.

57. A Member was disappointed that the Government dropped the idea of preserving the Long Valley as a Nature Park. Given that a majority of the area involved private ownership, the Government would be the only party which could have the resources to preserve the area as a Nature Park. He suggested designating the Long Valley as a Nature Reserve and land owners in the area could be allowed to have some small-scale development outside the Long Valley. Otherwise, batches of development would be found within the Long Valley.

58. Ms Jacinta Woo explained that the high ecological value of the Long Valley was fully recognized and the planning intention was still to preserve it. The current proposal was to strike a balance between conservation and development to ensure a long-term management of the area. The resumption of the whole area by the Government would have far-reaching legal and financial resource implications. The proposed “OU(CDNCEA)” zoning would ensure that a comprehensive rather than fragmented plan for development and management of the whole area would be put in place.

59. The Chairman considered that the proposed zoning was not clearly specified and it would be difficult to achieve the intention. Ms Jacinta Woo explained that there was existing mechanism under the Town Planning Ordinance in that the project proponent would be required to submit a planning application for any development, including a comprehensive plan for the whole area.

60. A Member considered that the non-in-situ land exchange approach which had been successfully implemented in many other countries was not sufficiently explored in the planning study. Given the multiple ownership of the area, it would be difficult for the private owners to propose a comprehensive management plan for the whole area. It would not be meaningful to have only piece-meal conservation. It would set a bad precedent to give up the proposed Nature Park. There were regrets in the community in the past for not making use of the non-in-situ land exchange approach to preserve ecologically important areas.

61. The Chairman considered that it was important not only to maintain the ecological integrity of the area but also the hydrological regime as the loss of water would affect the wetland. Construction works, including sewage and drainage channel works, would disrupt the hydrological regime of the region.

62. A Member was pleased to note that farming was covered under the plans but it seemed to be restricted to leisure farming. He suggested promoting urban agriculture to produce safe and quality fish and crops which would also help create employment opportunities.

63. A Member was pleased to note the design of cycling tracks in the NDAs. However, the cycling tracks should not be limited to recreational purpose and promotion of tourism but also for the use of residents in the areas. There were complaints in other new towns such as Tseung Kwan O that the design of cycling tracks did not facilitate the use by residents.

64. The Chairman summarized Members' views as follows –

- (a) the Council supported the principles of sustainable development and conservation in the plans and considered that it was of paramount importance that the ecological function and integrity of the affected areas should be maintained and enhanced;
- (b) given the strategic location and uniqueness of the Closed Area in terms of its ecological value and landscape, the Council considered that the right instruments and mechanisms should be identified and adopted for implementation of the conservation and development initiatives to achieve the planning intentions;

- (c) the Council was disappointed that the concept of preserving the Long Valley as a Nature Park was dropped and the Council did not support the proposed rezoning of the Long Valley as “Other Specified Uses”. The Council also had reservation on designating Hoo Hok Wai as “Other Specified Uses”. Without clearly specifying the uses in the areas, it would be difficult to achieve the intention of preservation and would give rise to development pressure. There was also insufficient information on the instruments to be used for achieving the goal of comprehensive conservation and long-term management in the areas; and
- (d) the Council urged the Administration to take into account the comments of the Council for designing and building a sustainable environment for the Closed Area and a sustainable community for the NDAs, including minimizing impact to the hydrological regime, promoting urban agriculture, building cycling tracks for residents, putting in place enforceable mechanism to deal with illegal dumping and landfilling, with a view to minimizing adverse environmental impacts and striking a balance between conservation and development.

Agenda Item 7 : Any other business

Site visit to the Lions Nature Education Centre and Geopark

65. The Chairman informed Members that the site visit to the Geopark had been re-scheduled to 18 December 2009 pm. In addition to the High Island Geo-Area, the opportunity was also taken to visit the Rock Gallery and Geopark Visitor Centre of the Lions Nature Education Centre which were newly opened. Members were encouraged to join the visit.

Vote of thanks

66. As the meeting was the last one of the year, Ms Anissa Wong took the opportunity to extend, on behalf of the Secretary for the Environment and colleagues of the bureau/department, her heartfelt gratitude to the support and

invaluable advice of the Members, particularly to the Chairman whose terms of office would expire following his kind agreement last year to extend his service for one more year. Under the Chairman's remarkable leadership, the Council had dealt with many difficult and controversial issues, especially in upholding environmental considerations in the pursuit of sustainable development.

67. The Chairman expressed his thanks to the support and contribution of Members and the trust of the Administration. He was confident that the ACE would continue to "Advance with Concerted Efforts" and be the "Agent of Change for the Environment".

Tentative items for discussion at the next meeting

68. The agenda was being compiled. Members would be informed in due course.

Agenda Item 8 : Date of next meeting

69. The next meeting was scheduled for 12 January 2010.

**ACE Secretariat
December 2009**