Annex B

EIA report on
"Development of Integrated Waste Management Facilities Phase 1"

A summary of issues discussed by the EIA Subcommittee
at the meeting on 21 March 2011

The Environmental Impact Assessment (EIA) Subcommittee discussed the EIA report on "Development of Integrated Waste Management Facilities (IWMF) Phase 1" at its meeting on 21 March 2011. The issues discussed are summarized below.

Site selection

2. Some Members noted that the EIA report included the assessment of three scenarios based on two potential sites for the development of the IWMF, namely Middle Tsang Tsui Ash Lagoon (TTAL) in Tuen Mun and an artificial island near Shek Kwu Chau (SKC), without making recommendation on a preferred site. The Environmental Protection Department (EPD) advised that the content of the EIA report was in line with the EIA Ordinance and Technical Memorandum on Environmental Impact Assessment Process (TM). The purpose of the EIA process, as stated in the EIA Ordinance, was to provide for assessing the impact on the environment for certain projects and proposals, for protecting the environment and for incidental matters. As stipulated in the TM, an EIA study brief might cover more than one designated project. The detailed objectives and contents of an EIA report were also stipulated which did not include the identification or recommendation of a preferred option for a project development.

3. Some Members noted that the need for the second phase of the IWMF was still uncertain and it would depend very much on the resources provided and efforts made on the series of waste reduction measures. With concerted efforts to reduce waste at source, the need for developing the second phase of IWMF should be reviewed critically. It was necessary to build on the experience of the first phase of the IWMF and take into account the progress of the effectiveness of waste reduction measures in considering the way forward for further development of similar facilities. The assessment of two potential sites in the EIA study did not mean that both sites had to be used.

4. A Member expressed reservation on the scenario of developing the IWMF on the artificial island near SKC in view of the visual impacts of the development on the natural landscape and the permanent loss of marine habitat. The principle of avoidance

should be adopted to avoid permanent loss of marine habitat in the development given that there was an alternative site. Another Member considered that development of the IWMF at the TTAL site would have synergy effect in view of its close proximity to the West New Territories Landfill, power stations and Sludge Treatment Facilities.

5. EPD advised that the role of the Subcommittee was to give recommendations to the Council on the environmental acceptability of designated projects within the framework of the EIA Ordinance. In the current EIA report, the assessment on the environmental acceptability of all the three scenarios, rather than a preferred site, was required.

6. The meeting agreed that the discussion should focus on the assessment of the environmental acceptability, within the EIA framework, of the three scenarios based on two potential sites for the construction and operation of the IWMF, comprising a 3,000 tonnes per day (tpd) thermal incineration plant and 200 tpd mechanical sorting and recycling plant.

Need for the project

7. Some Members noted some comments of the public that the development of the IWMF might not be necessary if more efforts would be made by the community in reducing waste through avoidance, minimization and recycling. The project proponent explained that the development of the IWMF was one important measure of the three-pronged strategy to address the imminent waste management problem in a holistic manner as promulgated in the updated Action Plan on waste management in January 2011. With more efforts to reduce waste by avoidance and minimization at source, such as revising the MSW recovery target from 49% to 55% by 2015 and promoting waste recovery and recycling at the district level, there would still be a huge volume of waste left to be disposed of. The estimated net municipal solid waste (MSW) per day requiring disposal, taking into account the enhanced recycling rates of MSW to 55% by 2015 and the construction of two Organic Waste Treatment Facilities, would be about 7,500 tonnes, and hence the IWMF project would be needed. The project would reduce the bulk volume of MSW by 90% and help save the precious space of landfills which were anticipated to reach their maximum capacities in 2014 to 2018.

8. Some Members considered that the Action Plan promulgated in January 2011 did not cover the full spectrum of measures proposed in the "Policy Framework for the Management of MSW (2005-2014)". Definite timetables for implementation of other measures, such as Product Responsibility Schemes (PRSs) for plastic tyres and beverage bottles, should be set. The project proponent explained that actions were in full swing to

roll out the proposed measures but priority had to be accorded. In 2011, consultations would be launched on three major proposals, including the PRS for Waste Electrical and Electronic Equipment and MSW charging scheme. Efforts were being made to promote recycling of food waste which constituted about 30% of MSW. The Sludge Treatment Facilities and the first Organic Waste Treatment Facilities were scheduled for completion in 2013 and 2014 respectively. Major education campaigns were being launched to reduce waste at source. Despite the implementation of measures at different fronts, there would still be a huge volume of waste requiring disposal. Bulk waste treatment and disposal would be inevitable.

9. On the MSW recovery rate in overseas countries, the project proponent explained that for Germany and the Netherlands which could achieve a high recovery rate of about 66% after implementation of waste charging schemes, they still had to employ incinerators to treat a large portion of the remaining waste.

10. On the need for the second phase of IWMF, the project proponent explained that it would depend very much on the effectiveness and progress of the waste reduction measures, such as MSW charging which was an effective measure in overseas countries. While the need for the second phase of IWMF would be further examined, it was necessary to plan ahead in view of the lead time required.

11. On the preferred sequence of the scenarios, the project proponent explained that on the assumption that the three scenarios under the EIA report were endorsed, the inclination was to adopt the SKC scenario for the Phase 1 of the IWMF. Apart from environmental concerns, there were other considerations, such as the overall spatial distribution of waste treatment facilities in Hong Kong and the distance for transporting waste from Refuse Transfer Stations over the territory by ship to the future IWMF.

Design of the project

12. On the use of technology to ensure complete combustion of waste and organic pollutants, the project proponent explained that the proposed moving grate incineration technology would be equipped with advanced 3T technology, i.e. high temperature of at least 850℃ to completely destroy organic pollutants, high turbulent currents to achieve complete combustion and at least two-second residence time for the flue gas at 850℃ or above to achieve complete combustion. The high temperature of 850℃ complied with the requirement of the European Commission's Waste Incineration European Union Directive (the EU Directive). Coupled with the advanced flue gas cleansing and control system which included dry/semi-dry scrubber for acid gas removal, powder activated carbon injection for mercury and dioxin removal, bag filter for

particulates removal and selective catalytic reactor for nitrogen oxides (NO_x) removal, the emissions from the IWMF would fully meet the target emission limits stipulated in the EU Directive. For gasification technology which required a higher temperature of about 1,300℃, it had been seriously considered by the Advisory Group on Waste Management Facilities and the current project consultant. It was concluded that gasification was not suitable for the proposed IWMF development and was not recommended in view of its limited track record for large scale MSW treatment and other limitations. The full Council was consulted on the IWMF technology review and gave its support on the proposed moving grate incineration technology in December 2009.

13. On the service life of the IWMF, the project proponent explained that the designed service life of major electrical and mechanical equipment of the IWMF was 20 years while that of civil structures was 50 years. The project operation period of 15 years mentioned in the Executive Summary of the EIA report referred to the term of the Design-Build-Operate contract arrangement which would be reviewed after the expiry of a contract term. Some Members suggested that flexibility should be allowed for upgrading the plant after a period of time to ensure the most advanced technology could be adopted.

14. On the design of the mechanical treatment plant (MTP), the project proponent explained that the IWMF would include a demonstration scale mechanical sorting and recycling facility with a design capacity of 200 tpd. Anaerobic digestion process would not be involved. The future Operator would be required to package all recyclables and sell them to the trade. Disposal of recyclables at landfills would not be allowed without permission and this would give economic incentives to the Operator to maximize the collection of recyclables for promoting the recycling industry.

15. On the risk of setting up a demonstration scale MTP, the project proponent explained that a demonstration scale rather than a full scale MTP was recommended by the full Council earlier in view of concerns such as marketability of the products recovered and operational issues. Given the successful experience of similar technology of a similar scale in overseas countries, it was anticipated the risk of setting up the plant was low. It would be useful to try out the feasibility of the operation in the local context and demonstrate the Government's commitment to recover useful materials from waste before final disposal by incineration.

16. On the contingency plan in case of technology failure, the project proponent explained that one of the main reasons to select moving grate incineration technology was its well-proven technology in terms of its capacity and reliability in

operation. There were over 900 moving grate incineration plants around the world. The operation data revealed that the technology could fully meet the standards on operational safety and environmental performance. The present outline design of the proposed IWMF consisted of six incineration process units with a design capacity of 600 tpd for each. During normal operation, only five units would be in operation while the remaining one would be shut down for regular maintenance. The plant would adopt stringent operational management control mechanism to ensure that industry best practices with reference to international standards and guidelines would be implemented. An emergency response plan would be formulated and properly implemented. All working staff in the plant would be well trained. As regards the design to cope with natural disasters such as earthquake, all the components of the IWMF would be designed and constructed according to local codes and international standards, including the need to cope with natural disasters.

Air quality impacts

17. On the detailed assessment of air quality impacts on air sensitive receivers (ASRs), the project proponent explained that the detailed analysis was presented in Section 3 of the EIA report while the impact assessment on health concerns was in Section 9. The results showed that even with the development of the IWMF concurrently at both TTAL and SKC sites, the impacts to the existing and planned ASRs would meet the relevant standards in all areas that might be impacted by the emissions, including Tuen Mun, Cheung Chau and Tung Chung. Under the TTAL scenario, for example, the predicted maximum cumulative impact of annual average nitrogen dioxide (NO_2) at ASRs in Tuen Mun was 49 $\mu g/m^3$ (against the standard of 80 $\mu g/m^3$). The contribution of emissions from IWMF against all emission sources was 0.023 $\mu g/m^3$ (0.05%). In the co-existing scenario, the predicted maximum cumulative impact of annual average NO_2 at ASRs on North Lantau was 50 $\mu g/m^3$. The contribution of emissions from IWMF was 0.135 $\mu g/m^3$ (0.27%).

18. Some Members noted that daily average and half-hourly average of air emission limits under the EU Directive were adopted. For the half-hourly average limits, the 100% of time values (Column A limits) was adopted but the more stringent 97% of time values (Column B limits) was not adopted. The project proponent explained that Column A limits were for full time compliance while Column B limits were for compliance in 97% of the time which would allow 3% of the time to exceed relevant standards. Under the EU Directive, compliance with either set of limits was acceptable. To facilitate operation of the plant and better understanding of the general public, Column A limits were adopted as in the case of the UK. Moreover, verification of

compliance under Column B limits would depend on the number of samples collected which would cause operational difficulty. As the adoption of Column B limits would imply that 3% of the time would not comply with emission limits, Column A limits were used to give a higher level of confidence to the public. With implementation of the state-of-the-art incineration technology, emissions for parameters such as NO_x could fulfil both Columns A and B limits. The findings of the EIA report had presented the worst-case scenario. The project proponent undertook to further explore the possibility of adopting Column B limits on the understanding that the requirements under the EU Directive had been complied with.

19. On the control of dioxin emission in the incineration process, the project proponent explained that the guidelines under the EU Directive would be strictly followed. Dioxin could be totally decomposed at about 800℃ and the temperature inside the incineration unit had to be sustained at or above 850℃ and the retention time for flue gas would be more than two seconds. The old type of incinerators was unable to remove all dioxin as the temperature in the incineration units was not sufficiently high and there was not sufficient residence time of the flue gas at high temperature before it came out. In the latest incineration technology, auxiliary burners would be activated if any part of the chamber fell below 850℃ so as to sustain the temperature at 850℃ to ensure complete destruction of dioxin. As an added insurance measure, activated carbon would be injected to remove any trace amount of organic pollutants that might remain in the flue gas. Overseas experiences showed that the dioxin level was far below the limit with the use of the latest incineration technology.

20. On measures to ensure compliance in case of malfunctioning of any part of the control system, the project proponent explained that there was a continuous emission monitoring system capturing data and a standby system. In the event of exceedance of the action limits, the interlock system would be activated to stop the feeding of MSW into the incineration unit. As each incineration unit would be equipped with its own flue gas cleansing and control system, the incineration unit with problem would be shut down without affecting the overall operation of the IWMF.

21. Regarding the inclusion of potential emissions arising from the Hong Kong-Zhuhai-Macau Bridge (HZMB) in assessing the cumulative air quality impacts, the project proponent explained that all vehicular emissions had been included in a local model for assessing the air quality impacts within the hot spot areas.

22. On the fuel used by incineration units, the project proponent explained that no fuel would be required as energy would be generated during the incineration process

during normal operation of the incineration units. Only a small amount of fuel would be required to sustain the temperature during the start up and shut down of the units and the future Operator would be required to use low sulphur diesel fuel. The temperature of flue gas at the tip of the stack before discharging to the atmosphere was estimated to be about 140℃.

23. On the possibility of adopting measures to off-set carbon footprint generated by operation of the IWMF, the project proponent explained that operation of the IWMF would be a waste-to-energy technology and would recover energy for use without causing additional carbon emission. While the combustion of MSW would generate carbon dioxide (CO_2), the IWMF would generate electricity and thus reduce reliance on fossil fuels for power generation. As stated in the consultation document for "Hong Kong's Climate Change Strategy and Action Agenda" promulgated in 2010, the IWMF could help reduce a net amount of 440,000 tonnes of greenhouse gas emissions per year. It was mainly achieved by avoidance of fossil fuel burning and generation of methane at landfills, which had 21 times higher greenhouse gas potential than CO_2.

24. On the compliance of predicted air quality impacts with the proposed new set of Air Quality Objectives (AQOs) under study, the project proponent explained that meeting the existing AQOs remained the statutory requirements under the EIA Ordinance until the new set of AQOs was issued to replace the existing set. Nonetheless, an administrative exercise was conducted and concluded that the predicted concentrations at the ASRs in the vicinity of the IWMFs such as Tsang Tsui, Shek Kwu Chu, Cheung Chau and South Lantau would comply with the proposed new set of AQOs. Moreover, the EIA study recommended the adoption of a daily average NO_x emission limit of 100 mg/m^3 which was more stringent than that stipulated in Hong Kong and EU for waste incineration.

<u>SKC site</u>

25. Regarding air quality impacts on Cheung Chau, the project proponent explained that an air quality assessment was conducted for each hour of a year based on historical meteorological records of the Hong Kong Observatory. For the SKC site, about 75% of the wind direction in a year was mainly north-easterly. The wind direction for the remaining 25% of a year was mainly south-easterly or south-westerly. The EIA study predicted that at the top of the IWMF stack, which was 150 m above ground, the south-westerly wind that would blow directly from the project site towards Cheung Chau occurred for about 8% of the time in a year. With the 150 m high stack and the separation of about 3.5 km to 5 km between the stack and Cheung Chau, the emission would become

vastly diluted when reaching the ASRs at Cheung Chau under the south-westerly wind. The predicted maximum annual average cumulative concentration of NO_2 at Cheung Chau, including all other sources, was 26 $\mu g/m^3$ (against the standard of 80 $\mu g/m^3$), the 24-hour average concentration was 87 $\mu g/m^3$ (against the standard of 150 $\mu g/m^3$), and the hourly average concentration was 176 $\mu g/m^3$ (against the standard of 300 $\mu g/m^3$) under the worst case scenario.

Ecological impacts

TTAL site

26. Regarding the ecological impacts on the Middle Lagoon, the project proponent explained that 1.2 ha of pond habitat would be created on the western side of the site and 4.5 ha of wetland habitat at the unoccupied Middle Lagoon on the southern side would be enhanced as Little Grebe habitat as temporary compensation to the loss of 1.98 ha breeding ground of Little Grebe. They noted some Members' comments that the proposed pond might not be conducive to ecological enhancement due to its elongated shape and would consider the layout and provide more wetland habitat features to enhance its ecological function in the detailed design.

27. On the possibility of putting in place a Woodland Enhancement Plan for areas in the vicinity of the project site, such as Castle Peak, which were sparsely vegetated, the project proponent explained that woodland enhancement was not required for the project under the TM. Nonetheless, the suggestion would be considered under greening enhancement initiatives outside the context of the EIA framework.

SKC site

28. Regarding the impacts of the project on Finless Porpoise, the project proponent explained that based on the data of long-term monitoring programmes commissioned by the Agriculture, Fisheries and Conservation Department (AFCD) and other project proponents as well as a 6-month survey under the EIA study, the key potential direct impact of the project was the permanent loss of 31 ha of habitat for Finless Porpoise as a result of the proposed reclamation works and breakwater construction. The designation of a marine park of about 700 ha in the waters between Soko Islands and SKC was proposed to safeguard some important habitats for Finless Porpoise. Additional enhancement measures such as deployment of artificial reefs would be implemented within the proposed marine park which could benefit the Finless Porpoise and marine ecosystem in the area as a whole. For indirect impacts such as acoustic disturbance and collision with vessels, the impacts would be mitigated to acceptable levels with the implementation of appropriate measures, such as monitored

exclusion zones and scheduling construction works which might produce underwater acoustic disturbance outside the months with peak Finless Porpoise occurrence. Finless Porpoise had very distinct seasonal occurrence in Hong Kong as revealed by AFCD's monitoring data of the past 15 years. They occurred in the South Lantau area mostly from December to May and only a handful of sightings were recorded from June to November. By scheduling the most disturbing construction works to between June and November, the impact on Finless Porpoise could therefore be considerably minimized.

29. On previous experience in marine mammals migrating to the marine parks designated for them, the project proponent explained that the objective of designating the marine parks was not to induce migration of the Finless Porpoise, but to conserve areas known to be important for their continual survival. While the project site was one of the important habitats in Hong Kong, they also heavily used the waters around Po Toi Island, South of Lamma Island, Soko Islands and waters between Soko Islands and SKC. Observations of Chinese White Dolphins over the last decade at the Sha Chau and Lung Kwu Chau Marine Park, which was designated as a compensation for the impact caused by the temporary "Aviation Fuel Receiving Facility" at Sha Chau, showed that designation of a marine park was an effective measure to safeguard and enhance habitats of Chinese White Dolphin by providing a better feeding ground and protecting them from high-speed vessel traffic. With reference to the experience in planning the proposed marine park in the Brothers Islands for the "Hong Kong-Zhuhai-Macao Bridge Boundary Crossing Facilities", proper scientific protocol and a set of criteria and parameters would be used to map out the appropriate boundary of the marine park.

30. On the monitoring programme of Finless Porpoise, AFCD advised that the Environmental Monitoring and Audit programme included a comprehensive programme to verify the impact evaluation and assess the effectiveness of the recommended mitigation measures for Finless Porpoise during construction and operational phases. The results of the monitoring would be submitted to the EPD and AFCD.

31. Regarding the permanent loss of 15.9 ha of fisheries spawning and nursery ground, the project proponent explained that the loss of fisheries ground would be compensated by the proposed designation of the marine park. The EIA recommended the deployment of artificial reefs with various micro-habitats and release of fish fry within the proposed marine park as enhancement measures for marine habitats. The artificial reefs provided shelter and nursery ground for the released fish fry.

32. On the timing of designating the proposed marine park, the project proponent explained that a detailed study would be commissioned to delineate the boundary of the marine park subject to the approval of funding in early 2012. Taking into account the necessary statutory process and consultations, it was planned that designation

of the marine park would go in parallel with the completion of the construction works of the IWMF in 2018.

33. On the procedures for designating the proposed marine park, AFCD advised that statutory requirements for the designation of a marine park were laid down in the Marine Park Ordinance. In gist, approval from the Executive Council (ExCo) had to be obtained in the first place, a draft map on the boundary of the marine park had to be prepared and consultation with stakeholders, including the Country and Marine Parks Board (CMPB) and District Councils concerned, had to be conducted. The draft map had to be gazetted for public inspection for two months and objections had to be considered by CMPB. The ExCo's approval of the draft map had to be obtained in light of objections and the ExCo's approval on the Order to designate the marine park would be required. Approval from the Legislative Council would then be required on the Designation Order. The time frame for the process was estimated to be at least 25 months. In view of the proximity of the proposed marine park and the project site, it would be prudent to start the designation of the marine park after the completion of the reclamation works as disturbances such as vessel movements during the construction stage might affect the designation of the marine park.

34. On the experience of coral translocation, the project proponent explained that there were successful experiences on coral translocation in various local infrastructure projects. An example of coral translocation in the Kau Sai Chau golf course extension project was included in Section 7b of the EIA report. A total of 89 coral colonies were transplanted and the successful rate was about 93%. Reference would be made to the experience. For the current project, 198 coral colonies of small sizes and low coverage were identified. Before coral translocation, a survey would be conducted by experienced specialists to map out the exact number and location and to evaluate their suitability for translocation. A detailed coral translocation plan would be prepared. A post-translocation monitoring plan would be implemented to monitor their health status regularly.

35. Regarding the impact of the project on terrestrial biodiversity on SKC, such as species of snake, lizard and butterfly of conservation interest, the project proponent explained that the artificial island would be separated from SKC by a water channel. It would not have direct impact on the territorial area and natural shoreline of SKC. Assessments under the EIA study also confirmed that the project would not have any significant indirect impact on the territorial fauna of SKC. As regards the White-bellied Sea Eagle (WBSE), the known nesting site of WBSE was on the northern side of SKC outside the Study Area. Furthermore, WBSE was a highly mobile species and similar habitat was available in the vicinity, the EIA study therefore confirmed that the impacts were acceptable with the implementation of mitigation measures such as avoidance of noisy works during their breeding season.

36. On the possibility of providing a green belt surrounding the IWMF, the project proponent explained that more greening measures on the artificial island would require the increase of reclamation size which was highly undesirable. Recommended green features included rooftop and vertical greening along the building façade, adoption of natural materials with recessive colour and provision of sky gardens between the stacks. Natural rocks with similar colour as the SKC rocky shore would be adopted for the construction of breakwater and artificial shoreline.

37. On the adoption of the principle of avoidance in order not to lose the permanent habitat of Finless Porpoise, the project proponent explained that the principle of EIA was to avoid adverse impacts wherever possible in areas with ecological importance, and when avoidance was inevitable, effective mitigation measures should be put in place. Given that the affected area was not a potential or designated marine park and a package of measures was proposed to effectively mitigate the adverse ecological impacts, the EIA study did follow the principles of EIA and requirements set out under the TM.

38. Regarding the possibility of dropping the SKC scenario given the need for reclamation and the availability of a land option under the TTAL scenario, the project proponent explained that the purpose of the EIA was to assess the environmental acceptability of the three scenarios. For planning purpose in the long run, one or more of the sites might be required having regard to the volume of waste to be generated and effectiveness of waste reduction measures. With the implementation of a package of mitigation measures, the SKC scenario was considered environmentally acceptable and should not be excluded for consideration.

Water quality impacts

39. Regarding water outlet from the cooling system of the steam turbine for generating electricity, the project proponent explained that the waste heat would be re-captured for power generation and air-cooled condensation, rather than water-cooled condensation, would be used to minimize potential impacts on nearby water bodies due to discharge of cooling water.

40. On measures to prevent bio-fouling problem of the membrane in the desalination plant without using chorine, the project proponent explained that no anti-fouling chemicals such as chorine would be used in the desalination plant as an environmental measure. The membrane would be back-washed more frequently to solve the bio-fouling problem.

41. On the possibility of underestimating sources of sewage for the wastewater treatment plant as only 25 employees or visitors were assumed to use the staff canteen and 20 visitors were assumed to use community facilities per day, the project proponent explained that regular ferry services would be provided to facilitate the commuting of visitors between the plant and Cheung Chau. Visitors were encouraged to consume food in Cheung Chau. Moreover, the demand for reclaimed water for reuse would outweigh the wastewater to be generated and there would be sufficient capacity for the plant to cope with increased sewage sources. Some members anticipated that the demand for sanitary facilities of the Education Centre would increase with increasing number of visitors. The design capacity of the plant should cater for the demand to uphold the net zero discharge commitment. As regards the treatment of surface runoff, the project proponent confirmed that the design capacity of the wastewater treatment plant had taken into account the surface runoff which would be collected by a dedicated interception system.

42. On the use of treated effluent from the wastewater treatment plant, the project proponent explained that the treated effluent would be reused within the plant for landscape irrigation, cleansing, toilet flushing water and process water for incineration. The water would not be used for direct human consumption in view of perception of users rather than technical viability.

SKC site

43. On the water quality impact of reclamation, the project proponent explained that cellular cofferdam and breakwater instead of sloping seawall were proposed to minimize dredging and filling activities and associated water quality impacts. Large-scale sediment dredging would not be required. The cofferdam enclosing the reclamation area would be constructed prior to reclamation filling. Other mitigation measures would include the use of double silt curtains at the opening of cofferdam and control of dredging and filling rates to ensure that the water quality impact of reclamation would be localized. The EIA study had assessed the level of suspended solid elevation during construction phase and saline water discharge during operational phase and concluded that the water quality would comply with the Water Quality Objectives. The only sensitive receiver in the area was coral colonies near the coastline of SKC. As the proposed marine park was a few kilometers away from the reclamation site, the water quality impacts of reclamation on the proposed marine park waters would be minimal.

Waste management

44. Some Members noted that 22% of the MSW would become bottom ash and 4% become fly ash which would be disposed of at landfills. In overseas countries, bottom ash could be beneficially recycled as pulp-filling or substitute aggregate for construction blocks. The project proponent explained that bottom ash in the IWMF would be collected separately from the fly ash, as in the case of power plants, for recycling purpose. On the availability of a mechanism to ensure recycling of bottom ash on a regular basis, the future Operator would be required to draw up a detailed plan on recycling of bottom ash and other elements which would be incorporated into the final contract requirements.

45. Regarding monitoring of the quality of ash generated, the project proponent explained that there would be separate monitoring plans for bottom ash and fly ash. To confirm that the bottom ash and treated fly ash would not contain elevated heavy metal levels and as a precautionary measure, tests under Toxicity Characteristic Leaching Procedures would be carried out for each batch of bottom ash and treated fly ash to be disposed of at landfills at the initial stage of operation. If the test results confirmed compliance, the frequency of the tests could be adjusted.

<u>SKC site</u>

46. On the use of construction and demolition (C&D) materials from local source for reclamation of the artificial island, the project proponent explained that the reclamation works would use about 4 million tonnes of filling materials. Some Members suggested that the use of local public fills, including C&D materials, should be maximized for the reclamation to relieve the pressure of local public fills. The project proponent explained that while general public fills would be used as much as possible for the filling activities above the high water level, i.e. 2.5 mPD, the use of general public fills for any filling activity below the high water level would need to be carefully controlled to minimize potential impact to water quality as the fine content in public fill would generally be higher. Nevertheless, it was estimated that more than 50% of filling materials would be the local public fills. It would be a balanced approach in maximizing the use of local public fills and minimizing the potential water quality.

Landscape and Visual Impacts

SKC site

47. On the incompatibility of the IWMF with the natural landscape of SKC, the project proponent explained that the artificial island would be isolated from SKC with a water channel to avoid direct impact on the landscape resources and natural shoreline. The EIA concluded that no direct impact on the landscape resources and character of SKC was anticipated. In respect of visual impacts, the siting of the IWMF at the southwest corner of SKC would greatly reduce the visual impacts of the project on visual sensitive receivers (VSRs) on Cheung Chau. The people mostly affected would be VSRs in the Society for the Aid and Rehabilitation of Drug Abusers (SARDA) SKC Treatment and Rehabilitation Centre and travellers by sea in the area who were transient. A series of mitigation measures was recommended, including rooftop and vertical greening along the building façade, adoption of natural materials with recessive colour and provision of sky gardens between the stacks. Architectural and landscape design with emphasis on natural elements would be adopted to blend the plant into the surrounding green environment.

48. A Member was concerned about the incompatibility issue as the visual impact of the plant would still be prominent with the mitigation measures as the industrial nature was very different from the natural characters of SKC even if the artificial island was separated from SKC by a water channel. In comparison, the plant at TTAL would be more compatible with the industrial use in the vicinity. The project proponent explained that overseas experience, such as Denmark and France, showed that incinerators could be compatible with the rural landscape or countryside by adopting architectural and landscape design with emphasis on nature and greening. The Planning Department considered that with the implementation of mitigation measures, the visual impacts were acceptable. Actions would be taken to work with the Planning Department to ensure that the design of the plant would blend into the natural environment.

49. On the design and visibility of the stacks of the IWMF, the project proponent explained that different designs had been considered. The proposed design was that the six incineration units would be separated into two groups with two adjacent stacks against concrete windshield which were about 6 m apart. Green features would be planted on the platform between the two stacks to mitigate the visual impacts. Consultation with the Planning Department was conducted and the proposed design was considered preferable in terms of landscape and visual impacts. Consultations with potential VSRs and relevant District Councils were being conducted and their views, such as on the theme of the design, would be taken into account in the final design.

Communal Facilities

50. On the development of communal facilities by making use of the energy and electricity generated by the project, the project proponent explained that consultations were being conducted with the local community and stakeholders on the type of amenity and community facilities to be incorporated into the project by using energy and electricity generated gainfully.

51. Regarding the incorporation of educational elements into the IWMF, the project proponent explained that a state-of-the-art Environmental Education Center would be included in the IWMF to showcase the latest incineration technology to the public. Educational elements such as waste management, marine ecology and conservation would be incorporated.

SKC site

52. On the potential impacts on tourism, the project proponent explained that air quality assessment of the EIA study showed that the project would not have any significant adverse impacts on tourists. On the other hand, the project could have the potential to attract tourists to Cheung Chau as the Education Centre and modern design of the IWMF would be tourist attractions as shown in overseas experience. The proposed provision of regular ferry service running between the artificial island and Cheung Chau would help encourage visitors to stop over Cheung Chau. It was expected that the project would have positive effects on tourism and could create economic synergy for Cheung Chau.

53. On consultation with SARDA, the project proponent confirmed that they had been liaising closely with the management of SARDA on a regular basis on the potential impacts of the project on them as well as the opportunity for creating synergy in terms of transportation arrangement, construction of facilities and promotion of environmental education.

Conclusion

54. After discussion, the Subcommittee agreed to recommend to the full Council that the EIA report could be endorsed with some proposed conditions. It also made some recommendations. The Subcommittee agreed that there was no need to invite the project proponent to attend the full Council meeting.