Confirmed Minutes of the 96th Meeting of the Environmental Impact Assessment Subcommittee of the Advisory Council on the Environment held on 19 January 2007 at 9:30 am

Present:

Dr NG Cho-nam, BBS (Chairman)
Mr TSANG Kam-lam (Deputy Chairman)
Prof POON Chi-sun
Mr Edwin LAU
Dr MAN Chi-sum, JP
Dr YAU Wing-kwong
Prof LAM Kin-che, SBS, JP (ACE Chairman and non-EIASC Member)
Mr Markus SHAW (Non-EIASC Member)
Ms Josephine CHEUNG (Secretary)

Absent with Apologies:

Dr Dorothy CHAN, BBS
Ms Betty HO
Prof Paul LAM
Mr Simon WONG

In Attendance:

Mr Esmond LEE, JP	Deputy Director of Environmental Protection (4), Environmental Protection Department (EPD)
Mr Elvis AU	Assistant Director (Environmental Assessment), EPD
Dr WONG Fook-yee	Assistant Director (Country and Marine Parks), Agriculture, Fisheries and Conservation Department (AFCD)
Miss Sarah NG	Executive Officer (CBD), EPD

In Attendance for Agenda Item 3:

Mr Richard LANCASTER	Commercial Director, CLP Power HK Ltd. (CLP)
Mr Richard MORSE	Head of Environmental Strategy & Development, CLP
Mr Joseph LAW	Project Manager – HK Renewable Energy, CLP
Mr Michael LAU	Project Manager – Wind Energy, CLP
Ms Rebecca LUK	Business Strategy & Regulatory Manager, ExxonMobil Energy Ltd. (EMEL)
Mr Raymond CHEUNG	Senior Technical Advisor, EMEL
Dr Andrew JACKSON	Managing Director, ERM-Hong Kong Ltd. (ERM)

Mr Frank WAN	Technical Director, ERM
Mr Scott LANG	Senior Consultant, ERM
Mr Terence FONG	Senior Consultant, ERM
Mr Douglas SIMMONS	Associate Director, Atkins
Mr Simon HUI	Principal Environmental Protection Officer, EPD
Mr Colin KEUNG	Senior Environmental Protection Officer, EPD
Mr Cary HO	Senior Nature Conservation Officer (South), AFCD

In Attendance for Agenda Item 4:

Mr Richard LANCASTER	Commercial Director, CLP Power HK Ltd. (CLP)
Mr John CULLEN	Project Director - LNG Project, CLP
Mr Ken MINER	Project Manager - LNG Project, CLP
Mr Richard MORSE	Head of Environmental Strategy & Development, CLP
Mr Jim POWER	Technical Manager – LNG Project, CLP
Ms Daisy CHAN	Public Affairs Manager - Environmental Communications (Commercial Projects), CLP
Mr David HO	Technical Director, EMEL
Mr Raymond WONG	Communications Manager, Public Affairs Shared Services – HK & South China, ExxonMobil HK Ltd.
Mr James HALL	Research Scientist, ExxonMobil Upstream Research Co.
Dr Andrew JACKSON	Managing Director, ERM
Dr Robin KENNISH	Director, ERM
Mr Craig REID	Senior Consultant, ERM
Mr Scott LANG	Senior Consultant, ERM
Dr Andrew WALTON	Senior Consultant, ERM
Mr Terence FONG	Senior Consultant, ERM
Mr Richard COLWILL	Managing Director, BMT Asia Pacific Ltd.
Mr Stephen SHAW	Oil & Gas Business Leader (DNV)
Dr Bernd WURSIG	Professor of Marine Biology
Dr Thomas JEFFERSON	Marine Mammal Biologist
Mr Eric CHAN	Assistant Director (Conservation), EPD
Mr Tony CHEUNG	Acting Principal Environmental Protection Officer (Strategic Assessment), EPD
Mr Vincent TIN	Environmental Protection Officer (Strategic Assessment)12, EPD
Mr Luke WOO	Environmental Assessment Professional (Strategic Assessment)2, EPD
Mr Cary HO	Senior Nature Conservation Officer (South), AFCD
Mr Joseph SHAM	Senior Marine Conservation Officer (West), AFCD
Mr WONG Sek-cheung	Chief Engineer/Gas Production and Supply, Electrical and Mechanical Services Department (EMSD)

Mr FUNG Kin-yi	Senior Engineer/Gas Systems 1, EMSD
Mr CHUNG Siu-man	General Manager/Planning, Development & Port Security, Marine Department
Mr WONG Kun-lun	Senior Marine Officer/Planning & Development (2), Marine Department
Ms Maggie CHIN	Senior Town Planner/Islands(1), Planning Department

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Action

The Chairman welcomed Mr Edwin Lau, Dr Man Chi-sum and Dr Yau Wing-kwong (who were present) as well as Dr Dorothy Chan, Ms Betty Ho and Mr Simon Wong (who could not attend the meeting), who had newly joined the Subcommittee.

Agenda Item 1: Confirmation of Minutes of the 95th Meeting held on 5 September 2006

2. The Chairman informed Members that the draft minutes of the 95th meeting had been circulated to Members in December 2006. Members had confirmed the draft minutes by circulation.

Agenda Item 2: Matters Arising from the Minutes of the 95th Meeting held on 5 September 2006

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

Agenda Item 3: Environmental Impact Assessment Report on A Commercial Scale Wind Turbine Pilot Demonstration at Hei Ling Chau ***(ACE-EIA Paper 1/2007)***

Internal discussion

4. The Chairman said that some of the Members had declared interests in connection with the two projects under consideration before the meeting and a list showing the details was tabled for Members' information. A Member declared that the World Wide Fund For Nature Hong Kong in which he served as the Chairman received some donations from the project proponent in the past. The meeting agreed that all the declared interests were not directly related to the project proponent or the two projects under consideration and Members concerned could stay and continue to take part in the meeting.

Action

5. The Chairman informed Members that three sets of public comments on the Environmental Impact Assessment (EIA) report on A Commercial Scale Wind Turbine Pilot Demonstration at Hei Ling Chau received by the Environmental Protection Department (EPD) and one set of comment directly addressed to the Council (copied to EPD) had been circulated to Members before the meeting. Some Members had raised some questions to the project proponent and the response from the project proponent had been circulated to Members before the meeting. Some Members had some follow up questions and concerns on the project.

6. The meeting agreed that the discussion should focus on the objective of the project, site selection, optimization of footprint and environmental monitoring.

Presentation

7. Mr Richard Lancaster introduced the background and purpose of the project. Dr Andrew Jackson briefed Members on the findings of the EIA study.

Objective of the project

8. A Member queried whether the objective of environmental education could be achieved given the remote location of the site. Mr Richard Lancaster explained that the objective of the project was to study the practicality of commercial use of wind turbine as well as to let the community gain more knowledge and experience about wind energy application in Hong Kong. Dr Andrew Jackson said that in terms of accessibility, there was public access by a regular ferry service from Peng Chau to the island. Guided tours could be arranged to the wind turbine site. The existing "Green Haven Tour" education programme organized by the Correctional Services Department (CSD) on the island for schools and community groups could be expanded to include education on renewable energy and visits to the wind turbine. A management infrastructure for environmental education was already in place. Upon the enquiry of the Member, Dr Jackson undertook to provide statistics of visitors on the Green Haven Tour arranged by CSD.

(Post-meeting note: The project proponent provided the required information on the Green Haven Tour which was circulated to Members after the meeting.)

9. A Member said that he learnt that it was quite difficult to secure a booking for the eco-tours arranged by CSD in view of the relatively high demand. It would be necessary for the project proponent to enhance the

education programme in connection with the wind turbine. Mr Richard Lancaster explained that they were working closely with CSD. CSD had indicated that they supported the wind turbine demonstration and considered it a good opportunity to include visits to the wind turbine site in its regular outreach public education programme to make the tour more prominent and attractive. They would build on the experience of running the existing educational centres in different parts of Hong Kong, such as those in the Castle Peak Power Station and Sham Shui Po. They were keen to enhance CSD's existing eco-tours to cover the education elements of renewable energy and applicability of wind energy in Hong Kong.

10. In reply to a Member's enquiry, Mr Richard Lancaster said that the education programme would include displaying and providing relevant information and leaflets at the site. Training would be provided to the tour guides. Another Member suggested and Members agreed that the project proponent should not only rely on CSD's existing eco-tours but should also be more proactive in providing resources for enhancing the educational aspect of the project.

11. A Member queried the value of constructing a wind turbine similar to that of the Hongkong Electric Company (HEC) on Lamma Island. He considered that the project tended to be politically driven. Mr Richard Lancaster explained that the project involved not only the construction of a wind turbine but also the experience and knowledge gained throughout the process. In the site selection and EIA process, they had gathered much information about the potential of a land-based wind turbine in Hong Kong, including wind resource, constraints in site selection, engineering considerations and environmental impacts. More information had to be collected after the operation of the wind turbine. CLP Power Hong Kong Limited was also working with an UK developer to assess the feasibility of offshore wind generation in Hong Kong.

Site selection

12. A Member asked whether other more accessible sites had been explored, such as the sites in Black Point, Castle Peak and Penny's Bay. Dr Andrew Jackson said that they had engaged stakeholders and concerned groups throughout the site selection process. The key considerations in selecting the site included wind resource, availability of access routes to deliver the components and construction materials, and practical constraints such as Disneyland height restriction, aviation safety and existing infrastructure to promote public awareness. Sites at Black Point, Castle Peak and Penny's Bay were ruled out in view of limited wind resources and/or

aviation height restrictions imposed by the Civil Aviation Department and as planning controls. Mr Richard Lancaster added that they had worked with the Hong Kong University of Science and Technology to develop a wind resource map to analyze the suitability of various sites in Hong Kong. The site at Hei Ling Chau represented a good balance of the relevant considerations. The HEC wind turbine on Lamma Island and the proposed wind turbine at Hei Ling Chau were complementary.

13. A Member asked about the meaning of the term "commercial scale" and the optimum size of the wind turbine. Mr Richard Lancaster explained that the term "commercial scale" was indicative of the size of a wind turbine typically found in a wind farm in the world. The optimum size of a wind turbine would depend on a number of factors, including technologies available, wind resource, height restriction and transportation means. Regarding the possibility of increasing the size of the wind turbine beyond the range of 800kW to 1,300kW, the proposed size would be an optimum one taking into account various factors. The decision process was that the most suitable site would be identified first before considering the size of the wind turbine.

Optimization of footprint

14. A Member asked about the possibility of reducing the footprint. Mr Douglas Simmons explained that the site area of 100 m x 54 m during the construction phase would be required to allow the installation of the turbine of 60 m blade diameter and 90 m tower height including the blade. Landscape enhancement works would be undertaken to reinstate and improve the site area to its natural state. Space in the tower base would be required for storage of tower components and other ancillary facilities such as a visitor centre. There would be some natural vegetation and landscape to demarcate the permanent site area without security fencing. The site area was similar to that of HEC's wind turbine.

Environmental monitoring

15. A Member was concerned about the conduct of construction workers on the restricted site. Mr Richard Lancaster said that CLP had a strict code of practice and set very high environmental standards on their contractors. They would not tolerate misconduct on the works site. Under the Environmental Monitoring and Audit (EM&A) Programme, an Environmental Team with a monthly audit programme would be set up to monitor the construction waste management issues and there were clear guidelines on waste disposal.

Action

16. A Member considered that there was a need to step up the monitoring of works sites given its remoteness. After discussion, Members suggested the setting up of on-site webcams at major works areas for monitoring purposes. Dr Andrew Jackson explained that the discussion with CSD suggested that there would be security concerns if the webcams were to oversee a very large area. They undertook to liaise with CSD and EPD to explore the possibility of setting webcams focused on the major works areas during construction.

17. In reply to the Chairman's enquiry about the bird monitoring programme, Dr Andrew Jackson said that they were planning to install a webcam to monitor the operation of the wind turbine. The frequency of site inspection would be increased from monthly to weekly intervals for the first 12 months. In addition, weekly vintage point surveys would be undertaken to observe the birds' behaviour and flight patterns, in particular the White-Bellied Sea Eagles. Suitable training would be provided to the eco-tour guides.

Conclusion

18. The Chairman concluded that having regard to the findings and recommendations of the EIA report and information provided by the project proponent, the meeting agreed to recommend the report to the Council for endorsement without condition. The meeting also agreed to make the following suggestions –

(a) the project proponent should take a more proactive role and provide resources to enhance the educational aspect of the project rather than purely relying on CSD's existing eco-tours; and

(b) the project proponent should explore the possibility of setting up on-site monitoring webcams at major works areas during the construction phase subject to the outcome of the negotiation with CSD and EPD on security considerations.

Action

Agenda Item 4: Environmental Impact Assessment Report on Liquefied Natural Gas Receiving Terminal and Associated Facilities
(ACE-EIA Paper 2/2007)

Internal discussion

19. The Chairman informed Members that public comments on the EIA report on Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities referred from the EPD had been circulated to Members for reference before the meeting in batches (4,050 sets). Members noted the large number of public comments received by the EPD but a major portion of the comments (3,994 out of 4,050) were in the format of a standard letter. The public inspection period would expire on 25 January 2007. EPD would send any public comments received after the Subcommittee meeting to all Council Members for reference in relation to the Council meeting on 12 February 2007. Separately, 14 sets of public comments directly addressed to the Council had also been circulated to Members for information before the meeting. One set of comment directly addressed to the Council received on the meeting date was tabled for Members' reference.

20. With the consent of the Chairman, a Member made a presentation with the assistance of powerpoint slides on his views about the project. He queried the need of the LNG terminal in Hong Kong and considered that a critical assessment based on the precautionary principle should be made. He noted that the EIA report presented and made a comparison between the South Soko and Black Point options. He expressed grave concern about the ecological impacts of the LNG terminal project on South Soko, a potential marine park, in view of the high ecological value of the area, including being a fisheries spawning and nursery ground, a habitat of co-occurrence of two types of marine mammals, existence of rare coral species and benthic species with conservation value. The cumulative impacts of various projects in South Lantau should be taken into consideration. He considered that the way that the project proponent presented the two options implied that the Council should comment on the validity of both options. The Black Point site should be a preferred option from the ecological point of view.

21. The Chairman pointed out that the role of the Advisory Council on the Environment (ACE) and EIA Subcommittee was to consider the environmental acceptability of the EIA report, which proposed the LNG terminal project at South Soko. Mr Elvis Au explained that under the EIA Ordinance, an environmental permit was required for the construction and operation of a designated project. The application for environmental permit

submitted in this case was for the construction and operation of an LNG receiving terminal and associated facilities at South Soko. It was the role and responsibility of the project proponent to go through a site selection process and justify why other alternatives were not viable.

22. The Chairman suggested and Members agreed that precedent cases were important as reference by the Subcommittee. Mr Elvis Au informed Members that the ACE had endorsed EIA reports on designated projects insofar as the environmental acceptability of the projects was concerned. Such endorsement did not imply or cover the approval of the needs for the projects. The ACE had also endorsed EIA reports on designated projects before the needs for the projects were established. In some cases, the projects did not proceed after the EIA reports were approved. There were also precedent cases that the ACE had endorsed EIA reports on dredging works, installation of pipelines and construction of fuel receiving facilities within the boundaries of existing or potential marine parks.

23. The Chairman said that there were some views that a gazetted marine park should be a "no-go area" for development. Mr Elvis Au explained that under the EIA Ordinance, a proposed development in an existing or gazetted proposed country park or an existing or gazetted proposed marine park was regarded as a designated project and would require the application for an Environmental Permit (EP). Even if the Soko Islands had been a gazetted marine park, it was still possible for the project proponent to propose the LNG terminal at Soko Islands, subject to the need to go through the EIA process to demonstrate the environmental acceptability of the project. Dr Wong Fook-yee said that developments within the country and marine parks would be subject to a set of requirements and agreement of the Country and Marine Parks Authority under the Country Parks or Marine Parks Ordinances.

24. After discussion, the meeting agreed that the discussion should focus on the need and justifications for the project, site selection, risk assessment, ecological impacts, water quality impacts, landscape and visual impacts, waste management, construction and operational impacts, archeological and cultural heritage, environmental monitoring and environmental enhancement plan.

Presentation

25. Mr Richard Lancaster introduced the background, purpose and scope of the project. Dr Robin Kennish briefed Members on the findings of the EIA study.

Action

26. The Chairman proposed and Members agreed to take a lunch break at 12:45 pm and continue the discussion at 2:00 pm on the same day.

Need and justifications for the project

27. The Chairman said that there was much concern about the need and justifications for the project. Mr Richard Lancaster explained that they had examined thoroughly the possibilities of alternatives, including supply from the existing Mainland terminal and those at the planning stage. They concluded that the development of an LNG terminal in Hong Kong was the only means where all essential criteria for the project could be met.

28. In reply to a Member's query about the projected development of ten LNG import terminals along the coast of the Mainland in the coming decade, Mr Richard Lancaster explained that the amount of LNG that would be imported into the Mainland (should all these terminals be developed) exceeded the world's capacity to produce LNG. The Mainland authorities recognized that the development of LNG terminals throughout the Mainland had to be staggered to ensure sufficient LNG supply would be available. Most of the proposed projects were only undergoing feasibility studies with no concrete development plans. The Guangdong Dapeng terminal was fully committed for the current and future needs of existing users. A terminal for Hainan was being considered but was already under great demand for local industrial uses. The two terminals proposed in the Zhuhai area were uncertain in terms of timing. It was crucial to match the timing of the terminal project with the availability of LNG supply. Certainty over the timing could only be assured by developing an LNG terminal in Hong Kong.

29. Two Members asked about the possibility of using receiving terminals outside Hong Kong after securing the supply source. Mr Richard Lancaster explained that there were practical limitations in terms of timing required for a cross-boundary project under two jurisdictions, the need to secure the commercial rights for sufficient supply and the need to construct a pipeline to the Black Point Power Station. For example, the Dapeng LNG Terminal took ten years to complete. Moreover, the pipelines from proposed terminals in Zhuhai and Dapeng would be much longer and would still need to pass through areas inhabited by Chinese White Dolphins.

30. A Member enquired about the consultancy study commissioned by Sinopec to examine the feasibility of a pipeline from Coloane Island to Huangmao Island and then to Hong Kong. Mr Richard Lancaster confirmed that the proposal had nothing to do with them. No EIA reports had been provided other than those in the public domain and there was no commitment

to constructing other pipelines other than the one proposed in the EIA report.

31. A Member enquired about the urgency of the project and rate of depletion of the gas in Yacheng gas field. Mr Richard Lancaster explained that there was a degree of uncertainty when evaluating the reserves and the gas supply could decline rapidly at the end of the plateau period. Thus, it was necessary to secure an alternative supply source in a timely manner. Regarding the validation of the gas field reserves, the Government had appointed a consultant to review the technical details provided by the proponent.

32. In reply to a Member's enquiry about users of the Yacheng gas field, Mr Richard Lancaster said that the Castle Peak Power Co. Ltd. (CAPCO) was not the only user of the gas field and the supplier also had a contractual commitment to provide gas to Hainan Island, which had a high demand for industrial use.

33. A Member asked about the possibility of using the existing Yacheng pipeline to source supply from the new gas field near Hainan. Mr Richard Lancaster explained that the new gas field was away from the Yacheng gas field which required installation of a new pipeline in the deep open sea. The construction of new connecting pipelines required shutting down of the existing Yacheng pipeline which would affect reliability of electricity supply to Hong Kong. In addition, the quality of the gas from other sources would be different from that of Yacheng and thus the Yacheng pipeline could not be used for transmitting the gas from other sources.

34. In reply to a Member's enquiry about the use of the natural gas received, Mr Richard Lancaster said that the gas received from the Yacheng gas field or the future gas supply was envisaged to be used for the Black Point Power Station. The plan was to reduce the portion of coal by increasing the portion of gas for power generation in order to meet the 2010 emissions reduction targets.

35. Upon a Member's enquiry about the import and export of power generated, Mr Richard Lancaster said that they imported power from the nuclear plant on the Mainland and exported power, mainly surplus power generated by low sulphur coal in the Castle Peak Power Station, when it was required to compensate the shortfall in electricity generation capacity on the Mainland. Even if surplus power was not exported to the Mainland, there was still the need to use all the available natural gas for power generation to meet power demand in Hong Kong.

Action

36. The Chairman asked about the scenario assuming that the proposed LNG terminal project could not proceed. Mr Richard Lancaster said that they would stretch out the remaining Yacheng gas capacity to ensure reliability of power supply for a certain period. With no further supply of natural gas, there would be a shortfall in electricity supply even if all the coal-fired and nuclear power units were run at full capacity. This hypothetical scenario would result in a massive increase in air emissions and the 2010 emissions reductions targets would not be met.

37. A Member asked whether the "LNG Feasibility Joint Study" commissioned by CLP, Shell and Total in 1992 mentioned in Section 2 in Chapter 1 of the EIA report could be released to Members for information. Mr Richard Lancaster said that CLP was one of the participants in the study and they undertook to check whether the study report could be released to Members for information. Mr Elvis Au clarified that the study was not commissioned by EPD. An inter-departmental working group was involved in the study.

(Post-meeting note: The study report was provided to Members for information after the meeting.)

Site selection

38. Upon the Chairman's enquiry about the site selection process, Mr Richard Lancaster explained that they had conducted an extensive site selection exercise since 2003 by three phases. The first phase was a long list of 29 sites which was reduced to seven sites in phase two. Based on a detailed analysis from different perspectives, including engineering, environmental, social and planning, it was concluded that both the Black Point and South Soko had strong advantages for siting the LNG terminal. The detailed EIA Study of the two sites then concluded that South Soko was the preferred option as it would enable a replacement gas supply earlier, enabling them to meet the 2010 emissions reduction targets earlier, involve less land reclamation and the marine transit was acceptable from a societal risk point of view.

39. A Member asked for the reason for conducting EIA studies on two options rather than one option. Dr Robin Kennish explained that both the Black Point and South Soko options had their pros and cons which had to be evaluated in detail. Given the tight time schedule and lack of sufficient information to rule out either of them, it was better to take both options forward for detailed EIA studies. Detailed quantitative risk assessment for Black Point and marine ecological assessment for South Soko were necessary, which required cooperation and integration within the study team and with

relevant Government departments, before a decision could be made.

40. A Member asked about the rationale behind the selection criteria that an existing marine park was regarded as an exclusive constraint while a potential marine park was regarded as a non-exclusive constraint. Dr Andrew Jackson explained that the starting point of the site selection was based on statutory designations of the possible sites which would constitute uncertainties and permitting risks. In the absence of a formal, approved designation as a marine park, the assessment was based on the ecological and environmental impacts of the project. The evaluation of these issues was conducted in accordance with the Study Brief, and supported by extensive field surveys and baseline data collection. It was important to note that the EIA study concluded that the construction and operation of an LNG terminal was not incompatible with the designation of the site as a marine park. The Member considered that it was a casuistic and technical way of answering the question.

41. Dr Andrew Jackson explained that they had conducted an extensive site selection process and short-listed the two most promising sites at Black Point and South Soko. The other sites were considered not viable due to various reasons, including technical, environmental or social constraints. The detailed EIA studies showed that with mitigation measures and enhancement plans, the LNG terminal would be compatible and meet the high standard required of a marine park. He highlighted that the Aviation Fuel Receiving Facility (AFRF) at Sha Chau and the Cove Point LNG Terminal at the east coast of the US were located in conservation areas. The frequency of vessels delivering fuel to the AFRF at Sha Chau was three times per day, which was substantially higher than in the case of the LNG Terminal at South Soko.

42. In reply to the Chairman's enquiry about the Tseung Kwan O Area 137 site, Dr Robin Kennish said that it had the advantages of being a formed site zoned for industrial use. However, there were constraints on the turning circles, marine traffic, safety concern, the need for extensive dredging and construction of a long pipeline and visual impacts to sensitive receivers in Tseung Kwan O, Siu Sai Wan and Chai Wan.

Risk assessment

43. In reply to the Chairman's enquiry about the marine transit risk assessment associated with the Black Point option, Mr Stephen Shaw said that an extensive study had been conducted with local and overseas experts. The assessment results presented in the EIA report were the risks that would exist

after mitigation measures were implemented. Further mitigation measures would be outside the direct control of the project proponent, such as changing the escort and exclusion provisions for LNG carriers or relocating the affected population. The key risk factors were the collision of the LNG carriers with other vessels and the grounding of carriers, which would have the potential to affect the population along the waterfront. With the implementation of all practicable mitigation measures, such as a restriction on transit times, it would not be able to reduce the risks to the acceptable region as per the Technical Memorandum on EIA process (TM). For the Black Point option, there would be about one million people along the transit route of the LNG carriers in Hong Kong, whereas for the South Soko option the equivalent population was only three hundreds.

44. The Chairman asked about the possibility of taking further mitigation measures to reduce hazard to life. Mr Chung Siu-man said that the way to minimize any mishap due to the transit of the LNG carriers was to impose an exclusion zone for the exclusive transit of the carriers. The access route from East Lamma Channel through the Ma Wan Channel and up to Black Point and Shekou were used by vessels calling at two international container ports, oil terminals and for passenger vessels to Macau and the Mainland. Given the tremendous amount of shipping and requirement of accurate schedules for container liners, closing the channel for the LNG carriers would have serious impacts on the operation of the container ports. While the container ships at Kwai Tsing container port did not pass through the Ma Wan Channel, they used the same Western Fairway and all the way to East Lamma. In order to eliminate the collision risk, it was not possible to close only one section of the channel and the whole channel would need to be closed.

45. Mr Richard Colwill explained that implementation of the proposed safety zone would effectively result in a complete closure of the Ma Wan Channel to south bound traffic for three hours. This would result in serious impacts on shipping operations and, because of this and other factors, the mitigation measure was considered not practicable in Hong Kong.

46. A Member asked about the consequences of a collision of an LNG carrier with other vessels. Mr Stephen Shaw said that research showed that there would be potential for a fire event resulting in burning which would extend over some distance potentially affecting the population along the waterfront. While collision cases involving LNG carriers were very rare and none had resulted in a release of LNG from its containment tank, the risk assessment was based on the likelihood of future events and the significance of the consequences of an LNG carrier passing through a densely populated

area. The Government had very strict risk management criteria.

47. A Member asked about the frequency of collision along the LNG route to Black Point site. Mr Chung Siu-man said that there were about two incidents associated with an ocean-going vessel vs an ocean-going vessel in the previous five years, one of which resulted in loss of life.

48. A Member said that there were overseas cases of LNG carriers passing through densely populated areas such as the Toyko Bay. Mr Richard Lancaster explained that a thorough analysis had been conducted on waterways and mitigation measures around the world. The most distinct characteristics of Hong Kong, as compared with those of overseas cases including Osaka and Toyko, were the high density of marine traffic and combined with the presence of high rise buildings housing a large population close to the waterfront. Mr Stephen Shaw highlighted that there were different risk criteria in different countries.

49. A Member asked for the reason for using large carriers in the analysis. Mr Stephen Shaw explained that the smaller the size of the carriers, the higher the risks as the frequency of transit would be increased given that both types would have hazard effects on the population along the waterfront. Mr Richard Lancaster said that the choice of the size of the carriers to be used would depend on a number of factors, including economic considerations, port size and flexibility required.

50. A Member asked about the possibility of using the Tonggu waterway. Dr Robin Kennish said that it was stated in the EIA report that the Tonggu waterway was not considered a viable option for the transit of LNG carriers. The original EIA report on the Tonggu waterway was rejected by the EPD in 2005. For the newly proposed alignment, it would be a unidirectional channel, 210 m wide and 15.8 m deep. The minimum requirement, according to the guidelines of the PIANC International Navigation Association, for an LNG carrier would be 250 m wide for a unidirectional channel and thus incremental construction dredging of 10 million m^3 would be required to widen the width and maintenance dredging would be approximately 0.5 million m^3 per year. The incremental additional dredging, which had not been discussed with the relevant authorities in the Mainland, would have substantial adverse environmental impacts as the rate of sedimentation deposition in the area was very high. Most of the dredging area and transit would be in the core area of the Pearl River Estuary White Dolphin Nature Reserve and thus approval from the State Government level would be required. Moreover, a unidirectional channel would be less preferred for LNG carriers for safety reasons. The provision of a bidirectional channel would

require intensive additional dredging for construction and throughout operation.

Ecological impacts

51. The Chairman said that there was much concern about the ecological impacts of the project, in particular on Chinese White Dolphins ("dolphins") and Finless Porpoises ("porpoises"). Considering that Soko area was a potential marine park, Members were concerned about whether the project would be compatible with the existence of a marine park.

52. A Member enquired about the habitat area of dolphins and porpoises around the Hong Kong waters. Dr Thomas Jefferson said that information from long-term studies showed that the Soko Islands were not a primary habitat for dolphins and porpoises and that the area was used by these marine mammals seasonally. The dolphin habitat area extended to the Pearl River Estuary, south west of Macau and western Hong Kong waters with a total population size of about 1,200 to 1,300. The porpoise habitat area extended to the east and south of Hong Kong. In reply to Dr Man's enquiry, Mr Joseph Sham confirmed that the population size of dolphins was fairly stable in the past years with about 1,200 in the entire Pearl River Delta including Hong Kong waters. Of this number, depending on the seasons, there were some 90 to 200 of them found in Hong Kong waters.

53. A Member enquired about the impacts of the project on marine mammals. Dr Thomas Jefferson said that with mitigation measures in place, the impacts would be relatively minor and short-term, primarily during the construction phase. The residual impacts on marine mammals would also be relatively minor. Very detailed long-term studies conducted on the impacts of the AFRF on the ecology of Sha Chau Marine Park showed that dolphins tended to avoid the works areas during the construction phase but their population returned to the pre-construction levels within several months of completion of the works. In reply to a Member's enquiry, Mr Joseph Sham confirmed that the dolphin population remained stable after the construction phase of the AFRF in Sha Chau.

54. A Member asked that if one put oneself in the position of a dolphin, how the dolphin would feel under the cumulative impacts of different projects in the South Lantau area in recent years. It was necessary to consider the cumulative impacts from a strategic perspective. Dr Thomas Jefferson said that the importance of assessing the cumulative impacts on marine mammals was recognized. There was a high degree of confidence that the impacts on marine mammals were short-term and primarily during the

construction phase. He highlighted that the Black Point site area was close to an important dolphin habitat in the Lung Kwu Chau. Dr Robin Kennish added that there would be a package of mitigation measures and long-term monitoring to ensure minimal residual impacts to marine life.

55. A Member considered that Soko was an undisturbed area for dolphins and any development would affect their habitat. Dr Robin Kennish said that detailed dive surveys round the South Soko Island and benthic surveys in Tung Wan, Sai Wan and along the pipeline route had been conducted. Results showed that most of the coastline where the works would take place were artificial shorelines. Reclamation at Sai Wan would be in between the old reclamation area for the detention centre, disturbing only about 265 m of rocky and 35 m of sandy shoreline. The seabed area was not pristine and was disturbed by frequent trawling activities.

56. Two Members enquired about the impacts of noise generated by the construction works and vessel movements on dolphins and porpoises. Dr Bernd Wursig explained that the impacts would be insignificant. The industrial noise was at the lower frequency range while the auditory sensitivity of dolphins and porpoises was at the higher frequency range. While they could hear the higher end of the frequency of industrial noise, including dredging, piling and vessel movements, the noise would have insignificant impacts on them. Evidence from the US showed that dolphins lived well in areas frequented by tankers. Dr Thomas Jefferson added that the Urmston Road Channel between Castle Peak Power Station and Lung Kwu Chau was a prime feeding ground for dolphins throughout the year despite the large number of vessels moving in the area.

57. The Chairman said that there was much concern about the impacts of the project on the functions of the potential marine park. Dr Andrew Jackson highlighted that the operational phase impacts, including the cooled water discharge, would not compromise the function of the potential marine park. The day to day operations of the LNG facility which were fairly benign would occur mainly on land. The vessel would only dock at the terminal once a week and the terminal would be manned by a small workforce of 50 to 60. A comprehensive package of environmental enhancement measures was proposed for both marine conservation and upgrading of terrestrial facilities. Mr Richard Lancaster said that there were successful examples of industrial facilities and conservation areas co-existing within the same area including the AFRF within the Sha Chau Marine Park and the Cove Point LNG Terminal in the US had operated for 30 years in the middle of a 1000 ha Nature Reserve.

Action

58. Dr Robin Kennish said that major activities of the project would be on the land and limited activities and facilities would be in the sea. They had taken the Agriculture, Fisheries and Conservation Department's (AFCD) advice to shift the location of the jetty from the north to south, reduced the reclamation area from 13 ha to 0.6 ha and implemented a number of mitigation measures which would mitigate the potential impacts of the operation on the future marine park. In view of the high ecological value of the area, due consideration had been given to assessing the ecological impacts and the package of appropriate ecological mitigation measures.

59. Upon a Member's enquiry about the compatibility of the LNG terminal project and a marine park, Dr Wong Fook-yee said that the ecological concerns had been duly addressed and adequate on-site and off-site mitigation measures would be employed to reduce the ecological impacts to the maximum practicable extent. That being the case, the LNG terminal should be able to co-exist with a marine park.

60. A Member enquired about the Administration's commitment to taking forward the marine park proposal. A Member said that the proposal of designating Soko Islands as a marine park had been endorsed by the Country and Marine Parks Board in 2002 and a paper on the subject had been submitted to the Legislative Council Panel on Environmental Affairs in the same year. He queried the holding up of the proposal for such a long time. Mr Eric Chan said that the proposal of designating Soko Islands as a marine park had not been shelved. The major issue to be resolved was resources allocation. The proposal would be taken forward once the issue was resolved.

Water quality impacts

61. A Member was concerned about the impacts of the project on the corals. Dr Robin Kennish explained that the maximum discharge volume of the water cooling system would be 18,000 m^3 per hour and the discharge would be about 100 m from the shoreline and about 10 m below the jetty. The corals were mainly in narrow bands at the water surface area along the shoreline. The temperature change at the coral area would be less than 0.5 degree Celsius and thus the impacts would be insignificant.

62. A Member was concerned about the temperature difference of 12.5 degrees Celsius mentioned in the EIA report. Dr Robin Kennish explained that the water quality impact assessment was based on water quality and hydrodynamic models calibrated for the Soko area. The temperature decrease of 12.5 degrees Celsius referred to the temperature of effluent leaving the vaporizing unit and not the temperature of the marine waters. The

current velocity at the discharge point beneath the sea surface would generate rapid dilution and dispersion effects and the temperature difference would only be 2 degrees Celsius from the ambient within 200 m of the outflow point. The residual chlorine concentration would only be 0.01 mg/l at 300 m from the outflow point.

63. A Member was concerned about the temporary exceedance of Water Quality Objectives (WQOs) arising from suspended solids elevations during dredging and asked for the reason for using trailer dredger instead of grab dredger. Dr Robin Kennish explained that the trailer dredger was mainly used at the western Lantau section as it was necessary to provide a larger trench for additional rock amour protection in view of the heavy marine traffic. The trailer dredger could be more accurate and efficient than the grab dredger and would minimize over-dredging. He highlighted that the exceedance would be over very short intervals and localized and not considered to cause an unacceptable deterioration of water quality. Dr Andrew Jackson added that the modeling assumed 24-hour operation but actual dredging works would be only 12 hours a day. WQOs were not specifically designed for protection of marine life and offered a higher degree of protection than would otherwise be the case.

64. In reply to a Member's enquiry, Mr Joseph Sham said that dolphins were air breathing animals with high mobility and would not be directly affected by suspended solids level elevations. Mitigation measures such as silt curtains would be used to minimize the impacts at specific sites where necessary.

65. A Member enquired about the impacts of chlorine in discharged water. Dr Robin Kennish explained that the concentration of total residual chlorine at the discharge would be 0.3 mg/l which was much lower than the required standard of 1 mg/l in the TM. In reply to the Chairman's enquiry, Mr Elvis Au said that the standard used was based on concentration rather than overall loading. The general concentration standard for residual chlorine at the discharge was 1 mg/l and the standard adopted in the EIA study for the water cooling discharge system of HEC's Gas-fired Power Station was 0.3 mg/l.

66. In reply to a Member's enquiry about the forming of foaming at the outlet of the discharge system, Dr Andrew Jackson confirmed that no foaming would be formed at the discharge point.

67. A Member asked for the reason for using different assessment criteria for heavy metals with reference to Table 6.3 of Section 6 in Part 2 of the EIA report. He also noted that the elutriate test results showed that the

copper concentration was a bit high. Dr Robin Kennish explained that international assessment criteria were used as no local criteria were available. He undertook to look into the reason for using different sets instead of one set of assessment criteria and provided relevant information.

(Post-meeting note: The project proponent provided supplementary information on the assessment criteria of heavy metals in water after the meeting. The information was incorporated into the annex to the paper submitted to the full Council.)

Landscape and visual impacts

68. In response to the Chairman's enquiry about the cut slope behind the tanks, Dr Robin Kennish said that there would be bench planting and landscaping at the cut slope. A landscape master plan would be submitted for landscaping implementation during and after the construction works.

69. In reply to the Chairman's enquiry about the height of the tanks, Dr Robin Kennish said that the tank height had been reduced to a level lower than the hilltop so that the tanks would not be visible from the other side of the hill and South Lantau.

Waste management

70. Upon a Member's enquiry about the disposal of contaminated sediments, Dr Robin Kennish explained that they were aware of the diminishing capacity of the existing site at East Sha Chau. If this disposal site was not available, they would work closely with the Marine Fill Management Committee of the Civil Engineering and Development Department (CEDD) and EPD to identify suitable sites to fulfill the project's requirements.

71. In reply a Member's enquiry, Mr Elvis Au confirmed that the sediments could not be permitted to be disposed of at landfill sites. In reply to the Chairman's enquiry, Mr Au said that on top of the existing disposal site, an EIA report on the extension of the East Sha Chau disposal site had been approved. Relevant parties would consider the project proponent's request for mud disposal based on the overall demand. Under the existing system, the dredging works could not proceed before the disposal issue was agreed by CEDD.

Construction and operational impacts

72. In reply to a Member's enquiry about the use of sea-based

pipeline route, Mr Richard Lancaster explained that the land-based route had been explored and found not feasible as it would involve numerous cuttings and other works in the country parks and extensive widening of existing roads, including Tung Chung Road. The tunnel route option was also not viable as it would involve numerous sensitive receivers, archeological sites, sites of special scientific interest, a longer construction period, dredging for access channels and coastline reclamation of 3 ha to accommodate tunnel boring machines. The sea-based option was preferred in view of its short construction period and less environmental impacts.

73. A Member enquired about the sewage treatment facilities for the construction workers and construction site runoff during the construction phase. Dr Andrew Jackson explained that the sewage treatment plant had to be designed and operated within the discharge standards under the Water Pollution Control Ordinance. Mr Ken Miner added that the detailed design of sewage treatment facilities would be submitted at a later stage.

74. In reply to a Member's enquiry about the number of storage tanks required, Mr Richard Lancaster said that the initial phase would involve the construction of two tanks with an expansion capacity to three tanks. The modelling studies and assessment were based on the maximum capacity. The tank size would be optimized during the engineering design but would not exceed the size proposed in the EIA report.

75. A Member expressed concern about the impacts of the submarine pipelines on fishing activities with particular reference to the complaints of the fishing community on a recent project. Mr Joseph Sham explained that the major reason for the complaints was the alleged change in configuration of the sea bottom after the works which, if taking place, could affect fishing especially trawling activities. For the current project, a geophysical survey would be conducted to ensure that restoration works would be done properly. Dr Andrew Jackson undertook that seabed configuration would be restored properly after the pipeline installation works as stated in the EIA report.

76. In reply to a Member's enquiry about the operation of the water cooling system on the Amphioxus, Dr Andrew Jackson confirmed that the impacts on the Amphioxus would be minimal because the water intake was at the surface (and Amphioxus lived close to/in the sediments) and the outfall was remote from the area where Amphioxus was recorded.

Archeological and cultural heritage

Action

77. In reply to the Chairman's enquiry about the rescue of artifacts from the site, Dr Robin Kennish said that detailed surveys had been conducted both inside and outside the project site. Excavation works would take about six to nine months before construction and would be conducted in accordance with the requirements laid down by the Antiquities and Monuments Office. The Antiquities and Monuments Office would play an important role in the rescue activity by providing supervision. During the construction phase, licensed archeologists would be on the site.

78. A Member enquired about the presence of indigenous villages and private lots. Mr Richard Lancaster said that they had been in consultation with the local representatives and the Lands Department in relation to the private lots and graves. There were no villages on the site.

Environmental monitoring

79. In reply to a Member's enquiry about the means of environmental monitoring, Dr Robin Kennish said that visual monitoring would be undertaken during the construction phase at the exclusion zone around the dredging and piling area by qualified dolphin observers. Longer term monitoring would be conducted through vessel based line transect surveys.

Environmental enhancement plan

80. Upon a Member's enquiry about the timetable and funding for the environmental enhancement plan, Mr Richard Lancaster undertook to provide funding and resources to work closely with the country and marine parks authority, AFCD and other stakeholders to implement the enhancement measures, in particular for the planned marine park. The discussion would take place early to formulate concrete plans. In reply to a Member's enquiry, Mr Eric Chan said that resources for the operation of marine parks, such as staff required for law enforcement, would be from government funding. There would be areas for cooperation with the private sector and non-government organizations when the Soko Marine Park proposal was taken forward.

Internal deliberation

81. The Chairman highlighted that the role of the ACE was to give advice on the environmental acceptability of the EIA report in the context of the EIA Ordinance and the decision on whether the EIA report should be approved rested with the Director of Environmental Protection. It was

important to examine the EIA report within the framework of the EIA Ordinance and the recommendations should be consistent with precedent cases. He suggested and Members agreed to go through the key issues.

82. A Member said that he still found the discussion absurd and he was not satisfied with the project proponent's explanations that they had gone though all the alternatives with so many terminals planned and being built outside Hong Kong. He expressed grave concern about the impacts of the project on marine mammals, in particular the cooling water system. He was not convinced about the compatibility of an LNG terminal with a marine park. He recommended rejecting the project because it came close to a planned marine park. A Member shared the Member's view that there should be other alternatives other than South Soko in Hong Kong.

83. On the need and justifications for the project, the Chairman pointed out that the issue was outside the ambit of the EIA Ordinance. There were precedent cases that the needs of the EIA reports were considered before the needs for the projects were established.

84. On the site selection process, the Chairman enquired about the viability of the Black Point option. Mr Chung Siu-man said that while one more shipment per week would be acceptable in terms of marine traffic, a collision incident might lead to significant consequences as the hazard to life was in the As Low As Reasonably Practicable region. The only way to reduce the risk level was to impose an exclusion zone. Similar new projects in other countries would try to site the terminals away from populated areas to minimize hazard to life.

85. A Member pointed out that the project proponent had gone through an engagement process and consulted stakeholders, green groups and concerned groups in the site selection process, and the project profile of the EIA study indicating the selected sites for study had gone through the proper public consultation process. He considered that the project proponent had gone through a proper site selection process. The Chairman shared his view and there was no objection from other Members.

86. On risk assessment, a Member enquired about hazard to life in the context of the EIA Ordinance. Mr Elvis Au explained that the objective of the EIA Ordinance was to assess impacts on the environment, including the people and wild life in the natural environment. The recent judgment of the Court of Final Appeal on an EIA case under the EIA Ordinance indicated that hazard to human life should be the highest level of concern and a high standard of hazard assessment should be adopted. He highlighted that risk

assessments on human and marine lives were conducted by the project proponent for both Black Point and South Soko options. The risk assessment for South Soko concluded that no unacceptable risks were foreseen.

87. In reply to a Member's enquiry about the AFRF, Mr Elvis Au said that the EIA report of the permanent AFRF at Tuen Mun Area 38 was approved in 2002 after the gazettal of the Sha Chau Marine Park and part of the pipeline would pass through the marine park. Upon another Member's enquiry about the monitoring of the dolphin population before and after the permanent AFRF project, Dr Wong Fook-yee said that the monitoring results showed that the dolphin population after the construction phase resumed to the level before the construction phase.

88. On the noise impacts on marine mammals, a Member considered that the project proponent should further clarify whether there would be additional noise source generated from the outflow of the water cooling discharge system which might have impacts on the marine mammals.

(Post-meeting note: The project proponent provided supplementary information on the underwater sound at the inflow and outflow points of the cooling water system after the meeting. The information was incorporated into the annex to the paper submitted to the full Council.)

89. On the water quality impacts, the Chairman enquired about the compliance with the WQOs. Mr Elvis Au confirmed that the water quality at the boundary of the mixing zone met the WQOs and the modeling results on water quality assessment in the report were validated. A Member queried the validity of the standards of the WQOs. Mr Au explained that the WQOs were based on the beneficial uses of different water bodies. There were different water quality control zones in Hong Kong with different sensitivity and characteristics. More stringent standards were applied to more ecologically sensitive areas.

90. On the landscape and visual impacts, a Member considered that the industrial facility was not compatible with the natural environment of the outlying island. Ms Maggie Chin explained that from the EIA perspective, landscape and visual impacts had to be assessed from the angles of the sensitive receivers. The landscape and visual impacts of the project after taking mitigation measures as proposed in the EIA report were considered acceptable in complying with the EIA Ordinance and TM. Mr Elvis Au said that under the TM, the assessment should only be based on environmental grounds but not on land use grounds.

Action

91. A Member considered that South Soko was one of the very few outlying islands that remained undeveloped. Ms Maggie Chin said that the project site was not virgin land without development. The central part of the island had been formed and used as a detention centre for Vietnamese refugees. In reply to the Chairman's enquiry, Ms Chin said that the project site was not covered by any Outline Zoning Plan at this stage. The land use compatibility issue had to be dealt with under the planning process.

92. A Member queried the planning strategy for South Soko and South Lantau with reference to the South West New Territories (SWNT) Development Strategy Review. Ms Maggie Chin explained that the Soko Islands were proposed as "Conservation Area" under the Recommended Development Strategy of the SWNT Development Strategy Review in 2001. However, the LNG proposal had not come into scene. For South Lantau, the planning intention for the area was to preserve the existing natural environment and development therein should be low-density and low-rise.

93. On waste management, a Member considered that identification of disposal sites for contaminated sediments had to be properly dealt with under the existing system before the dredging works could proceed.

94. On environmental monitoring, the Chairman suggested that should the EIA report be approved, the project proponent should be required to set up an Environmental Monitoring Committee, including representatives of concerned groups, stakeholders, experts and Members of the ACE. A Member suggested that an Environmental Management System should also be in place on top of the EM&A Programme submitted by the project proponent. Two Members supported the suggestions.

95. On the environmental enhancement plan for the marine park, Dr Wong Fook-yee said that should the EIA report be approved, conditions would be stipulated in the EP specifying the enhancement proposals. The details of the enhancement measures, including artificial reefs, biodiversity surveys and other educational facilities and activities, would be worked out by the project proponent for the Administration's consideration and agreement. The Chairman and a Member suggested that a concrete environmental enhancement programme be included in the EP.

96. A Member considered that with regard to the submission of the EIA report, the ACE's role was to consider the report within the framework of the EIA Ordinance. The project had to be considered from different policy perspectives, including energy policy, economic considerations, land use and town planning. Whilst noting that the EIA report was the first step of the

whole process in this case, members were aware of the high expectations in the community that all these issues should be resolved as early as possible. In considering the EIA report, the EIA Subcommittee or the ACE should comment on the environmental acceptability of the project. Issues falling outside the remit of the EIA Ordinance, including the need and justifications for the project, alternative sources of supply outside Hong Kong and land use interface, had to be dealt with by relevant policy bureaux and boards. Members agreed to his views.

97. The Chairman suggested and Members agreed to recommend to the Council that the following outstanding issues and concerns (with further information to be provided by the project proponent on some of them) be further discussed –

a) on the need and justifications for the project, some Members considered that the information and explanations given were not strong enough to justify the project. Members noted that the need and justifications for the project were outside the remit of the EIA Ordinance;

b) on the landscape and visual impacts, some Members were concerned about the landscape impact and compatibility of the proposed LNG terminal and associated facilities on the natural landscape of the Soko Islands. Members noted that the land use compatibility issue was a planning issue which had to be dealt with during the planning process;

c) on the water quality assessment, the project proponent would be requested to clarify the assessment criteria for the heavy metals in water (with particular reference to Table 6.3 of Section 6 in Part 2 of the EIA report); and

d) on the ecological impacts, the project proponent would be requested to clarify whether there would be additional noise source generated from the outflow of the water cooling discharge system which might have impacts on the marine mammals.

Agenda Item 5: Monthly Updates of Applications under the Environmental Impact Assessment Ordinance

98. Members noted the updates.

Action

Agenda Item 6: Any Other Business

Meeting schedule for 2007

99. The Chairman said that the tentative meeting schedule for the Subcommittee in 2007 had been circulated to Members before the meeting. The meeting schedule was endorsed by the Members.

Tentative items for discussion at the 97th meeting

100. The Chairman informed Members that the Secretariat would liaise with relevant parties and notify Members whether there would be submission of EIA reports which required the deliberation of the Subcommittee.

Agenda Item 7: Date of Next Meeting

101. The next meeting was scheduled for 15 February 2007.

(Post-meeting note: The meeting scheduled for 15 February 2007 was cancelled.)

EIA Subcommittee Secretariat
February 2007