

Attachment 2

附件 2

**Minutes of the Sixth Advisory Panel Meeting of the  
Review of Air Quality Objectives and  
Development of a Long Term Air Quality Strategy  
Held on 13 March at 2:30 p.m.**

**Present**

Ms. Anissa Wong	(Chairperson / EPD)
Mr. Carlson K.S. Chan	(EPD)
Mr. W.C. Mok	(EPD)
Mr. Pang Sik-wing	(EPD)
Ms. Susanna Lai	(EPD)
Mr. Benson Yeung	(EPD)
Mr. C. H. Kan	(EPD)
Ms. Alice Tang	(EPD)
Professor Frank Lee	(HKPU)
Professor Wong Tze-wai	(CUHK)
Professor Alexis Lau	(HKUST)
Dr. Ng Cho-nam	(HKU)
Mr. W. Y. Ho	(ENB)
Mr. Willy Tsoi	(FHB)
Mr. C. T. Wong	(THB)
Mr. Timothy Peirson-Smith	(Executive Counsel Ltd)
Dr. Alfred Tam	(Hong Kong Asthma Society)
Mr. S. H. Chan	(CLP Power)
Mr. C. T. Wan	(HKE)
Mr. Alan Lee	(HKCTOA)
Mr. Aaron Ng	(Tai Wo Motors Ltd)
Mr. Kim O Chan	(HKIP)
Mr. Alan Kwok	(Arup)
Mr. Sam Tsoi	(Arup)
Dr. Kin Lo	(Arup)
Mr. Paul Kent	(Arup)
Ms. Dorothy Lam	(Secretary / Arup)

### **Absent with Apologies**

Dr. Chow Kit-bing	(DC)
Mr. Leung Siu-tong	(DC)
Miss YUEN Wai Yin, Amy	(Planning & Lands Branch, DB)
Mr. Kenneth Chan	(GHKFAL)
Mr. Joseph Wong Pang-sui	(CPU)

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1. **The Chairperson** welcomed all members to the sixth meeting of the Advisory Panel on the Review of Air Quality Objectives (AQOs) and Development of a Long Term Air Quality Strategy.

### **Agenda Item 1: Confirmation of Minutes of the Last Meeting**

2. **The Chairperson** updated members that advertisement for the 3<sup>rd</sup> Public Forum had been posted and the responses received were positive. Also, EPD would submit a progress report on this study to the Sub-committee of EA Panel of the Legislative Council upon their request.

3. Minutes of the fifth meeting held on 14 November 2008 had been circulated to members for comment. The minutes were confirmed without amendment.

### **Agenda Item 2 : Presentation on the principles for the setting of AQOs; the recommended new AQOs for Hong Kong and the strategy for achieving these new objectives**

4. **The Consultant** made a presentation on the principles for the setting of AQOs, the recommended new AQOs for Hong Kong and the strategy for achieving these new objectives.

5. **The Chairperson** summed up the consultant's presentation that the principles for reviewing the AQOs were a) for protection of public health; b) adopting targets/ standards appropriate to the local situation and with reference to the WHO Air Quality Guidelines (AQGs); and c) new objectives achievable after implementing the 19 Phase I measures and new tightened standards might be introduced subject to regular review.

**Agenda Item 3 : Comment and discussion on consultant's preliminary findings and proposal**

6. Referring to the proposed AQOs, a **Member** asked if PM<sub>2.5</sub> would be monitored comprehensively. In response, **the Consultant** confirmed that PM<sub>2.5</sub> would be one of the key pollutants to be monitored.

7. **A Member** reiterated that the principle for setting AQOs was to protect public health and it should be explicitly stated in the Air Pollution Control Ordinance rather than the Technical Memorandum. He further commented on a point in the presentation concerning the rather loose PM<sub>10</sub> standard in the US. He opined that the US adopted very stringent standard for PM<sub>2.5</sub> and as such, their PM<sub>10</sub> standard became less important in their control of particulate matter.

8. **A Member** recognized there might be practical difficulties in achieving the AQGs for PM<sub>10</sub> though the authority should take a bigger stride to improve our air quality by adopting WHO IT-3 for PM<sub>10</sub> and IT-2 for PM<sub>2.5</sub> for the revised AQO values.

9. **A Member** pointed out that the consultant had not yet provided the cost and benefit data for each of the control measures as agreed at the last meeting and therefore, he simply could not provide any sensible comment. He was in general agreement to the said principles for revising the AQOs and

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suggested the consultant to propose a broad timeframe for achieving the new objectives.

**Post Meeting Notes:** The CBA figures and Assumptions were sent to the Advisory Panel members on 8 December 2008.

10. Referring to slide #4 of the presentation, **a Member** suggested to delete the word '*aspirational*' from '*long-term aspirational goal*' as it would give a negative feeling that the goal would not be attainable or would take a long time to achieve.

11. On slide #5, **a Member** echoed **another Member's** view that a timeline to achieve the interim targets and the AQGs should be provided to monitor steady progress.

12. Referring to slide #12, **a Member** agreed that protection of public health should be the key parameter in determining the new AQOs. However, this principle should be stated in the Ordinance which was more for policy setting purposes, and not stated in the Technical Memorandum which was meant more for the reference of technical people.

13. Referring to slide #13, **a Member** suggested the consultant to include 'protection of public health' in the paragraph on forward-looking approach in updating the AQOs.

14. Referring to slide #15, **a Member** queried the actual meaning of 'adequate allowance of exceedances' in the paragraph.

15. **A Member** said he had reservation about putting 'protection of public health' into the Technical Memorandum. Also, he queried whether the implementation timeline should be included in the Technical Memorandum instead to bind the Government on its long-term plan.

16. In response, **the Chairperson** said that the principle of 'public interest' as stated in the Ordinance had covered

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‘protection of public health’. As regards the suggestion of including a timeline for attainment of the new standards in the Ordinance, she said the implications of the proposal and how it might interact with the other proposal of having a regular review mechanism should be assessed.

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17. **A Member** questioned about the definition of ‘public health’ and the level of pollution that would pose risk to the public. He quoted the practices in the United States (with primary and secondary air quality standards] and the UK (where economically and technically feasible) and suggested Hong Kong should balance between ‘public health’ and socio-economic and technical considerations.

18. **A Member** commented that the air quality objectives in other countries were more comprehensive as they would have taken into account other aspects such as ecology, vegetation, building stones and monuments, etc.

19. **A Member** said that the primary objective of AQOs should be for protection of the health of the general public which would be characterised by the amount of common diseases suffered by a large number of people. The US primary standards were for protection of public health whereas the less stringent secondary standards were for protection of people’s well-beings. Presumably, when the primary standards were attained, the secondary standards would also be attained.

20. In response to the comment of **two Members** on the proposed particulate matter standards and the implementation timeline, **the Consultant** agreed that particulate matter would be a key parameter for control but even if Hong Kong’s PM10 emissions were down to zero, we would still not be able to achieve the IT-3 standard in the reasonable future because of the regional influence. As for the timeline, there would be many other determining factors such as the emissions in the PRD, whether the stakeholders were supportive of the proposed control measures and whether the community was willing to pay

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for the controls. It would therefore be difficult to commit to a fixed timeline but a more flexible review mechanism for periodic review of the standards should be sufficient to ensure regular and timely updating of the air quality objectives.

21. **A Member** commented that the WHO AQGs were more like a moving target. He proposed that a review mechanism would be necessary and that the emission reduction figures mentioned in the slide presentation could be used as the initial target. He also commented that the proposed new AQOs, as a combination of WHO ITs and AQGs, would seem arbitrary and suggested the Consultant to prepare an explanation in simple language why Hong Kong could not achieve the WHO AQGs in one go.

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22. **The EPD** said the proposed new AQOs, other than those for particulate matters, were close to the EU's which were the most stringent ones in the world for now. For particulate matters, a set of more practical AQOs were proposed in view of the strong influence of sources outside Hong Kong.

23. Referring to the timeline, **the Consultant** supplemented by giving graphical presentation of different scenarios of emission contributions from the PRD and Hong Kong, suggesting that we might not be able to achieve WHO AQGs even by 2030.

24. **a Member** referred to the consultant's comment that Hong Kong would not be able to attain IT-3 for particulate matters even if Hong Kong's PM10 emissions were set to zero. He queried the reason for adopting different sets of standards when Hong Kong and PRD were sharing the same airshed. He suggested the Chief Executive should go to Beijing to seek help from the Mainland as the root of the problem seemed to be in the north. He said the findings of this study should as well be used in the Greater PRD so as to tackle the air pollution problem in a regional context.

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25. **A Member** supported **another Member's** comment. He then commented on **the EPD's** statement that the proposed new AQOs were close to the EU's standards, as misleading. The daily and annual PM10 standards proposed by the Consultant were 100 and 50 ug/m<sup>3</sup>, respectively, while EU's corresponding standards were 50 and 40 ug/m<sup>3</sup> which obviously were way more stringent. Another comment was that the Government should not set the new AQOs based on 'practicality', e.g. what if PRD had another round of industrialization, should Hong Kong then regress back to the less stringent AQOs with due consideration of practicality? Hong Kong should emphasise that if we faced community health problem here due to air pollution, PRD would probably face the same community health problem as well.

26. In response to these comments, **the Chairperson** explained that according to the consultant's modeling results, Hong Kong should be able to achieve the proposed PM10 standards after implementation of the Phase I control measures. The guiding principle in the current review would be for Hong Kong to adopt a more stringent set of new AQOs and move progressively towards the WHO AQGs. As such, any slip back on the standards would be against this very principle and would not be supported. On the front of regional cooperation, the EPD had been engaging and working closely with the Guangdong EPB on the progress and findings of this study. The Chief Executive had also met with the Party Secretary of Guangdong - with environmental protection being one of the key areas for regional cooperation. The Government would also work closely with the Guangdong authority on the post-2010 emission reduction targets.

27. **A Member** said the Government should never adopt a passive attitude in setting standards for particulate matter. Also, it would be advisable to clearly spell out to the public the on-going cooperations with the Mainland authority and to always maintain the momentum in improving our air quality.

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28. **A Member** registered his strong disagreement to only review the AQOs on a need basis. He opined the review must be conducted regularly and a frequency of once every 5 years should be reasonable to assess any progress and what else to be done to further improve the air quality. He then commented on the limitations of modeling work and given the lack of information on the emission data, control scenarios (e.g. business-as-usual vs. aggressive control), etc. adopted by the consultant, he was in no position to know how reliable were the modeling results so produced. He also pointed out the importance of having a timeline for the new AQOs as the trades would need to plan ahead for their activities.

29. **A Member** considered that particulate matters should be of highest concern. The proposed PM<sub>10</sub> standard was less stringent than the WHO IT-2 target as exceedances were allowed (9 each year in the proposed AQOs). He proposed to include the next stage standards (e.g. WHO IT-3 for PM<sub>10</sub>) in the proposal to allow the public to know what target was aiming for.

30. **The Consultant** explained that WHO published the interim targets and AQGs as reference for each country to set their own standards taking into account their local circumstances. For example, the UK did not count episodes of a natural nature in reviewing their air quality compliance status. He also pointed out the proposed review mechanism was meant to help achieve the next optimal standards and not necessarily the next stage AQOs.

31. **A Member** suggested the review should be conducted at regular intervals (e.g. 5 years) or that a mechanism should be introduced to trigger the review process. Without such arrangement, it might take another 20 years before the next review of the AQOs. **The Chairperson** added that a reasonable duration should be allowed in recommending the period of review so that in each review, the outcome of control measures in improving air quality would have been available to

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chart the way forward in deciding on the next set of more stringent objectives..

32. In response to a **Member's** comment, **another Member** said that only extreme episodes such as the London Smog of 1952 would have triggered the government or the public to improve the air quality. He believed that a 5-year interval (same as in the US) would be reasonable for review of the AQOs. Most of the scientific findings on health effects due to air pollution were made in the 1980s and but it was only recently that there were new findings on the mortality effect of ozone on the population. He said that other governments adopting this regular review mechanism would allow ample time for the industry to respond.

33. A **Member** agreed that a 5-year interval should be appropriate. He then asked about the predicted air quality in Hong Kong if PRD had stopped all their PM10 emissions and that Hong Kong had implemented all feasible control measures. In response, **the Consultant** said the predicted air quality would likely be between IT-3 and AQGs provided that all possible mitigation measures were implemented on Hong Kong side.

34. **The Chairperson** added that the Administration would do its best to work closely with the Guangdong authority to reduce emissions - particularly PM10. She also sought confirmation from the consultant that if PRD could make substantial improvement on PM10, Hong Kong would be able to achieve an even higher standard. **The Consultant** supplemented that the implementation of Phase I control measures and achievement of the published emission reduction targets of PRD had already been included in the proposed IT-2 standard for PM10.

35. Referring to the proposed AQOs shown in slide #16, a **Member** commented that it would be difficult for the public to understand as different standards were proposed for, say, the

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10-minute and 24-hour SO<sub>2</sub>. **the Consultant** explained that the former aimed to address spontaneous exposures whereas the latter aimed to address longer term standard of the pollutant.

36. **A Member** echoed that it would be necessary to provide a detailed explanation on the proposed AQOs for the benefit of the general public. He also asked the reason for not adopting the short averaging times for the CO standards. **The Consultant** explained that CO had already attained the AQG level long time ago and it was not a major issue in Hong Kong.

37. **A Member** asked if there were any violation of SO<sub>2</sub>. **The EPD** answered that there were violations of 10-minute SO<sub>2</sub> standard of 500 ug/m<sup>3</sup> at both the general and roadside stations. **The EPD** further advised that the health effect for CO exposure is the formation of carboxyhaemoglobins which would reduce the oxygen-carrying capacity of the blood. The 15-minute CO standard was not considered necessary as the effects would be reversible once exposure was eliminated and the level of carboxyhaemoglobin increase for 15-minute CO standard was equivalent to that for the other proposed AQOs, i.e., 1-hour and 8-hour standards.

38. **A Member** pointed out that the number of exceedances for 24-hour and 10-minute SO<sub>2</sub> were both 3 times. It seemed that the exceedances allowed for the 10-minute standard was relatively small. **The Consultant** responded that the figures were based on modeling results with the implementation of Phase I control measures. **The Member** suggested the Consultant to review the number of exceedances carefully as it would also apply to the roadside monitoring stations.

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39. **A Member** asked for the number of exceedances for SO<sub>2</sub>. According to the monitoring data of 2008, there were 19 exceedances for 10-minute SO<sub>2</sub> at the Central/Western monitoring station. **Another Member** commented that these results had failed to meet the AQGs. **The Chairperson**

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replied that the data was recorded before the additional control measures were implemented and that the Administration would do the very best to achieve the proposed standards.

40. **A Member** suggested showing which district could achieve what air quality standard by mapping the air quality data at the district level and compared that to the proposed new AQOs. **Another Member** agreed in-principle but opined that such mapping might 'over-simplify' the situation, e.g. Tap Mun would have recorded the highest ozone concentrations (during episodes) but in fact, the overall air quality there should generally be better than other locations within Hong Kong. In addition, he reiterated the Administration should adopt IT-2 for 24-hour SO<sub>2</sub>, IT-2 for PM<sub>2.5</sub> and IT-3 for PM<sub>10</sub>. In response, **the Chairperson** said she fully understood the preference of the public for a more stringent set of standards. However, the modeling results prepared by the Consultant showed that even with all of the proposed control measures fully implemented, the suggested targets would still not be attainable. **The Consultant** supplemented that the proposed control measures were also subject to cost benefit assessment and public acceptance.

41. **A Member** asked what sort of exceedances would Hong Kong experience in the interim before the revised AQOs were achieved. Also, he suggested that the modeling results should be presented before and after implementation of the control measures in order to give an overview on the effectiveness of the proposed measures.

42. **The EPD** reported that for SO<sub>2</sub>, only 22% of the time in 2008 could achieve the AQG standard. Assuming implementation of the 19 control measures by 2015, the amount of time achieving the AQG would increase from 22% to 61%. For the IT-1, currently about 1% of the time failed to meet the standard. For the IT-2, about 9% of the time did not meet the standard. He cautioned that the above information had been collated based on some preliminary modeling results and that

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the number of exceedances could still be on the high side. A **Member** commented that it would be more convincing to present the proposal together with the modeling results and the assumptions listed.

43. A **Member** commented that a timeline for Phase I, II & III control measures would be necessary as it would affect the implementation costs. In response, **the Consultant** said that Phase I measures were assumed to be fully implemented by 2015. **The Chairperson** added that 2015 was only a reference year for calculation purpose. In fact, the implementation timeline would vary for different control measures. Some of the energy efficiency measures, e.g. district cooling system for Kai Tak Development, had already been taken forward. Other measures, e.g. 50% natural gas for local electricity generation with an implication of 20% tariff increase *and* early retirement of franchised buses with a bus fare increase of 15% in the peak year, would be subject to their acceptance by the public and the stakeholders and thus the outcome of the forthcoming public consultation.

44. A **Member** pointed out that it would be extremely difficult to achieve the listed emission reduction potential for the 50% natural gas scenario. He said a long lead time of, say, 5 to 6 years would be required to deliver the necessary infrastructure. The price of fuel gas then would also be uncertain and he predicted the impact on the tariff would be much larger than 20%.

45. A **Member** asked the Consultant to provide more detailed information for the proposed control measures for use in the public consultation. He also questioned the rationale of introducing Low Emission Zone to districts fitted with roadside air quality monitoring station, and not to Wanchai nor Tsim Sha Tsui with equally busy traffic flow. In response, **the Consultant** explained that Central, Causeway Bay and Mong Kok were identified as priority districts for assessing the effectiveness of the scheme and there was certainly no

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restriction to expand the scheme to other areas. **a Member** suggested expanding the existing monitoring network throughout the territory for better coverage and for protection of community health.

46. **A Member** suggested adopting the more stringent IT-3 standard for PM10 while increasing the number of exceedances to a more reasonable value. One advantage was that the proposal would thus have a better public image and would be more acceptable particularly to the green groups.

47. **The Consultant** pointed out that with the PM10 standard tightened to IT-3, the corresponding number of exceedances would be higher than 35. **The EPD** added that there would be 45 and 113 exceedances at the Yuen Long monitoring station in 2008 when compared to the IT-2 and IT-3 standards, respectively. Exceedances at the roadside stations would be even higher. In terms of statistics, any number of exceedance higher than 5% of the measurements should not be considered as compliance. As such, it was a practice adopted in other parts of the world to allow only very small amount of exceedances, with the possible exception of particulate matters which should be a universal problem all over the world. In EU the number of exceedances allowed for particulate matters is 35 per year plus further exclusion of exceedances due to natural contribution.

48. **The Chairperson** highlighted that the number of exceedances allowed in a year should be reasonable so as not to make a mockery of the whole exercise. Regarding the proposed Low Emission Zones for Central, Mong Kok and Causeway Bay, she anticipated lots of discussions ahead with the stakeholders and the District Councils and it would not be realistic to expect design details of the operation of each and every proposed control measures to be available at this stage.

49. **A Member** commented that something should be done to rationalize the bus routes. He said he spotted many empty

buses running in the Central.

50. **A Member** questioned how to implement the Low Emission Zone to stop vehicles from entering the area. He further questioned if #2 of the Phase I measures (i.e. early retirement of aged/heavily polluting vehicles) was implemented, #10 of the Phase I measures (i.e. Low Emission Zone) would not be necessary. In response, **the Consultant** said the integrated effect of the two measures in question had been taken into account in the calculation. He further elaborated that the implementation cost for Low Emission Zone would vary with different approaches and in his calculation, a conservative approach deploying fixed cameras was assumed.

51. **A Member** added that there would be many ways to implement the Low Emission Zone such as by displaying different stickers on vehicles of different emission levels and imposing financial disincentives to screen certain vehicles from entering the Zone.

52. **A Member** offered the following comments on the short-term control measures:

- For early retirement of aged/heavily polluting commercial vehicles: what incentives would the Government provide to the vehicle owners;
- For Low Emission Zone: consideration should be given to allow shipping agents to deliver their goods;
- For the pedestrianisation scheme: the priority area/streets should be identified;
- For bus route rationalization: should the scheme also include green mini buses;
- For cycling network: safety issues must be addressed if the network was extended to busy, narrow streets; and
- For the district cooling system for Kai Tak Development: the

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Government should consider applying the scheme to the whole district as a policy to allow it to take off.

53. **The Consultant** responded that the bus route rationalization measure was targeted at franchised buses since most mini buses had already been changed to run on LPG.

54. **A Member** suggested including the costs and the emission reduction potential for each of the control measures in presenting the proposal to the legislature and the public. He also pointed out that measures to deal with urban planning issues, e.g. tall buildings would reduce ventilation within the urban area, were missing.

55. **The Consultant** responded that the existing air ventilation assessment (AVA) requirement in the Town Planning Board submission would have addressed this urban planning issue. In selecting the control measures, one major criterion was that the result of the measures in terms of emission reduction potential should be quantifiable. The proposed measures, largely to reduce emissions, would achieve results irrespective of whether the weather condition was favorable for dispersion of pollutants.

56. **A Member** commented that the most effective approach would be to reduce the emission sources. The effect of AVA would be rather localized and would not help much territory-wide. He considered that capping the number of vehicles would not lead to fewer cars on the road. There would be more vehicles coming to Hong Kong from China. The Hong Kong-Zhuhai-Macau Bridge would mean more vehicular traffic in Hong Kong. He suggested a stronger railway-based traffic network to reduce our reliance on private motor vehicles.

57. **A Member** commented that the use of ultra low sulphur diesel by ocean-going vessels would not be feasible. Instead, he suggested the use of dual engines on board the ocean-going vessels. For local vessels, he asked what types of vessels the

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proposal would cover. The implementation cost and the approach of control would be different when different types of vessels were involved.

58. **A Member** was concerned that the public and the trades would object strongly to banning Euro I to III diesel commercial vehicles from the Low Emission Zone. Instead of “banning” the said vehicles, he suggested “charging” the vehicles.

59. **The Chairperson** cautioned Members that they should not be too optimistic about having a fixed implementation date for the proposed measures. Some of the measures concerning the power industry and traffic management were controversial at the least. The proposed measures should be taken as conceptual only as the Consultant had not yet gone into the implementation details. The Consultant provided an estimation on the emission reduction potential and the cost/benefit of the individual measures and based upon which, an indication on the effectiveness of the measures was obtained.

60. **The Chairperson** summarized that Members generally endorsed the principles adopted by the Consultant in setting the AQOs, and had no objection to put forward the proposed control measures for public consultation and a review mechanism to regularly review the air quality standards. The Consultant would present the initial findings and recommendations to LegCo’s Panel on Environmental Affairs on 19 March 2009, and would hold a public forum on the findings/recommendations on 20 March 2009.

61. **A Member** said he would like to have sight of the draft final report before it was finalized. **The Consultant** responded that there were two reports being prepared - one for the consumption of the general public and the other for people with a technical background. The first draft should be ready by next month. **The Chairperson** said that Members would be invited to comment on the draft reports and added that a consultation document was being prepared in parallel by the

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Department for a comprehensive public consultation to take place in the second half of 2009.

62. **A Member** asked about the role of Members in the upcoming public forum. **The Chairperson** explained that Members were free to attend the forum and to express their views.

63. **A Member** said that he generally endorsed the principles for setting the new AQOs but given that he had only heard the powerpoint presentations by the Consultant, he had reservation about the conclusion that the Advisory Panel had a consensus on the Consultant's proposal. Some examples would be the absence of a target date for achieving the AQGs and the interface between the proposed new AQOs and the existing Environmental Impact Assessment Ordinance. In response, **the Chairperson** welcomed the elaboration of **the Member** and said if asked to report on the views of the Advisory Panel, she would report that the Advisory Panel heard the presentation by the Consultant and offered their views; and the Consultant took note of the views for inclusion in the draft reports being prepared and in the presentation file. **The Member** added there was significant progress in the study, many of the comments had been taken on board by the Consultant and that the study was generally moving in the right direction. He highlighted, however, that Members should not be obliged to say either 'yes' or 'no' to the proposal.

**A Member** said he disagreed with the Consultant's proposal in that WHO AQGs were not recommended as the new AQOs of Hong Kong. **The Chairperson** thanked members for their honest and best advice. She noted the divergent views though she thought the priority was to move forward to wrap up the review exercise so that actions to tighten the current AQOs might proceed as early as possible.

**Agenda Item 6: Any Other Business**

64. There being no other business, the meeting was adjourned at 5:30 p.m.