

**Confirmed Minutes of the 254th Meeting
of the Advisory Council on the Environment (ACE)
on 8 August 2022 at 2:30 p.m.**

Present:

Mr Stanley WONG, SBS, JP (Chairman)
Prof Nora TAM, BBS, JP (Deputy Chairman)
Ms Carmen CHAN, BBS, JP
Ms Sylvia CHAN, MH
Ms Ada FUNG, BBS
Ir Samantha KONG
Ms LAM Chung-yan, MH
Prof LAU Chi-pang, BBS, JP
Ms Julia LAU, JP
Dr Winnie LAW
Mr Andrew LEE
Prof Kenneth LEUNG, JP
Dr MA Kwan-ki
Dr Jeanne NG
Dr SUNG Yik-hei
Ms Christina TANG
Mr Simon WONG, BBS, JP
Dr WONG Kwok-yan, MH
Prof WONG Sze-chun, BBS, JP
Dr Raymond YAU
Dr Kenneth LEUNG (Secretary)

Absent with Apologies:

Prof Alexis LAU, JP

In Attendance:

Mr Terence TSANG	Assistant Director (Environmental Assessment), Environmental Protection Department (EPD)
Mr Stanley LAU	Principal Environmental Protection Officer (Strategic Assessment), EPD
Mr Simon CHAN	Assistant Director (Conservation), Agriculture, Fisheries and Conservation Department (AFCD)
Ms Maggie CHIN	Assistant Director of Planning / Technical Services, Planning Department
Ms Celia TAM	Principal Information Officer (News), EPD
Ms Karen CHEK	Chief Executive Officer (CBD), EPD
Miss Sally SHEK	Executive Officer (CBD) 1, EPD
Miss Ingrid SUEN	Executive Officer (CBD) 2, EPD
Miss Avynn WONG	Executive Officer (CBD) 2 Designate, EPD

In Attendance for Item 4:

Dr Samuel CHUI, JP	Deputy Director of Environmental Protection (1), EPD
Dr Billy MA	Senior Environmental Protection Officer (Strategic Assessment) 6 (Acting), EPD
Mr Felix TAI	Environmental Protection Officer (Strategic Assessment) 63, EPD
Ms Chole NG	Nature Conservation Officer (North), AFCD

Project Proponent Team

<i>Civil Engineering and Development Department (CEDD)</i>	Mr Chris WONG, JP, Project Manager (North) Mr Gavin TSE, Deputy Project Manager (North) Mr John CHUNG, Chief Engineer / North 2 Mr Daniel LAU, Senior Engineer / 9 (North) Ms Elaine SHIH, Engineer / 16 (North)
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<i>Housing Department (HD)</i>	Ms Joanne CHAN, Chief Architect 1 (Acting) Ms Angela SZE, Senior Architect 29 Mr Billy IP, Architect/Feasibility Management Unit 3
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<i>WSP (Asia) Limited</i>	Mr Emeric WAN, Executive Director Ms Cassie CHOW, Principal Consultant Ms Esther LIU, Principal Planning Consultant Ms Anny LI, Senior Tree Specialist Mr Dennis CHAN, Principal Engineer
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<i>Ecosystems Limited</i>	Mr Vincent LAI, Managing Director Mr Klinsmann CHEUNG, Ecologist
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<i>South China Agricultural University</i>	Prof WANG Min, Moth Expert
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Action

The Chairman welcomed Members for attending the meeting in person or by Zoom. He informed the meeting that apologies of absence had been received from Prof Alexis Lau.

Item 1 : Confirmation of the draft minutes of the 253rd meeting held on 16 May 2022 (Closed-door session)

2. The draft minutes of the last meeting were confirmed without any proposed amendments.

Item 2 : Matters arising (Closed-door session)

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

Item 3 : Report on the 154th Environmental Impact Assessment Subcommittee Meeting - EIA report on "Cycle Track between Tsuen Wan and Tuen Mun (Tuen Mun to So Kwun Wat)" (Closed-door session)
(ACE Paper 10/2022)

4. At the invitation of the Chairman, the Environmental Impact Assessment Subcommittee (EIASC) Chairperson informed Members about the discussion and recommendation of the EIASC meeting held on 18 July 2022 in respect of the Environmental Impact Assessment (EIA) report on “Cycle Track between Tsuen Wan and Tuen Mun (Tuen Mun to So Kwun Wat)” of which the details were summarised at *ACE Paper 10/2022*.

5. Having regard to the findings of the EIA report and the information provided by the project proponent at the meeting, the EIASC recommended the full Council to endorse the EIA report with two conditions and three recommendations. Members were informed of the project proponent’s site inspection on trees number T352 and T353 on 19 July 2022. The project proponent confirmed that the two trees were no longer on the site as they fell under another project. In response to a Member’s enquiry, Mr Stanley Lau supplemented that the two trees fell about one year ago relating to the widening of the Castle Peak Road which was not under the EIA Ordinance (EIAO).

6. In this connection, the EIASC Chairperson proposed and the meeting agreed that the recommendation under paragraph 8 (iii) of *ACE Paper 10/2022* should be slightly revised with the phrase “*in particular tree number T352 in the site area*” removed. With no further comment from Members, the Chairman concluded that the meeting agreed to recommend the DEP to endorse the EIA report with the conditions and recommendations as set out in paragraph 8 of *ACE Paper 10/2022* taking into account the above amendment.

Item 4 : Report and follow up discussion on the 154th Environmental Impact Assessment Subcommittee Meeting - EIA report on "Technical Study on Partial Development of Fanling Golf Course Site – Feasibility Study"
(ACE Paper 11/2022)

7. The Chairman referred Members to *ACE Paper 11/2022*, which summarised the discussion of the EIASC meeting held on 18 July 2022 in respect of the EIA report on “Technical Study on Partial Development of Fanling Golf Course Site – Feasibility Study”. The Chairman noted that some ACE Members had attended a site visit arranged by the project proponent before the EIASC meeting.

8. The Chairman declared that he was the Chairman of the Task Force on Land Supply from 2017 to 2019 and the resumption of 32 hectares (ha) of land of the Fanling Golf Course (FGC) to the east of Fan Kam Road (FGC site) for housing development was one of the recommendations put forward by the Task Force in the report submitted to the Government. The Chairman invited Members to consider

if it was appropriate for him to chair the discussion of this agenda item. As the development of the FGC site was only one of the many recommendations submitted by the Task Force in 2019 based on the opinions collected through public consultations, a Member suggested with the agreement of the meeting that the Chairman should continue to host the meeting as no direct interest in the matter was involved.

9. A Member declared that he had collaborated with Mr Vincent Lai of the Ecosystems Limited (the ecological consultant of the project proponent) on fishery studies for AFCD in which Mr Lai served as a sub-contractor. He was also a consultant of eco-shoreline trial studies commissioned by CEDD. A Member declared that he had carried out a research and published a book on the history of Fanling Golf Club in 2015. In addition, he had expressed his views on the history and ecology of the FGC on various occasions through different media channels, including newspapers, radio and TV in the past few years. A Member declared that she had been engaged in different projects with WSP (Asia) Limited. A Member declared that his company had engaged WSP (Asia) Limited to conduct research for different projects. A Member declared that he was involved in an ongoing study on the ecological impact of catchwaters commissioned by CEDD. A Member declared she was an ex-officio executive councillor of the Heung Yee Kuk, New Territories (N.T.). The Chairman and Members agreed that the above declarations would be put on record and the Members concerned could continue to participate in the discussion of the item as there was no direct conflict of interest.

(Post-meeting notes: At the EIASC meeting held on 18 July 2022, a Member declared that Mr Vincent Lai of Ecosystems Limited was her social acquaintance. On 26 August 2022, two other Members updated that they were respectively an ex-officio executive councillor and a co-opted councillor of the Heung Yee Kuk, N.T. One of the Members also corrected that his book on Fanling Golf Club was published in 2019 instead of in 2015.)

10. Upon the invitation of the Chairman, the EIASC Chairperson reported that the EIASC Members had meticulously deliberated and sought clarifications from the project proponent on a wide range of issues of the EIA report including the fauna and flora diversity, hydrology and hydrological impact, landscape impact, ecological impact, light impact and the proposed layout plan at the EIASC meeting. After thorough discussion, Members still had doubts on the assessments made in the EIA report. They considered that the information provided by the project proponent was insufficient to support the endorsement of the report. Some Members opined that the EIA report should be rejected, some held the view that the project proponent should be asked for a second submission to the EIASC while others considered that the project proponent should provide additional information for the full Council's deliberation. The EIASC Chairperson referred Members to Annex B of ACE paper 11/2022 for details of the discussion.

11. As the EIASC could not reach a consensus, all Members agreed that the project proponent should be invited to attend the full Council meeting and to provide additional information on the issues of concern to facilitate the Council's further deliberation. A list of the issues of concern and the responses given by the project proponent were also attached to the above-mentioned ACE paper.

(The project proponent team joined the meeting at this juncture.)

Presentation cum Question-and-Answer Session (Open session)

12. Mr Chris Wong gave an opening remark and Mr John Chung briefed Members on the project background, key findings of the EIA study as well as the project proponent's responses to the areas of concern raised by Members at the EIASC meeting, with the aid of a PowerPoint presentation. Prof Wang Min also gave a brief introduction of the moth survey including the methodology deployed and the rationale behind.

Zoning and Division of Four Sub-Areas

13. In reply to the Chairman's enquiry about the criteria for the division of the four sub-areas, Mr John Chung explained that the delineation was mainly based on the topography and distinctive ecological features of the site for the purpose of technical assessment. He said that Sub-Area 1 was delineated by the large piece of plantation and woodland below the southern boundary with Sub-Area 2 whereas Sub-Areas 2 and 3 were delineated by the access road to On Po Village. As for Sub-Area 4, it was characterised by the unique Chinese Swamp Cypress, marsh and swampy woodland. The Chairman further sought clarification on the land use of Sub-Areas 2 to 4. Mr Chung confirmed that according to the Outline Zoning Plan (OZP), Sub-Areas 2 to 4 were reserved for "Conservation cum Recreation" purpose.

14. A Member noted that the site was divided into sub-areas based on elements like roads or plantations instead of their ecological value. Pointing out that the zoning of Sub-Area 1 was "Residential (Group A)" which was the highest residential density allowed in Hong Kong, the Member suggested with the support of two other Members that a detailed Habitat Management Plan or conservation plan should be provided for Sub-Areas 2 to 4 at an early stage to facilitate Members' consideration of the project. A Member suggested and another Member echoed that the environmental impact of the proposed project on the FGC site should be considered in a holistic manner given that the four sub-areas are closely connected to each other. Mr Terence Tsang advised Members that EPD, AFCD and other relevant departments would follow up with CEDD on the Habitat Management Plan at the detailed design stage.

Ecological Value of the Site

15. Two Members doubted why Sub-Area 1 was assessed to have lower ecological value given the insignificant difference in number of species found in the sub-area as compared with Sub-Areas 2 to 3. While there might not be a significant difference in the number of species found in the four sub-areas, Mr Vincent Lai highlighted that rare mammal species, such as red muntjac, leopard cat and masked palm civet were not recorded in Sub-Area 1. Mr John Chung explained that the overall ecological value of Sub-Area 1 was assessed against the 11 criteria set out under the Technical Memorandum of the EIA process (TM) as well as a bundle of other environmental factors including the connectivity of the habitats concerned. Mr Chung indicated that a large portion (about 63%) of Sub-Area 1 was developed area which was close to the existing disturbances from the neighbouring area. In addition, it had little connectivity to areas of high ecological value and the size of its habitats with higher ecological value was relatively small. Based on the above site conditions and the results of the ecological surveys, the ecological value of Sub-Area 1 was thus assessed to be low to medium.

16. A Member enquired if the project proponent had considered the ecological value of the mosaic pattern of the habitats in Sub-Area 1 which might serve as foraging ground for bats. Mr Vincent Lai clarified that Sub-Area 1 should not be categorised as mosaic habitats as most of its areas including the carpark, tennis court and staff quarters were man-made and the frequently trimmed turfgrass would unlikely be a feeding ground for bats.

17. A Member indicated that the size of natural habitats in Sub-Area 1 was in fact the largest among the four sub-areas although it was not the case in terms of percentage. She questioned the objective for comparing the ratio instead of actual size of natural habitats and man-made habitats in the four sub-areas. She also questioned if it was appropriate to compare the ecological value of the sub-areas on a relative basis. Mr Vincent Lai responded that as the overall size of Sub-Area 1 was larger than the other sub-areas, it was natural that the size of its individual habitats was also larger. To cater for the difference in sizes of the four sub-areas and to give a meaningful comparison, the ratio of the various habitats was compared. the Member further enquired why the age of some habitats such as marsh, mixed woodland and watercourse was not assessed in the EIA report. Mr Lai explained that as the age of habitats was mainly used for indicating the status of vegetation succession of a habitat, only habitats which might go through natural succession process would be evaluated in terms of their age. Habitats in which the vegetation were heavily affected by human operation, such as farmland, or without vegetation succession, such as river, would not be given an assessment on age.

18. Drawing reference to the Long Valley Nature Park which was a habitat with the entire area being occupied by man-made agricultural activities, a Member stressed that the naturalness of a habitat was not the only determining consideration of its ecological value. Sharing examples in other countries, another Member

echoed with the Member that the ecological value of man-made habitats should not be undermined. Mr Vincent Lai explained that “naturalness” and “size” were only two of the 11 criteria of the ecological assessment. Apart from these two criteria, the abundance, diversity and rarity of species in Sub-Area 1 were all lower than those of the other sub-areas. The ecological value of Sub-Area 1 was determined based on an overall assessment of all the criteria.

19. Highlighting that the Shuen Wan Golf Course was adjacent to a landfill, a Member was of the view that the site would not be an appropriate comparison to the FGC site given their significant differences in ecological values. Mr John Chung explained that each site was unique in its biodiversity and ecological linkage. The Shuen Wan Golf Course was quoted as a reference for its man-made environment with frequently-trimmed turfgrass and human interruption, which was also a dominant habitat in the FGC site.

20. Noting that Sub-Area 1 was considered as having lower ecological value due to its proximity to the developed area, two Members were concerned that the proposed housing development would further lower the ecological value of other sub-areas and pave way for development of Sub-Areas 2 to 4 in the future. Mr John Chung assured Members that Sub-Areas 2 to 4 would be reserved for passive recreation and conservation purposes under the OZP. In response to one of the two Members’ suggestion of an impact assessment on Sub-Areas 2 and 3 subsequent to the proposed development in Sub-Area 1, Mr Chung highlighted that Sub-Area 1 was close to the existing developed areas including the clubhouse, staff quarters, turfgrass and housing estate and the woodland between Sub-Areas 1 and 2 would act as a buffer zone between the proposed housing units and the remaining sub-areas. With a proper Habitat Management Plan to be devised at a later stage, the ecological value of Sub-Areas 2 to 4 should not be affected by the proposed development in Sub-Area 1.

21. Mr John Chung reminded Members that the whole project site area was 32 ha in total, but only 9 ha in Sub-Area 1 was proposed for development after the EIA assessment. Mr Chung considered that the current proposal was a conservative one which had already given due consideration to the ecological value of the site. He further shared with Members that there were precedents of approved EIA projects in sites with moderate ecological values. This notwithstanding, he assured Members that the project proponent would explore the possibility to reserve more areas in the remaining 37% of the undeveloped part of Sub-Area 1. Mr Chung was of the view that the landscape and visual impact of the proposed development in Sub-Area 1 would not be unacceptable given the existing proportion of developed area in the sub-area and its proximity to Cheung Lung Wai Estate.

Fauna Species

22. Given that mammal species of conservation interest such as red muntjac, leopard cat were recorded in Sub-Areas 2 to 4, a Member remarked that the project

proponent should critically review the potential impacts of human disturbances on the fauna species and put in place appropriate mitigation measures. Mr John Chung advised Members that appropriate measures would be set out in the Habitat Management Plan with reference to the designated purposes of the areas concerned to avoid disturbances to the fauna species of Sub-Areas 2 to 4.

23. With reference to the Project Study Brief, the Guidance Notes of the EIAO and relevant literatures, a Member opined that the EIA report should not only ascertain the existence of roosting site, but also check the presence of breeding or foraging sites for fauna species in the FGC site. As such, he disagreed with the project proponent's assessment of the ecological value based on the absence of bat roosting sites. He highlighted that there was a large area of woodland in Sub-Area 1, which could be a potential foraging ground for bats.

24. Mr Vincent Lai confirmed that the project proponent had considered the existence of roosting, feeding and breeding grounds of bats in the survey. Considering that bats were using their roosting site as breeding ground, Mr Lai said that efforts had been made to actively search for roosting sites, but none was found in Sub-Area 1. Pointing out that bats were generally feeding on fruits or small insects, Mr Lai further said that even if Sub-Area 1 was a feeding site for bats, alternative food sources were available in the mixed woodland or woodland in other sub-areas as well as in the farmland within 500 m of the project area. As such, the proposed development in Sub-Area 1 should not have significant impact on the foraging of bats. Mr John Chung was of the view that the presence of roosting sites was the key indicator of the significance of the habitat for bats given their high mobility.

25. A Member argued that if the objective of conducting the bat survey was only to ascertain the presence of roosting sites, it called into question the purpose of the assessment of the abundance and types of bat species which was required under the TM and Project Study Brief. Mr Vincent Lai clarified that the survey methodology including the sampling method and equipment used were suggested and conducted based on the TM, Project Study Brief as well as the specific conditions of the site. While the project proponent had provided additional information at the meeting, the Member was still concerned about the methodology and quality of the ecological surveys which could affect the assessment and subsequent recommendations. The Member pointed out that the project proponent had yet to address his question on the details of bat survey including the transect, number of personnel and teams involved as well as the location and time spent in each sub-area which were raised in the EIASC meeting.

26. Considering that the ecological consultant of a third party was able to record more bat species with the use of static detectors, a Member questioned if handheld bat detectors was an appropriate equipment for the survey. He indicated that static detectors could provide more accurate and comprehensive data such as the duration of bats staying in a location and hence give insights into potential foraging grounds.

Mr Vincent Lai explained that the deployment of handheld bat detectors was suitable for the purpose of active search of roosting sites and in line with the methodology of past EIA studies. Mr Lai added that static detectors would need to be set up at exposed locations in open spaces and thus their usage might not be feasible in all EIA projects. As for the number of species recorded, Mr Lai said that it could be affected by various reasons including the purpose of the survey. The Member remarked that deployment of static detectors in the current project should be feasible given the vast open space in the site.

27. Mr John Chung supplemented that the methodology and equipment deployed were recommended after extensive literature review and was in line with the EIA project on North East New Territories New Development Areas approved in 2013. While there was no specific requirement in the TM, the equipment deployed was considered suitable and approved by the authorities concerned. Taking into consideration the possible sources of food for bats, Mr Chung was of the view that the bats recorded in the FGC site were only passing by the area.

28. Noting that more moth species were recorded in another survey carried out by a third party, a Member enquired about the rationale behind the proposed design and duration of the moth survey carried out by the project proponent. Prof Wang Min explained that the survey was designed based on the environment of the project site as well as the travelling distance of regular moths between 30 m to 150 m. Bearing in mind that the survey was to identify the species of moth which could be found in the project site for the purpose of EIA, the duration of the survey was set at two hours after sunset to avoid the inclusion of moths from areas outside the project site, such as “the Green”.

29. A Member enquired about the extent of Prof Wang Min’s participation and the personnel responsible for the field survey as these factors were crucial to the quality of the moth survey. Mr Vincent Lai explained that Prof Wang had conducted site inspection in early 2020 before designing the survey methodology. Owing to the pandemic situation, Prof Wang was unable to come to Hong Kong again and the field survey was carried out by local consultants who were experienced in insect surveys. Mr Lai confirmed that the identification of moth species was conducted by Prof Wang.

30. In reply to a Member’s enquiry, Mr Vincent Lai clarified that flight path surveys of breeding ardeids as well as surveys on land birds outside the FGC site actually began at 8 am whereas surveys on land birds inside the site had covered different time of the day from 10 am to 10 pm. Mr Lai explained that land birds could be recorded throughout the day as they were mostly staying within their habitats.

31. A Member shared with Members that the results of bird surveys could vary greatly between 8 am to 10 am depending on the seasons involved. He opined and echoed by another Member that the probability of recording land birds would be the

highest during the first two hours of sunrise which would be their peak foraging time. The number of land birds recorded outside their active time would be on the low side as they would be hiding in the trees with little movement. As such, the two Members were concerned about the accuracy and comprehensiveness of the baseline ecological data. Another Member opined that it would not be appropriate to conduct bird surveys so late in the morning as the FGC was open for golf activities and accessible by local villagers around 6 am.

32. Mr Vincent Lai advised Members that according to Dr Kwok Hon-kai, an ornithologist in the consultant team, there were no known land bird species which could only be recorded before 10 am. Taking into account the data from literature review, the bird surveys carried out were considered sufficient and appropriate while he agreed that surveys in the early morning could make the work easier for surveyors. Mr John Chung assured Members that the frequency and survey efforts of its consultant were on par with other EIA projects.

33. Considering the different issues raised by Members on the bat, moth and bird surveys, a Member was concerned about the accuracy, comprehensiveness and reliability of the ecological assessments which were the basis of all recommendations, judgement and mitigation measures. The Member and two other Members stressed that the accuracy of ecological findings was of paramount importance in forming the conclusion of the EIA report as well as a baseline for environmental monitoring and audit in the future.

Flora Species

34. In response to a Member's enquiry, Mr Vincent Lai clarified that the percentage of exotic trees referred to the number of tree species instead of the tree counts since the ecological value of an area should mainly be evaluated based on the composition of species rather than quantity. Highlighting that the woodland and mixed woodland in Sub-Area 1 had existed since 1945, the Member considered it inappropriate to determine the ecological value of the mixed woodland in Sub-Area 1 solely based on the percentage of exotic species as the quality of the woodland would depend on the tree counts. He added that there might not be much difference in the ecological function of the woodland and mixed woodland given their long history.

35. A Member enquired and Mr John Chung clarified that 11 trees of particular interests (TPIs) would be retained while those in unsatisfactory condition would be felled. While details of the tree survey were provided in the EIA report, another Member pointed out that the project proponent should provide a summary covering the percentage of tree species, their conditions together with the retention and removal plan to facilitate Members' understanding. A Member suggested the project proponent to consider the adverse impact of tree removal on the ecology of the project site as a whole. One of the above Members added that the project proponent should retain as far as possible those trees in good conditions given the

substantial number of trees to be felled in the project. Another Member remarked that the Government seemed to be more lenient to Government projects in terms of tree removal.

36. Mr John Chung emphasised that tree preservation and removal in Hong Kong was subject to a stringent control mechanism. Prior to any tree felling, a Tree Preservation and Removal Proposal with details and justifications on the location and number of trees to be felled and compensated would need to be submitted to the relevant authority for approval. Such details would also be included in the relevant paper to be submitted to the Legislative Council for funding approval. Mr Chung added that a more detailed tree survey would be conducted before the commencement of works.

37. For compensation tree planting, a Member suggested with the support of the Chairman that the project proponent should deploy suitable floral species bearing fruits for foraging or palm trees which would provide roosting sites for fauna species. Mr Vincent Lai responded that it had been mentioned in the presentation under the Outlines of Habitat Management Plan that floral species with ecological functions would be deployed to enhance the habitat quality for fauna species such as birds and bats.

38. In response to a Member's enquiry on the plans for the protection of the Chinese Swamp Cypress, Mr John Chung responded that motion sensor or artificial intelligence cameras could be installed to monitor and protect the Chinese Swamp Cypress. In terms of water sources, he said that irrigation would be arranged if necessary.

39. Noting that the existing car park in Sub-Area 1 would be removed, a Member was concerned about the need for tree removal outside the 32 ha of the FGC site to accommodate the parking needs of the Hong Kong Golf Club (HKGCC). Mr John Chung responded that temporary parking arrangement for the HKGC users might be made having regard to the different construction phases of the project. The possibility would be explored subject to further liaison with the parties concerned.

Layout Plan

40. A Member doubted the feasibility of accommodating 12,000 flats in Sub-Area 1 in view of the constraint of the trees to be retained and the potential light glare impact. Ms John Chung stressed that the 12,000 flats were the target housing supply worked out based on the plot ratio under the prevailing policies. Mr Chung explained that the proposed layout was only an indicative plan to facilitate the preparation of the EIA report and would be subject to adjustment at the detailed design stage. The possibility to keep more trees could be explored with reference to the spaces to be taken up by the housing blocks subject to the flat sizes to be determined at a later stage.

41. A Member expressed that the project proponent should make an effort to keep the woodland in Sub-Area 1 as its ecological value should be higher than that of the mixed woodland. The Member suggested with the support of the Chairman and two other Members that the disposition of the housing blocks should be adjusted. In particular, the Member said that some housing blocks could be moved to the existing tennis court or the empty spaces to the north of the proposed block 2. To preserve the woodland and to accommodate other conditions in the site, the Member further suggested the adoption of different building designs other than the proposed butterfly plan. One of the above Members also indicated that if the proposed block 4 could be moved southwards to integrate with the proposed social welfare facilities building, there would be a good chance to keep a large part of the woodland. The Member added that the layout plan should not be limited by the visual and ventilation corridors of the proposed housing units so that the maximum number of trees in good conditions could be conserved. Mr John Chung explained that the proposed development in Sub-Area 1 was considered as a whole and the area of existing tennis court would be used as the main entrance of the proposed residential development while the empty space at the north of the site would be utilised for other purposes.

42. Further to a Member's suggestion to preserve the woodland, another Member sought clarification on the value of the woodland in comparison to the mixed woodland in Sub-Area 1 as the strategic design of the layout plan might be affected. She also questioned why the woodland was abandoned in the proposed plan. Mr Vincent Lai clarified that while the ecological value of woodland should normally be higher than that of mixed woodland, the woodland in Sub-Area 1 was considered as having relatively low ecological value given its relatively small size, proximity to the car park and being detached from other woodland areas. He highlighted that no species of conservation interest was recorded in the woodland. Considering the aforesaid, that woodland patch in Sub-Area 1 was not proposed to be retained.

43. Ms Joanne Chan explained that the trees and woodland would need to be removed based on the preliminary layout plan devised with the domestic plot ratio of 6.5 for new development area under the prevailing policy. She said that the butterfly-shaped building was only one possible design and HD would continue to liaise with the project proponent to fine-tune the layout plan while maintaining the plot ratio. The possibility to retain more trees would be explored at the detailed design stage. The Chairman understood that the project was still in the early stage of development and the layout plan would inevitably be subject to change over time. He suggested that the project proponent should take note of Members' comments and incorporate the relevant views in its future design. He added that the Town Planning Board (TPB) might be consulted if there was a need to lift the height restriction. The Chairman reminded Members to focus their discussion on the environmental assessments of the project instead of the layout plan.

44. Given that the EIA was carried out based on the preliminary layout plan, a Member opined that the conditions or recommendations should not be substantial changes to the final layout plan if the EIA report was approved. The Member had doubts on the development proposal as she failed to see a matching conservation plan to mitigate the possible impacts of the current development project with the highest density under the zoning “Residential (Group) A”.

45. Noting the high density of the proposed housing development in Sub-Area 1, two Members expressed concern about the potential adverse impact on the ecological values of Sub-Areas 2 to 4 brought by human disturbances. Mr John Chung explained that the density of the housing development project was determined by the maximum plot ratio which was increased to 6.5 for new development area since 2019. The Chairperson reminded Members that residential density was outside the scope of EIAO.

46. A Member suggested the incorporation of green design elements such as green roof or sky garden in the proposed housing units with a view to enhancing urban ecology. Mr John Chung thanked the Member for his suggestion and said the matter would be considered in the design stage. Another Member concurred with the Member and said that green building design and energy-efficient features should be the basic requirements for public housing projects nowadays.

Hydrological Impact

47. Considering that the permeability of the site might be reduced as a result of the proposed development as well as the substantial felling of more than 20% of the trees in the FGC site, a Member sought detailed scientific data on the potential impact on the hydrology and water table of the project site. With the aid of a cross-section diagram, Mr John Chung explained that the groundwater of Sub-Area 1 flow from south to north, i.e. away from Sub-Areas 2 to 4 which meant the hydrology of Sub-Area 1 would not affect the other sub-areas. He added that reclaimed water from Shek Wu Hui Sewage Treatment Works could be deployed to replenish the water demand if necessary.

48. A Member reminded the project proponent to be cautious of the adverse impact of chlorine on the Chinese Swamp Cypress if recycled water, which might be chlorinated for disinfection purpose, was used for irrigation purpose. Mr John Chung informed Members that recycled water was currently used for irrigation in the FGC site. He advised Members that ultraviolet light instead of chlorine could be used for water disinfection if irrigation by recycled water would be required.

49. Two Members expressed concern about the permeability of Sub-Area 1 after the housing development and suggested the project proponent to consider adopting the Spongy City concept with a view to increasing the permeability of the site to 40%. Mr John Chung thanked Members for their suggestions and said that the project proponent would take them into consideration. In response to another

Member's question about the infiltration coefficient adopted for the calculation of the hydrology impact assessment, Mr Chung explained that the infiltration coefficient of 0.6 was determined by making reference to relevant design standard such as Stormwater Drainage Manual published by DSD. Mr Chung said that different measures such as bioswale and high permeability materials for road pavement would be considered to help refill the underground water table in the future.

Traffic Impact

50. Considering the distance of the FGC site from Sheung Shui station and other community facilities, a Member was concerned about the traffic impact as the residents would rely heavily on public transportation for their daily activities. In view of the potential traffic impact and ecological impact of the proposed housing development on Sub-Areas 2 to 4, the Member opined that the local transportation would need to be improved and the residential density should be reduced to minimise the adverse environmental impact. She doubted if the current assessment had already accommodated the above situation and the uncertainties about the changes during the detailed design stage worried her. Mr John Chung advised Members that the proposed housing development was about 1 km from the Sheung Shui Station and the local residents could reach Sheung Shui Station with a 15-minute walk.

51. Pointing out that the traffic count would affect the noise impact assessment, A Member remarked that the project proponent had yet to provide details of the traffic count as requested in the previous EIASC meeting. Mr John Chung responded that the traffic impact of the housing development including noise had already been included in the Traffic Impact Assessment (TIA) report submitted to the TPB. He stressed that the traffic impact was assessed to be acceptable and had been endorsed by the relevant authorities. Mr Chung said that the TIA report could be provided to Members for reference if considered necessary even though it was not required under the EIA framework.

52. The Chairman opined and Mr John Chung confirmed that the main traffic flow of residents in Sub-Area 1 would likely concentrate in the north of the proposed housing estate towards Sheung Shui station and the traffic impact to the south, i.e. Sub-Areas 2 to 4 should be on the low side. He further remarked that traffic impact was outside the scope of the EIAO. The Chairman appealed to Members again that the discussion should focus on the EIA report criteria and details.

Light Impact

53. A Member remarked and echoed by another Member that the proposed architectural fins of the housing blocks shown in the powerpoint slide were acoustic fins rather than for mitigating light impact. They were concerned about the aesthetics and ventilation aspects of the fins. Explaining that light impact was three-dimensional, the Member indicated that the light impact of the housing blocks

might reach up to a few times of its height of 170 m in terms of horizontal distance. Noting that there was no buffer zone designed between Sub-Area 1 and other sub-areas, the Member was concerned about the potential light glare impact on the ecology of Sub-Areas 2 to 4. Mr John Chung said that further investigation works would be carried out to fine-tune the layout plan with a view to minimising adverse impact on the environment including light impact as far as possible.

Cultural and Historical Value

54. A Member indicated that the historical value of the FGC site should not be neglected as its existence could be dated back over 100 years ago. Another Member also referred to her comments in the previous EIASC meeting and reinstated that the grading result of the Antiquities Assessment Board as well as the cultural impact of the project should be taken into account before proceeding with the project.

55. Noting the concerns raised by the Sheung Shui District Rural Committee and the North District Council (DC) on the project, a Member said there was no proposal in the EIA report to address their concerns. Mr John Chung advised Members that all the graves in Sub-Areas 2 to 4 would not be removed whereas the only grave in Sub-Area 1 would be handled in accordance with the established mechanism. Mr Chung pointed out that the grave in Sub-Area 1 was not large in scale and removal of graves was not unexceptional in development projects. The Member reminded that even if the graves in the site were not removed, the villagers might be concerned with the adverse impact on “Feng Shui” arising from the changes in the surrounding environment. While “Feng Shui” should not be under the scope of the EIAO, given the concern of the Northern DC, the Chairman concurred with the Member that the project proponent should proactively communicate with the stakeholders no matter whether the graves were to be removed or not. Mr Chung said the Government would continue to liaise with the relevant parties as appropriate and handle the matter under the existing mechanism as appropriate.

Northern Metropolis

56. Pointing out that the development of the FGC site was proposed in the context of land search for housing development before the Northern Metropolis was announced in 2021, a Member suggested the Government to review the need of the project given that large-scale housing development options in the Northern Metropolis was available. Mr John Chung responded that the Northern Metropolis was proposed to address the housing demand in Hong Kong in the long run on top of the existing and planned housing development projects. In other words, the development of the FGC would be necessary even with the housing supply to be provided by the Northern Metropolis. In response to another Member’s enquiry, Mr Chung said that the current project was expected for completion in 2029 to alleviate the pressing housing need which would be much earlier than the supply from the Northern Metropolis. Mr Chung pointed out that the project proponent had considered and balanced the need of environmental protection against the

development need of the society in planning the current project. He hoped that Members would give weight to the housing demand and the interest of the society as a whole.

57. Given the proximity of the FGC site with the boundary of the future Northern Metropolis, a Member enquired about the assessment of the cumulative impact on the Northern Metropolis development project. Mr John Chung advised that CEDD had taken into account the cumulative impact of the Kwu Tung North development in its assessment. As the other development projects under the scope of the Northern Metropolis were still in the early planning stage, concrete data were not available for cumulative assessment. Nonetheless, he assured Members that the parties responsible for the EIA study of the Northern Metropolis would need to take into account the cumulative impact of other EIA projects in the neighbourhood including the current project.

58. A Member opined that the EIA report would not be objective based on a pre-determined target of 12,000 housing units in the site. She suggested that Sub-Areas 1 to 4 should be considered as a whole to determine if the project would be beneficial to the environment and neighbourhood. In response to the Member's enquiry on the overall impact of the project on the Northern District, Mr John Chung explained that the trees to be felled in Sub-Area 1 would be compensated in Sub-Areas 2 to 3 and no unacceptable environmental impact was anticipated. On the whole, the current project would not bring adverse impact to the Northern District and the relevant assessments had already been cleared by the relevant authorities.

Role of ACE

59. A Member questioned whether the ACE had no choice but to support the endorsement of the EIA report as long as it had fulfilled the minimum requirements set out in the TM and Project Study Brief. She opined that the ACE had the responsibility to assess whether the EIA report would be beneficial to the public in particular those in the neighbourhood. She was aware that Members had questioned the ecological value of the site and the environmental impacts of the project. She doubted if the compensatory measures would be followed through once the EIA report was endorsed.

60. Mr Terence Tsang advised Members that the DEP would take into consideration whether the requirements in the TM and EIA Study Brief had been met, relevant environmental issues raised by the public and the ACE during the public inspection period before approving an EIA report. The relevant concerns of the public and the ACE could be incorporated as the EIA approval conditions and recommendations as appropriate. Relevant Government departments would follow up on those conditions and recommendations. Mr Tsang appreciated the ACE for all along playing a very important role in the EIA process by providing its views to the DEP. He assured Members that EPD, AFCD and other relevant departments would follow up with CEDD on the Habitat Management Plan, which could cover

hydrological management, tree management, layout of housing blocks etc., at a later stage. The Chairman reminded Members that whether there were other site options for housing development and the historical background of the site were aspects outside the EIAO mechanism. Playing the role of the ACE, Members could propose appropriate conditions and recommendations to address any environmental concerns of the project.

61. While acknowledging the housing demand of the society, two Members remarked that the ACE should focus on evaluating the environmental impacts of the project. Mr Terence Tsang explained that the EIAO served as an essential platform for striking a balance between the need of environmental protection and development, through the requirements set out in the TM and EIA Study Brief. He said that as long as the project proponent proposed a feasible option and the relevant assessments confirmed that there was no unacceptable environmental impact, the EIA report should be approved. In the current case, the project proponent had prepared the EIA report based on a schematic housing layout and demonstrated relevant requirements stipulated in the TM and EIA Study Brief had been complied with. If any major changes were required in the future, the potential environmental impacts involved should also be assessed against the requirements set out in the TM and EIA Study Brief.

(The project proponent team left the meeting at this juncture.)

Internal Discussion Session (Closed-door session)

62. Upon the invitation of the Chairman, Mr Terence Tsang and Mr Simon Chan summarised the views of EPD and AFCD on this EIA report. Noting Members' discussion had focused on the ecological baseline information, Mr Tsang confirmed that the methodology for conducting ecological impact assessment in the EIA report had been agreed by EPD and AFCD as required in the EIA Study Brief. The methodology had also fulfilled the requirements set out under Annex 16 of the TM as well as the EIAO Guidance Notes No. 7/2010 and 10/2010. Mr Tsang elaborated that while there were different methodologies and equipment to conduct the ecological surveys under the EIAO Guidance Notes, the most appropriate survey methods should be determined during the EIA process to suit the site specific circumstances. The EIA had taken into account literature review findings (including information provided by the Golf Club), and the consultant had exercised their professional judgement to identify the most appropriate survey methodologies according to the site conditions, ecological components to be studied, type of impacts expected, and the information gaps to be filled. For the bat survey, handheld bat detectors were considered appropriate and the same equipment were also deployed in other approved EIAs. He said that EPD needed to be objective and apply the same standards across different projects.

63. Mr Simon Chan continued to elaborate the objective of the EIA study which aimed to establish baseline ecological information by sampling rather than to

conduct an exhaustive search of all species for research purposes. The project proponent must take into consideration the conditions of the project site involved in deciding the survey method and there was not a single methodology which could fit all situations and species. Mr Chan highlighted that the methodology and timing for bird and bat surveys might differ in different projects depending on the species concerned. For example, acoustic search might not be applicable for fruit bats which did not produce echolocation and active search would be required in such case. While early morning might be the active time of birds, Mr Chan was of the view that bird surveys in the early morning was not obligatory as land birds could be recorded during the day. Overall, he confirmed that the methodology, coverage and survey efforts of the ecological surveys for birds, bats and other fauna species in this EIA report were appropriate and sufficient to obtain the information required.

Ecological Surveys for Fauna Species

64. The Chairman sought Members' views on the ecological surveys after EPD and AFCD gave their comments on the EIA report. A Member questioned the reasons for AFCD to accept the bird surveys from 10 am which deviated from the convention of birdwatching in the early morning. He considered the timing of bird surveys unacceptable. With reference to the discussion at the previous EIASC meeting, another Member echoed that the EIASC Members considered it more appropriate to conduct bird surveys in the early morning when most bird species including land birds were active. The Member agreed with a Member's previous comment on the possibility of missing some bird species if they were hiding in the trees. Coupled with the fact that the abundance and diversity of bird species recorded by the HKGC was more significant, the Member and another Member raised doubt on the validity and reliability of the EIA report given that baseline information on birds during their active time was missing. The project proponent should justify the survey time which deviated from the mainstream practice. While additional bird survey in the early morning might not affect the conclusion of the EIA report, the Member suggested with the support of the Chairman and two Members that it would enhance the credibility of the EIA report by providing a comprehensive survey to fill the information gap by following the birdwatching convention for such a controversial project.

65. The Chairman enquired whether it was exceptional to conduct survey for land birds at 10 am in comparison with other EIA projects in the past and if there was scientific proof to justify the adequacy of conducting bird surveys from 10 am. Mr Simon Chan went on to elaborate that the project proponent had commenced the flight path surveys of ardeids before 8 am and the bird survey outside the FGC at 8 am while the land birds survey within the project site was done after 10 am. He added that not all EIA reports would include details on the survey time as it was not a designated requirement in the TM. The proposed survey time was considered acceptable as there was sufficient sampling effort and the survey purpose could be met. Mr Chan considered the survey methodology for birds adequate since land birds could be recorded in their habitats during the day. Notwithstanding the above,

Mr Terence Tsang said that the project proponent could be requested to carry out additional bird surveys to alleviate the ACE's concern, if necessary.

66. By the same token, a Member suggested with the support of another Member that the project proponent should carry out additional bat surveys after 10 pm with a view to covering the active time of bats and filling in the gaps of the baseline information. The Member said that the project proponent should address the discrepancy between the significant difference in the number of species found by the project proponent and the HKGC. Mr Terence Tsang explained that the most important indicator of the significance of the habitat for bats was the presence of roosting sites instead of the numbers of individuals and bat species recorded. The Member opined that apart from the presence of roosting sites, it was also important to provide comprehensive and accurate baseline information on the abundance and diversity of species as it would affect the accuracy and reliability of the assessment and thereby the conclusion of the EIA report.

67. Mr Terence Tsang reiterated that the use of handheld detectors in conducting active search for roosting sites was agreed by AFCD and was in line with the practices of other approved EIA reports. Notwithstanding the different methodologies used and the survey efforts, Mr Tsang highlighted that all parties including the HKGC, AFCD as well as the project proponent did not find any bat roosting sites in Sub-Area 1 which reaffirmed that the FGC site was not a significant habitat for bats. While the survey time was considered sufficient for the purpose of EIA, Mr Tsang said the project proponent could be requested to conduct additional bat surveys if deemed necessary.

68. Referring to Prof Wang Min's earlier explanation on the travelling distance of moths and the distance between the project site and "the Green", two Members were doubtful about the possibility for moths to travel from "the Green" to the project site. Two other Members suggested that moth traps could be kept for a longer duration to provide more comprehensive baseline information. Two of the above Members opined that the trees of the FGC site would mask the light of the moth traps and setting up overnight traps would unlikely attract moths from outside the project site. That said, one of the Members agreed that two hours should be sufficient if the traps were set at open canopy. Apart from moth traps, one of the Members considered that active search for moths might be important as well.

69. Highlighting that this was the first time a moth survey was required in the EIA projects thus far, a Member pointed out that it was particularly important to set a good precedence for future projects. The Member and another Member questioned the credibility of the moth survey since it was not carried out by Prof Wang Min personally. Mr Terence Tsang explained that the moth survey was devised by a moth expert, Prof Wang, after his site visit to FGC including the location, time, duration, types and numbers of traps deployed. Despite that Prof Wang was unable to carry out the field survey in person due to the pandemic situation, Mr Tsang emphasised that the moth surveys remained credible as they were

conducted according to the advice of Prof Wang, and that all collected moth samples were identified by Prof Wang. With reference to Prof Wang's advice, another Member considered it reasonable to set a limited duration for the survey in order to avoid the inclusion of moths from outside the project site which might lead to an overestimation of the species diversity.

70. Mr Terence Tsang highlighted that the project proponent had taken into account the number of individuals and fauna species recorded in other studies including those carried out by the HKGC in their literature review. Mr Simon Chan stressed that, unlike academic studies which might require exhaustive search of species, the purpose of the EIA study was to obtain baseline information by sampling to assess the environmental impact and to devise corresponding mitigation measures. The same standards had been applied to all EIA reports in the past. A Member clarified that Members were not asking for an extensive nor exhaustive search. Instead, they were doubting if the surveys conducted were reasonable and appropriate having regard to the characteristics of the fauna species. Taking bats as an example, a survey without covering its active time at mid-night was considered not reasonable unless the project proponent could provide proof to show that the results from the evening till 10 pm was as representative as those at mid-night. She opined that justifications should be provided if the survey methods adopted deviated from the conventional knowledge. In view of Members concerns about the methodology, assessments as well as the significant variances in the findings of the ecological surveys, another Member considered it prudent for the project proponent to carry out additional surveys to fill the information gaps.

71. While Mr Simon Chan had no objection to Members' request for additional bat and bird surveys, he reaffirmed that the survey effort and coverage in the EIA report had met the requirements under the EIA mechanism. Pointing out that the additional information was a judgemental requirement beyond the EIA requirements, Mr Chan was concerned that this might set an undesirable precedent for future projects where the project proponent might have to carry out additional surveys whenever a third party provided different survey results.

Layout plan

72. Two Members pointed out that the project proponent had not yet provided a layout plan, as requested by Members at the previous EIASC meeting, to demonstrate the feasibility of accommodating 12,000 flats in Sub-Area 1 while retaining the trees and providing sufficient buffer zone for them. With his past experience in serving the Housing Authority, the Chairman shared that around 1,000 flats could be accommodated in 1 ha of land. The Chairman and one of the two Members remarked that the building height could be suitably adjusted in order to meet the housing supply target while retaining the trees in the project site at the same time.

73. The Chairman understood Members' concerns about the layout plan, but opined that it should not be a critical factor for assessing the EIA report. A Member opined and echoed by another Member that the layout plan would directly affect the landscape, visual impact and the possibility of tree retention in Sub-Area 1. In this connection, this should be one of the key considerations in deciding whether the EIA report should be endorsed or not. One of the two Members recalled that Members had raised doubts on the feasibility of retaining the trees under the prerequisite of accommodating 12,000 flats during the previous EIASC meeting. In case it was not technically feasible, another Member pointed out that HD might not be able to proceed with the housing development if a condition was imposed. As such, the Member highlighted the importance for the project proponent to examine the feasibility of accommodating 12,000 flats under the constraints at an early stage and work out a practicable plan for mitigation measures.

74. The Chairman pointed out that the ACE could suggest to impose a condition or recommendation for retaining the trees in the layout plan to address Members' concern in this respect. A Member was concerned that once the ACE had supported the endorsement of the EIA report with conditions, the project proponent would be allowed to build 12,000 housing units regardless of the landscape impact.

ACE's Role and EIAO Mechanism

75. A Member enquired if the ACE had the flexibility to reject an EIA report that had complied with the requirements set out under the TM and Project Study Brief. Another Member questioned the purpose of the ACE's involvement in the EIA process if the Council was obliged to mechanically endorse an EIA report which had fulfilled the basic requirements set out by the relevant authorities. The Member pointed out that the EIA report should be creditable to stand up to challenges. Two Members enquired about the possible recommendations that the ACE might put forward. A Member indicated that the DEP and the ACE might hold different views on whether an EIA report had met the EIA requirements as judgment was involved in the evaluation process.

76. A Member raised further enquiry on whether the same standards were to be applied to all projects irrespective of their nature and sensitivity. Mr Terence Tsang explained that it was crucial to adopt consistent assessment benchmark for all EIA reports, regardless of the scale or controversy of the projects. The DEP should strictly follow the requirements set out under the TM and EIA Study Brief in deciding whether an EIA report should be approved whereas the ACE might suggest conditions and recommendations to facilitate the project proponents to raise the standard of the projects above the bar. Mr Tsang explained that under the EIAO, the decision as to whether an EIA report would be approved lied with the DEP, having regard to the views or comments from the public and the ACE. On this project, the Chairman suggested that the ACE might consider recommending the DEP to impose conditions or recommendations on conducting additional surveys to alleviate the afore-mentioned concerns.

77. In response to a Member's enquiry on the EIA project of Lung Mei Beach, Mr Terence Tsang informed Members that the ACE supported the endorsement of the Lung Mei Beach EIA report with conditions, including the provision of additional information to the DEP to ascertain the conclusion made in the EIA report. He added that the project proponent of the Lung Mei Beach had reported back to the ACE after consolidating the additional information.

78. A Member enquired and Mr Terence Tsang confirmed that the project proponent had reduced the scale of housing development from 32 ha to 9 ha. If the study area of the Engineering Feasibility Study was less than 20 ha, it might not be a designated project under Schedule 3 of the EIAO. Noting that the project proponent had reduced the scale of housing development from 32 ha to 9 ha, the Chairman remarked that the site usage was somewhat conservative and restrained.

79. As the project proponent might deploy treated sewage for irrigation purposes, a Member enquired whether the sewage treatment project would be required to undergo the EIA process. Dr Samuel Chui explained that the reuse of treated effluent was already covered in a previously approved EIA.

Overall Remarks

80. With his experience in the ACE during the past six years, a Member was of the view that there was no major problem with the quality of the current EIA report. He understood Members might be more stringent with the vetting process given the controversy of the project. As a member of the Panel on Environmental Affairs in the Legislative Council, another Member felt obligated to ensure the quality of the EIA report would meet the public expectation. He was not convinced that bird surveys conducted after 10 am would yield the same result as from 6 am. The Chairman agreed that the ACE, as a gatekeeper, should strive to facilitate the enhancement of the environmental aspects of EIA projects. While Two Members believed that the additional ecological surveys requested might not necessarily affect the overall conclusion of the EIA report, they considered it appropriate to go through the process for filling in the missing information gaps so that the EIA report would be complete and the recommendations therein would be able to stand up to challenges.

81. Noting that the ACE was required under the EIAO to give its views to the DEP on or before 28 August 2022, the Chairman enquired and Dr Samuel Chui responded that there might not be sufficient time for the project proponent to conduct additional ecological surveys for the ACE's further consideration before the statutory deadline. Dr Chui suggested that the ACE might consider endorsing the EIA report with a condition for the project proponent to provide additional information on the ecological surveys that should reaffirm the findings of the EIA report.

82. With reference to the discussions at the last EIASC meeting, four Members pointed out that the project proponent was unable to address Members' concerns about the potential adverse impact on the ecology of Sub-Areas 2 to 4 such as the shading impact, light glare impact and the hydrological impact brought by the development and human disturbances.

83. While the project proponent had explained the flow of water in the FGC site, a Member indicated that she still had doubts about the hydrological impact of the project. Another Member added that a tree felling plan was also not available. He opined that the project proponent should provide scientific data to illustrate the hydrological impact on Sub-Areas 2 to 4 as the infiltration coefficient of 0.6 might not be applicable to the permeability and porosity of the FGC site.

84. Two Members further highlighted that the project proponent had yet to provide a detailed layout plan to demonstrate the feasibility to accommodate 12,000 housing units while retaining the trees. Another Member suggested that the layout plan should be revised taking into account the earlier suggestions of Members including the preservation of both the woodland and mixed woodland in Sub-Area 1.

85. A Member remarked that the project proponent was unable to address the cultural heritage impact and doubted if due diligence had been done in the EIA study. Drawing reference from the EIA report on "Expansion of Hong Kong International Airport into a Three-Runway System", another Member indicated that the project proponent should provide a concrete conservation or compensation plan to facilitate Members' consideration at the current stage.

86. On the whole, three Members expressed that they were unable to support the endorsement of the EIA report at the juncture due to the outstanding issues of concerns mentioned. Another Member also said that he could not support the report due to the missing information on the ecological impact assessments on bats, birds and moths.

87. A Member echoed with another Member's suggestion to put the decision to vote. Nevertheless, the Chairman, another Member and Mr Terence Tsang advised the meeting that detailed justifications should be given to substantiate the ACE's decision.

88. The Chairman noted that more time was still required for the Council to work out the details of its recommendations on the EIA project. In view of the time constraint and the depth of outstanding issues to be deliberated, the Chairman suggested with the support of Members to continue the closed-door discussion on another date to be arranged by the Secretariat. As the next meeting would be a continuation of the closed-door discussion, the project proponent would not be required to attend the meeting. The Chairman asked the Secretariat to consolidate and pass to the project proponent a list of outstanding issues based on Members'

discussion for their responses before the next meeting. The Secretariat would inform Members of the details of the next meeting in due course.

89. The meeting was adjourned at 9:00 p.m.

*(Post-meeting notes: A list of additional information to be provided by the project proponent for the ACE's further consideration before the resumption of the closed-door discussion and the supplementary information provided by CEDD are respectively at **Annexes A and B** of the minutes.*

The meeting for the continuation of the closed-door session of the 25⁴th ACE meeting was scheduled on 19 August 2022.)

**ACE Secretariat
November 2022**

The 254th ACE meeting on 8 August 2022
“Technical Study on Partial Development of
Fanling Golf Course Site – Feasibility Study”
Additional information on issues of concern

To facilitate ACE’s further deliberation on the above EIA project, the Project Proponent is requested to provide additional information in writing on the following issues with reference to the comments provided by Members at the meeting –

1. Ecological Impact

- provide results of ecological surveys for bats and moths after 10 pm and for birds before 10 am in the Fanling Golf Course site with a view to substantiating the assessment on the ecological value of the project site (i.e., Sub-areas 1-4);
- explain the methodology used for moth surveys with reference to the traveling distance and surrounding habitats of moths, such as “the Green” (歌賦嶺) quoted by Professor Min Wang at the meeting;
- provide scientific data to illustrate that the proposed development in sub-area 1 would not pose adverse ecological impact on the other sub-areas, with particular elaboration with supporting data on the potential ecological impact to sub-areas 2 to 4 arising from the anticipated increase in the flow of people and the conservation plan for the relevant sub-areas to minimise any possible adverse ecological impact;
- provide details of the woodland habitat compensation and management plan to illustrate the woodland habitat loss due to the proposed development would not result in significant ecological and ecosystem adverse impact;

2. Hydrology and Hydrological Impact

- elaborate with scientific expertise, methodology and data the hydrological impact on the Chinese Swamp Cypress and woodland habitats in sub-areas 3 and 4 with consideration of the change due to the proposed development, tree plantation as mitigation measures, and available water sources in both wet and dry seasons in these sensitive areas;
- provide hydrology impact assessment and mitigation measures to demonstrate the feasibility of the proposed layout of the housing blocks and amenity buildings (with consideration to allow reasonable substructure / foundations and impervious paving areas as well) for the 12,000 residential units;

3. Layout Plan and Landscape Impact

- provide a reasonable layout plan in line with sustainable building design guidelines for the proposed housing blocks and amenity buildings such as carpark block, community facilities and podium garden and the buffer area, if any, to illustrate the consideration of conserving both the woodland and mixed woodland in sub-area 1 while retaining and sustaining the existing trees, in particular the 11 trees of particular interests by strategically adjusting the design, disposition, location, density and height of the housing blocks where appropriate;
- elaborate the tree felling plan with the aim to minimise the number of trees to be felled through strategically adjusting the design, disposition and layout for the housing blocks and amenity buildings;
- provide detailed tree compensation plan including the numbers, species and tentative locations of compensatory tree planting to illustrate that the compensation would not result in adverse ecological impacts on sub-areas 2 to 4 while also considering plantation of native fruit trees and trees as habitats for fauna to enhance the ecosystem; and

4. Light Impact

- provide detailed assessment of the lighting glare impact with the support of scientific data including the design, disposition, location and layout of the proposed housing blocks and amenity buildings, on the woodland habitat and associated fauna of the project site in both the construction and operational phases.

Agreement No. CE 17/2019 (CE)
Technical Study on Partial Development of Fanling Golf Course Site – Feasibility Study

Request for Additional Information on Issues of Concern
Raised on ACE Meeting on 8.8.2022

To facilitate ACE's further deliberation on the above EIA project, the Project Proponent is requested to provide additional information in writing on the following issues with reference to the comments provided by Members at the meeting. A summary of the Project Proponent's responses to the comments is in **Annex 1**.

No.	Comments	Responses
	<p>1. Ecological Impact</p> <p>- provide results of ecological surveys for bats and moths after 10 pm and for birds before 10 am in the Fanling Golf Course site with a view to substantiating the assessment on the ecological value of the project site (i.e., Sub-areas 1-4);</p>	<p>It must be emphasized that methodologies for undertaking bat, moth and bird surveys under the ecological study have been well determined after thorough review of the literature, achieving the objectives of the ecological survey, 1) to verify information collected from literature review, 2) to fill information gaps after a comprehensive literature review, and 3) to collect updated information, for establishment of ecological baseline with focus on occurrence of important habitats (e.g. breeding and roosting habitats) and species of conservation importance, and in particular the ecological conditions of the 4 Sub-Areas of the PDA for impact assessment.</p> <p>Methodologies for undertaking bat, moth and bird surveys have been incorporated into the Method Statement for the Terrestrial and Aquatic Ecological Impact Assessment submitted to and agreed with AFCD and EPD prior to the assessment. Adequate survey effort has been undertaken in accordance with the agreed Method Statement, which serves to ensure that the ecological assessment including the surveys carried out are in full compliance with the Environmental Impact Assessment Ordinance (EIAO). Considering the above and with justifications below, ecological surveys for bats and moths after 10 pm and for birds before 10 am within Fanling Golf Course are considered as not essential; results of the ecological surveys of the requested periods are not currently available.</p> <p>Please see below the rationales of bird, bat, and moth surveys for this study.</p> <p>Adequate Survey Efforts for Bird:</p> <p>In gist, full day bird survey (10:00 am to 10:00pm) had adequate survey effort to identify bird species potentially found within FGC (i.e. land bird).</p> <p>Targets of the bird survey include identifying the diversity amongst the 4 Sub-Areas and searching for the presence of colonial roost/nest within the 4 Sub-Areas, in order to establish the ecological baseline for assessment of the impact of the development to birds.</p> <p>Flight line survey was carried out during the active period of breeding egrets (both diurnal egrets and nocturnal egrets were covered). Bird survey near FGC was started from 8:00 am.</p> <p>Bird survey inside FGC was carried out between 10:00 am and 10:00 pm after coordinating with HKGC. As there is no major water body</p>

within FGC and the assessment area as a whole, the majority of the birds within the assessment area, especially within FGC are land birds (referring birds inhabiting land habitats such as woodland, shrubland or grassland). Different from waterbirds which often travel among different feeding grounds, land birds basically reside inside or stay close to their roosting habitats. Land birds can be recorded if the bird survey is carried out throughout the day. Based on the above site condition, bird survey within FGC between 10:00 am and 10:00 pm and throughout the day, covering the morning, the afternoon and the evening (including the time close to dusk) is adequate for establishing the ecological baseline of birds within FGC, and has met the requirement under EIAO Technical Memorandum (EIAO TM) and the EIAO Guidance Note No. 10/2010.

In one of the references listed in the EIAO Guidance Note 10/2010, i.e., “Bird Census Techniques”, it states that activity and song output (of bird) is also high close to dusk. Our bird survey within the FGC carried out between 10:00 am and 10:00 pm has already well covered the high activity time of birds close to dusk.

It is also reported under a research study (Robbins, C.S. 1981. Effect of Time of Day on Bird Activity. *Studies in Avian Biology* 6:275-286.) that if the survey time cannot be conducted in the best timing (most active time of birds), a higher survey effort (such as slower walking or longer listening periods in the research, or longer survey time in our survey) can compensate for lower bird activity. Hence, the bird survey period within FGC between 10:00 am and 10:00 pm based on the coordination with HKGC was designed taking account of the bird survey cannot be carried out in the early morning.

Further information of the above demonstrates that adequate survey effort has been taken for bird, even though bird survey within FGC was carried out after 10:00 am, as higher survey effort (i.e. longer survey time in our survey) was taken for bird survey for the whole day (including high activity time of bird close to dusk) within FGC. Additional bird survey within FGC covering the period before 10:00 am is considered not necessary.

In fact, the key findings from bird monitoring data collected by HKGC between 2015 and 2018 were included in the literature review and used to establish the ecological baseline for impact assessment. The ecological baseline information of the EcoIA has thus been sufficient and comprehensive for assessment purposes.

Adequate Survey Efforts for Bat:

In gist, bat survey period before 10:00 pm had well covered the active time of bat species potentially found within FGC, according to literature.

It is a common practice to conserve bat roost as direct impact on bat roost would affect the species population level, as supported by relevant publications (鄭錫奇等 1999¹; Sheffield et al. 1992²). Hence, attention was paid on bat roost location in local EIA studies

¹ 鄭錫奇, 方引平, 周政翰。1999。臺灣蝙蝠圖鑑。行政院農業委員會特有生物研究保育中心。

² Sheffield, S. R., Shaw, J. H., Heidt, G. A., & McClenaghan, L. R. (1992). Guidelines for the Protection of Bat Roosts. *Journal of Mammalogy*, 73(3), 707 - 710.

(e.g. EIA for NENT NDA, Mai Po Nature Reserve Infrastructure Upgrade Project etc.).

Based on the literature review, including the EIA for NENT NDA and the report submitted by HKGC to the Task Force on Land Supply in 2018, 8 species of bat were found in the area and within FGC (see table below). Active search for the presence of bat roosting/breeding sites were carried out in daytime in potential roosting habitats and the survey time has covered the emergence time of all bat species based on the literature review (see table below). The emergence time for all these bat species are all become active within 2-3 hours after sunset. No late emergence bat was reported based on the literature review.

品種 Name	主要群落棲息生境 Major Roosting habitats ^{3,4}	出現時間 Emergence time
Short-nosed Fruit Bat 短吻果蝠	蒲葵、絲葵、建築物 Chinese Fan-palm, Petticoat Palm, building	日落後 2-3 小時內開始活躍 Become active within 2-3 hours after sunset
Lesser Bamboo Bat 扁顛蝠	竹林 Bamboo forest	
Lesser Yellow Bat 中黃蝠	建築物 Building	
Intermediate Horseshoe Bat 中菊頭蝠	山洞、礦洞、隧道、荒廢建築物 Cave, mine, tunnel, abandoned building	
Himalayan Leaf-nosed Bat 大蹄蝠	荒廢建築物、山洞、礦洞、隧道 Abandoned building, cave, mine, tunnel	
Chinese Noctule Brown Noctule 中華山蝠	建築物、樹林 Building, woodland	
Japanese Pipistrelle 東亞家蝠	建築物、樹林 Building, woodland	
<i>Myotis</i> sp. 鼠耳蝠屬	山洞、礦洞、隧道 Cave, mine, tunnel	

Further information of the above demonstrates that adequate survey effort has been taken for bat, as the bat survey period before 10:00 pm within the FGC had well covered the emergence time of all bat species found within FGC from reviewed literature. No late emergence bat was reported based on the literature review. Additional bat survey within FGC covering the period after 10:00 pm is considered not necessary.

In fact, the bat data collected by HKGC between 2015 and 2018 were

³ Shek, C.T. (2006) A Field Guide to the Terrestrial Mammals of Hong Kong. AFCD

⁴ Kadoorie Farm & Botanic Garden (KFBG) (2006). *Focus on Hong Kong Bats: Their Conservation and the Law*. Retrieved June 20022 from

<http://www.bio.bris.ac.uk/research/bats/China%20bats/Focus%20on%20Hong%20Kong%20Bats%20%5BA5%20format%5D.pdf>

		<p>included in the literature review and used to establish the ecological baseline for impact assessment. The ecological baseline information of the EcoIA has thus been sufficient and comprehensive for assessment purposes.</p> <p>Adequate Survey Efforts for Moth:</p> <p>In gist, moth survey period before 10:00 pm had well covered the active time of moth species potentially found within FGC, according to Moth Expert.</p> <p>Methodology of moth survey, including moth trap types used, time and duration for setting up the moth traps was based on the recommendation from Professor Wang Min (王敏), who is a renowned moth expert of South China Agricultural University (華南農業大學), after a site visit in January 2020, the CV of Professor Wang in Attachment 1 was also submitted to AFCD for agreement.</p> <p>According to Professor Wang, most of the moths are active near sunset, which is a common commencing time for other moth studies. Hence, setting up of moth traps near sunset is appropriate according to Professor Wang. It was observed that the PDA is relatively open, moths inside PDA could be attracted to the moth trap in a short period of time. The standardized sampling efforts of 2 hours for each trap used for sampling is thus deemed sufficient to yield objective results for establishing the ecological baseline for the assessment. Setting up moth traps for longer period, however, might collect moth species farther away from the survey location, such as habitats outside the PDA, and may affect the evaluation and impact assessment.</p> <p>Further information of the above demonstrates that adequate survey effort has been taken for moth, as the survey was carried out near the sunset, which is a common commencing time for moth survey and for setting up of moth traps according to Professor Wang. Set-up time of 2 hours is appropriate as per the advice of Professor Wang, to avoid moth species farther away from the survey location are also collected, distorting the purpose of the survey to find out the moth distribution in the 4 Sub-Areas. Additional moth survey within FGC covering the period after 10:00 pm is considered not necessary.</p>
	<p>- explain the methodology used for moth surveys with reference to the traveling distance and surrounding habitats of moths, such as “the Green” (歌賦嶺) quoted by Professor Min Wang at the meeting</p>	<p>The moth survey of the present EIA adopted two approaches to investigate the moth diversity, i.e. moth trapping and active search.</p> <p>While active search covered the PDA were conducted, UV light moth traps were deployed for two hours in all 4 Sub-Areas.</p> <p>The PDA in general is of elongated shape. Along this elongated landscape, open turfgrass occupies the middle part, with woodland/mixed woodland forming a thin belt along boundaries on both sides or elongated patches near the turfgrass.</p> <p>The trap survey commenced at evening near sunset, and the traps was operated for 2 hours. As moths usually roost inside well vegetated areas such as woodlands during daytime and become active when light diminishes near sunset, it is a common practice in other moth studies to commence trapping near sunset.</p> <p>With the relatively open landscape in the PDA, the UV light of the traps could be quickly detected by moths inside the wooded areas in</p>

		<p>the PDA, and the moths could be attracted to the moth trap in a short period of time.</p> <p>This survey timing and duration could collect moths utilizing habitats inside PDA. For moths inhabiting habitats outside the PDA, with the trees along PDA boundary shielding, the chance of those moths to be attracted by the moth trap when they start becoming active is much lower during the survey duration.</p> <p>It is however known that the travelling distances vary among different groups of moths, from a few dozen meters to a few kilometers. If the traps are operated for a longer time duration, when the long traveling distance moths from outside habitats flying near the PDA, these moths originally inhabiting outside habitats might also be attracted to the traps.</p> <p>It is also known that habitat complexity is related to moth diversity, the more complex the habitat type compositions, the higher total diversity of moths could be recorded from trap survey. While the habitat complexity inside the PDA is relatively simple (mainly dominated by turfgrass, mixed woodland and woodland, with the addition of extensive developed area in Sub-Area 1 and swampy woodland and marsh in Sub-Area 4), the habitat complexity to the south and southeast of the PDA is higher, including, east of “The Green (哥賦嶺)”, the woodland (which is a large piece of continuous woodland extending to Pak Tai To Yan SSSI and Lam Tsuen Country Park), the AFCD’s experimental farm, abandoned and active agricultural lands, and west of “The Green (哥賦嶺)”, mixed woodland, active agricultural land, ruderal vegetation and fung shui wood. A plan showing the location of the “The Green (哥賦嶺)”, Pak Tai To Yan, & and Lam Tsuen Country Park is shown in Attachment 2. A high diversity of moth is expected from these complex habitats. If the moth traps were deployed for a long duration of time, moths from outside the PDA would be attracted and would mix with moths inhabiting the PDA, and thus affect the evaluation and impact assessment.</p>
	<p>- provide scientific data to illustrate that the proposed development in sub-area 1 would not pose adverse ecological impact on the other sub-areas, with particular elaboration with the supporting data the potential ecological impact to sub-areas 2 to 4 arising from the anticipated increase in the flow of people and the conservation plan for the relevant sub-areas to minimise the possible adverse ecological</p>	<p>Minimal Impact to Fauna:</p> <p>Sub-Area 1 is consisted of 4 habitats, woodland, mixed woodland, turfgrass, and developed area. These habitats, including the more ecological valuable woodland and mixed woodland are not unique to the PDA, the assessment area or FGC as a whole. Our ecological impact assessment based on the literature review and the ecological survey has shown that none of the 4 habitats are critical/unique to the fauna species identified in Sub-Area 1, as major roosting/breeding site or foraging ground cannot be found in Sub-Area 1. Sub-Area 1 does not consist of important habitat such as pond and wetland neither.</p> <p>Sub-Area 1 is Fragmented. Over 75% of the boundary of Sub-Area 1 adjoins to or in close proximity to existing developments, not only the existing roads of Fan Kam Road, Po Kin, Road, Ping Kong Road, but also North District Hospital to the North, Cheung Lung Wai Estate to the East, Ming Tak Court to the South East, the club house of HKGC to the West and WSD’s pumping station to the South West.</p>

<p>impact;</p>	<p>There are existing carpark, staff quarters, tennis courts & other sports ground with high frequency of human activities and noise within Sub-Area 1. The woodlands to be affected within Sub-Area 1 surrounded by the existing carpark, turfgrass, the tennis courts and the sports ground, as well as Fan Kam Road and Ping Kong Road. It is away from the woodlands in Sub-Areas 2 to 4 and also the preserved mixed woodland in the southern side of Sub-Area 1.</p> <p>The fragmentation, the high proportion of developed area, which is the largest in term of both absolute area and in proportion amongst all the Sub-Areas, as well as higher human activities due to the developed area differentiate Sub-Area 1 (and its associated woodlands) from Sub-Areas 2-4 (and their associated woodlands). In fact, fauna found in Sub-Area 1 is lower than Sub-Areas 2 to 4, in term of both diversity and abundance, which objectively shows that the habitats of Sub-Area 1 is not as important as the habitats of Sub-Areas 2 to 4.</p> <p>Even if fragmentation, scale of the developed area, and human activities are ignored, the woodland to be affected within Sub-Area 1 is very small. In fact, taking account of the 1 ha. of mixed woodland in the southern side of Sub-Area 1 and the additional 0.4 ha. of mixed woodland within the housing development boundary to be preserved, the total area of woodland & mixed woodland lost due to development of Sub-Area 1 is 2.84 ha. only, which is only 1.7% approximately of the 172 ha. of FGC.</p> <p>On the other hand, over 90% of the boundary of Sub-Areas 2 to 4 will be maintained in its current condition. The ecological corridors identified within the PDA will also be preserved.</p> <p>Based on the above, the habitat loss in Sub-Area 1 would not be significant for fauna utilizing Sub-Areas 2 to 4.</p> <p>Minimal Impact to Flora:</p> <p>Our hydrological impact assessment has already shown that the groundwater of Sub-Area 1 flows towards the north side, i.e. away from Sub-Areas 2 to 4, based on the geological condition of Sub-Area 1. Given that Sub-Area 1 and Sub-Area 2 is divided by hillocks and woodland with higher general level than both Sub-Area 1 & Sub-Area 2, surface runoff of Sub-Area 1 would not contribute to the groundwater of Sub-Areas 2 to 4.</p> <p>The main water sources of the swampy woodland in Sub-Area 4 are the groundwater and the surface runoff of a hillock in the southeast side of the swampy woodland and the golf course in the west side of the swampy woodland. Contribution of the groundwater and the surface runoff of Sub-Areas 2-3 to the water source of the swampy woodland in Sub-Area 4 is not substantial due to the similar topography of Sub-Area 4 and Sub-Areas 2-3, not to mention Sub-Area 1, which is over 1km from Sub-Area 4 and divided by hillocks and woodland with higher ground level.</p> <p>Well-Engineered Housing Development Scheme</p> <p>Key findings of our ecological and the hydrological impact assessments above demonstrate that the housing development in Sub-Area 1 will not induce adverse ecological impact to Sub-Areas 2 to 4. The following has also been considered and incorporated into the</p>
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		<p>scheme for the housing development in Sub-Area 1, with a view of increasing the confidence level of no adverse ecological impact.</p> <ul style="list-style-type: none"> • Setting back the housing development from Sub-Area 2 by preserving the mixed woodland of 1ha. in the southern side within Sub-Area 1. • Exclusion of the nourishing area of turfgrass adjacent to the existing WSD's pumping station. <p>The preserved woodland within Sub-Area 1, the existing turfgrass nourishing site and the existing WSD's pumping station collectively serves as a buffer to further minimize any potential impact due to the housing development in Sub-Area 1 to Sub-Areas 2 to 4 to be preserved.</p> <p>Active Measures to Man-Access to Sub-Areas 2 to 4:</p> <p>The Government will consider necessary protective measures, including control on number of visitors, types of activities, operation hours and limitations on visitors in getting access to areas of conservation importance. Subject to the management plan of Sub-Areas 2 to 4, control of access of visitors to Sub-Areas 2 to 4 similar to the existing arrangement implemented by HKGC for the existing Old Course may be considered. For reference, HKGC organized an open day on the Old Course for over 5,000 public participants in July 2022.</p> <p>Active measures will be considered to control the man-access to Sub-Areas 2 to 4. For example, new fencing will be erected along the boundary between the proposed housing development in Sub-Area 1 and Sub-Area 2 to prohibit uncontrolled man-access to Sub-Areas 2 to 4 via Sub-Area 1, while maintaining connection with the preserved mixed woodland inside Sub-Area 1 with Sub-Areas 2 to 4 by providing animal corridors.</p> <p>Habitat Management Plan for Sub-Areas 2 to 4:</p> <p>Adverse ecological impact to Sub-Areas 2 to 4 will be avoided by preserving the existing habitats and ensuring that the existing habitats will not be affected by the development. A Habitat Management Plan will be formulated setting the targets, the design and management methods, daily management measures, and monitoring measures to ensure that the existing habitats will be well maintained after the PDA is reverted to the Government. Outlines of the Habitat Management Plan are as follows: -</p> <p>Targets: -</p> <ul style="list-style-type: none"> • Target includes protection of existing habitats (e.g., swampy woodland, woodland), enhancement of existing habitats and/or the overall ecological functions of the managed area, and promotion of nature conservation education. • Approach to achieve the targets, such as maintenance of hydrological regime, planting to enhance ecological corridors, expansion of the swampy woodland extent (for example to investigate the feasibility on removal of existing obstacles near its boundary such as hard-paved path, enlarging the waterlogged soil area, etc.), planning of core zone and education zone. • Proposes sizes, locations and species of the compensation
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woodland planting, as well as locations of the transplanted floral species of conservation importance, and if necessary, buffer planting, without affecting hydrological regime and existing habitats.

Design and Management Methods:

- Overall planning on the usage of the managed areas
- Design/approach for maintaining hydrological regime and water sources for swampy woodland and marsh (such as diversion of rain runoff, contingency water sources)
- Propose enhancement planting locations which could increase the connectivity of existing habitats and thus enhance the ecological corridors, and also recommend the floral species with ecological functions (such as larval food plants for butterflies and moths, nectar plants, plants with berries for birds and mammals, etc.)
- Propose other habitat enhancement measures such as creation of additional habitat types (for example shrubland, tall grassland, multiple ponds) to increase habitat diversity and structural complexity, provisions of bat boxes, nest box, wood logs, animal passage to connect woodland outside the PDA, etc.
- Formulate the management for the compensatory woodland including control on the application of fertilizers, replacement planting, management of understory with the consideration of maintaining biodiversity, etc.
- Propose the necessary facilities for habitat management, nature conservation facilities and site security.

Daily Management:

- Habitat management works to maintain the habitats (such as contingency irrigation)
- Facility Maintenance
- Implementation of control on visitor activities such as type of activities, opening hours
- Nature conservation education such as guide visits and demonstration activities where appropriate (organised and limited to certain zones, in order to minimise interfering the functions of the habitats).

Monitoring:

- Habitat monitoring, including but not limited to, hydrological conditions in particular at swampy woodland; coverage, number and health of Chinese Swampy Cypress, and seedlings if any; vegetation diversity, conditions of the habitats, and fauna usage of the habitats.
- Water quality monitoring at wetlands including the existing and created ones
- Interface with the other areas of the PDA (i.e. development in Sub-Area 1), the remaining golf course, and the urban area outside the golf course and the PDA

		<ul style="list-style-type: none"> • Adaptive Management: Adjustments and improvements. <p>The proposed development in Sub-area 1 would not pose adverse hydrology, hydrological and light impacts on the other sub-areas will be further elaborated in the following sections.</p>
	<p>2. Hydrology and Hydrological Impact</p> <p>- elaborate with scientific data the hydrological impact on the Chinese Swamp Cypress and woodland habitats in sub-areas 3 and 4 with consideration of tree plantation as mitigation measures, and available water sources in both wet and dry seasons in these sensitive areas;</p>	<p>Demonstration of Successful Compensatory Planting in Sub-Areas 2-3 based on Historical Records of Plantation of Woodlands in Old Course after 1945:</p> <p>According to historical records, including the aerial photos taken since 1945, the existing woodlands within the Old Course, except the Chinese Swamp Cypress within the swampy woodland, were rebuilt from 50's to 80's, as most of the woodlands were destroyed during World War II, though the Chinese Swamp Cypress has been in existence for over a century. The historical records well demonstrate that the swampy woodland in Sub-Area 4 is not affected by the plantation within the Old Course. Plantation of compensated trees within Sub-Areas 2-3 will not produce any threat to the Chinese Swamp Cypress.</p> <p>Demonstration of Main Water Sources of the Swampy Woodland not to be affected by Housing Development in Sub-Area 1 and Compensatory Woodland in Sub-Areas 2-3 based on the Hydrological Mechanism:</p> <p>Our hydrological impact assessment has already shown that the groundwater of Sub-Area 1 flows towards the north side, i.e., away from Sub-Areas 2 to 4, based on the geological condition of Sub-Area 1. Given that Sub-Area 1 and Sub-Area 2 is divided by hillocks and woodland with higher general level than both Sub-Area 1 & Sub-Area 2, surface runoff of Sub-Area 1 would not contribute to the groundwater of Sub-Areas 2 to 4. The housing development of Sub-Area 1 will not affect the hydrology of Sub-Areas 2 to 4.</p> <p>The Chinese Swamp Cypress is located within the swampy woodland in Sub-Area 4. The approximate level of the swampy woodland is +22mPD. Based on the existing topography, the existing hillock with minimum catchment area of 1.9 ha. and maximum level of +90mPD approximately in the southeast side of Sub-Area 4 and the New Course of FGC with minimum catchment area of 3 ha. and with approximate level of +34mPD in the north-west side of Sub-Area 4 are much higher than the swampy woodland. The hillock and the New Course are the main water catchments of the swampy woodland. Runoff from these two catchments is discharged into the swampy woodland. The catchment area plan is shown in Attachment 3.</p> <p>The general level of Sub-Area 3 is +24mPD approximately, which is only slightly higher than the general level of Sub-Area 4 of +22mPD. Contribution of water to the swampy woodland in Sub-Area 4 is not significant due to the similar topography of Sub-Area 4 as Sub-Areas 2 to 3.</p> <p>Based on our site observation, there is a water channel along the east side of the swampy woodland. The water flows from the south side towards the north side, i.e., towards Sub-Area 3. The water channel is well connected with the swampy woodland and is one of the main water sources of the swampy woodland. Direction of flow of the water channel further demonstrates that the main source of water to</p>

		<p>the swampy woodland in Sub-Area 4 is not from Sub-Areas 2-3.</p> <p>Irrigation Water Demand for Compensated Trees:</p> <p>The planation within the PDA is under intensive maintenance. HKGC irrigates the planation within the golf course by reclaimed water supplied from Shek Wu Hui Sewage Treatment Works (SWHSTW). The daily consumption is 3,000m³ approximately. Based on this ratio, the irrigation water demand for the over 1,000 trees within Sub-Area 1 is 174m³ per day. It is reasonable to assume that the additional water demand irrigating the 1,000 compensated trees in Sub-Areas 2-3 will also be 174m³ per day.</p> <p>The additional water demand for irrigating the compensated trees can be satisfied by SHWSTW, which will have reclaimed water capacity of over 73,000 m³/day, which is 419 times the water demand for irrigating the compensated trees or supplementing the potential groundwater lost of Sub-Areas 2-3 due to the compensated trees, if any.</p> <p>With the Habitat Management Plan to irrigate the compensated trees by the reclaimed water provided by SWHSTW, the hydrology of Sub-Area 4, especially to the swampy woodland and the Chinese Swamp Cypress will not be affected.</p>
	<p>- provide hydrology impact assessment and mitigation measures to demonstrate the feasibility of the proposed layout of the building blocks (with consideration to allow reasonable substructure / foundations as well) for the 12,000 residential units;</p>	<p>Hydrological Mechanism of Sub-Area 1:</p> <p>Our hydrological impact assessment has already shown that the groundwater of Sub-Area 1 flows towards the north side, i.e. away from Sub-Areas 2 to 4, based on the geological condition of Sub-Area 1. Given that Sub-Area 1 and Sub-Area 2 is divided by hillocks and woodland with higher general level than both Sub-Area 1 & Sub-Area 2, surface runoff of Sub-Area 1 would not contribute to the groundwater of Sub-Areas 2 to 4. The housing development of Sub-Area 1 will not affect the hydrology of Sub-Areas 2 to 4.</p> <p>Potential Impact of Housing Development to Hydrology:</p> <p>Hydrological impact to the trees retained within the housing development during the construction phase has been considered. The housing development for this project does not consist of basement. Deep excavation, which would require drawing down of water level, would not be required. Foundation of the housing development in Hong Kong is usually designed based on large-diameter bored piles. Drawing down of water table will not be required for construction of bored pile, as tremie concrete, i.e., casting of concrete under water, is used for construction of bored pile.</p> <p>Water Demand due to Increase in Impermeable Surface:</p> <p>According to the relevant DEVB's Technical Circular (Works) No. 3/2012, public housing development should achieve an overall of 30% green coverage. Given that the proposed development area is 10ha. approximately, area to be reserved for greening would be 3 ha. approximately. The green coverage to be provided will be well sufficient for maintaining the existing trees to be preserved. New fresh water and reclaimed water systems will be provided for the development. Detailed design of the fresh water and reclaimed water system will take into account the water demand based on the greening</p>

		<p>requirement.</p> <p>As suggested by the members of the ACE during the meeting on 8.8.2022, sponge city concept will be considered in the scheme design of the housing development, including adoption of porous materials instead of hard paving as far as practical, to minimize the impact of hard paving to the groundwater lost, if any. Even if there is any groundwater lost due to additional impermeable surface, the potential groundwater lost can be supplemented by the reclaimed water provided by Shek Wu Hui Sewage Treatment Works (SWHSTW). In this regard, we have estimated the water demand required. As approximately 30% of the area shall be reserved for greening, maximum impermeable surface of the housing development will only be 70%, or 7 ha. approximately. Given that there is 1.8 ha. of developed area within Sub-Area 1 for the existing carpark, staff quarters, tennis court and other sports ground etc., the maximum net increase in impermeable surface due to the housing development will be 5.2 ha. approximately.</p> <p>Annual rainfall in Hong Kong is 2,000 mm/year approximately. It is conservatively assumed that 100% of the rainfall will be infiltrated into ground for porous materials and 0% for impermeable materials. In that case, the potential groundwater lost, if any, due to the net increase in impermeable surface, would be 285 m³/day approximately. The potential groundwater lost of Sub-Area 1 can be supplemented by SHWSTW, which will have reclaimed water capacity of over 73,000 m³/day, which is 256 times the water demand for supplementing the potential groundwater lost of Sub-Area 1, if any, due to net increase of impermeable surface.</p> <p>Successful Cases of Preserving Existing Trees:</p> <p>Preservation of trees, especially TPIs, is common in various housing development projects in Hong Kong. Taking the Queen’s Hill as an example, some of the existing trees are preserved successfully within the housing development. Please refer to Attachment 4 for photos of the preserved trees within the housing development. This shows that, with the various mitigation as described above, tree preservation within housing development would be practical.</p>
	<p>3. Layout Plan and Landscape Impact</p> <p>- provide a reasonable layout plan for the proposed housing units to illustrate the consideration of conserving both the woodland and mixed woodland in sub-area 1 while retaining and sustaining the existing trees, in particular the 11 trees of particular interests by strategically adjusting the design, locations, density and</p>	<p>As discussed during the ACE meeting on 8.8.2022, 11 existing trees of particular interest (TPI) with trunk diameter, i.e., DBH > 1m will be preserved based on the layout of the housing development incorporated into the EIA Report. Preserving the 11 TPI in concern as well as the woodland near the existing carpark and the mixed woodland in the southern side of Sub-Area 1 is assessed to be technically feasible, as: -</p> <ul style="list-style-type: none"> • According to the relevant DEVB’s Technical Circular (Works) No. 3/2012, public housing development should achieve an overall of 30% green coverage. Given that the proposed development area is 10 ha. approximately, area to be reserved for greening would be 3 ha. approximately. The green coverage to be provided will be well sufficient for maintaining the existing trees to be preserved. New fresh water and reclaimed water systems, particularly HD's Zero Irrigation System, will be provided for the development. Detailed design of the fresh water and reclaimed water system will take into account the water

<p>height of the residential units where appropriate</p>	<p>demand based on the greening requirement.</p> <ul style="list-style-type: none"> • The housing blocks are set back from the TPIs in concern by about 3m, if possible, <u>in addition</u> to the required tree protection zone, which is defined as the drip line of the tree crowd in accordance with the Greening, Landscape and Tree Management Section of Development Bureau' guidelines. • Root survey can be undertaken to examine the extent of the tree to be preserved. The housing block layout can be adjusted to avoid the major roots of the preserved trees to be affected. • Tree well or tree island can be designed to avoid affecting ground level of the tree protection zone and the additional buffer zone of the preserved trees, in case ground level outside the tree protection zone and the additional buffer zone shall be raised or lowered to suit the site formation and the housing development layout. • The mixed woodland in the southern part of Sub-Area 1 will be excluded from the boundary of the housing development. <p>Preservation of trees, especially TPIs, is common in various housing development projects in Hong Kong. Taking the Queen's Hill and Kai Tak developments as examples, the existing trees intended to be retained are preserved successfully within the housing developments. Please refer to Attachment 4 for photos of the preserved trees within the housing developments. This shows that, with the various mitigation as described above, tree preservation within the housing development would be practical.</p>
<p>- elaborate the tree felling plan with the aim to minimise the number of trees to be felled through strategic design and layout plan for the residential housing units while considering the possibility that the total number of buildings could be reduced by extending the height and number of floors in each building;</p>	<p>Balancing Development and Conservation Needs:</p> <p>It is the Government policy to preserve the existing trees as far as practical. When the existing trees cannot be retained due to conflict between the development and the existing trees to a greater extent, the affected trees may be transplanted or felled with suitable compensation, with a view of balancing development and conservation.</p> <p>The housing block layout incorporated into the EIA Report is formulated taking account of the Government policy to preserve the existing trees as far as practical. For examples: -</p> <ul style="list-style-type: none"> • All the existing trees with total number of 3,090 within Sub-Areas 2 to 4 will be retained; • The 1ha of mixed woodland in the southern part of Sub-Area 1 will be preserved; 0.4 ha. of woodland between the carpark building and the podium garden will also be preserved. <p>As a result, amongst the total number of trees of 1,255 within Sub-Area 1, 267 trees will be retained, 34 trees will be transplanted, and 954 trees proposed to be removed, which is only 22% out of the total number of trees of 4,345 within the PDA.</p> <p>Out of the 954 trees proposed to be felled, there are 63 trees of undesirable species such as <i>Leucaena leucocephala</i> 銀合歡⁵, and</p>

⁵ According to TC(W) No.4/2020 Tree Preservation, *Leucaena leucocephala*, which is invasive, exotic and self-seeding, is an undesirable species. According to TC(W) No.4/2020 Tree Preservation, there is no need to consider transplanting for trees of poor

279 trees assessed to be poor in health condition, poor in structural condition and/or poor in form. Out of the remaining 612 trees with satisfactory health/structural condition/form, there are 288 trees of exotic species which have relatively lower conservation value.

Hence, out of the 954 trees proposed to be removed, there are only 324 trees of native species with satisfactory health/structural condition/form will be affected by the proposed housing development, that is only 7.5% of the total 4,345 trees within the PDA.

Further Effort to Preserve Existing Trees:

The tree felling plan based on the statistics above is formulated based on the housing block layout in the EIA Report. The housing block layout will be subject to further review in the subsequent design phase of this project.

With respect to the tree felling, a further and detailed tree survey will be carried out in the subsequent phase of this project. The further detailed tree survey will provide a complete inventory and reexamine the condition of all the existing trees within Sub-Area 1. The housing block layout will be reviewed and revised based on, amongst others aspects, findings of the further detailed tree survey, with a view of preserving the existing trees as far as practical as the Government tree preservation policy. By reviewing the housing block layout, active measures will be taken to minimize the impact to the existing trees. The active measures may include adoption of non-standard housing blocks, relocation of the housing blocks, reducing the number of housing blocks without affecting the targeted flat yield by increasing the number of flats for each floor, taking account of the visual impact, air ventilation impact etc. Intensive effort will be taken for ensuring the housing block layout scheme will be technically feasible and balancing different technical aspects, including preserving the existing trees as far as practical.

Tree preservation and removal proposal (TPRP) will be prepared based on the recommended housing block layout with tree preservation as a major consideration. The TPRP will be subject to vetting by the relevant departments of the Government. Justifications shall be provided for any tree felling. Approval by the relevant departments will only be given upon the Government policy of tree preservation is satisfied.

Tree Felling in Other Similar Housing Development Projects:

Based on various constraints of project sites, tree felling is inevitable for many developments even with huge efforts to follow the Government policy to preserve trees as far as practicable. Examples include the following.

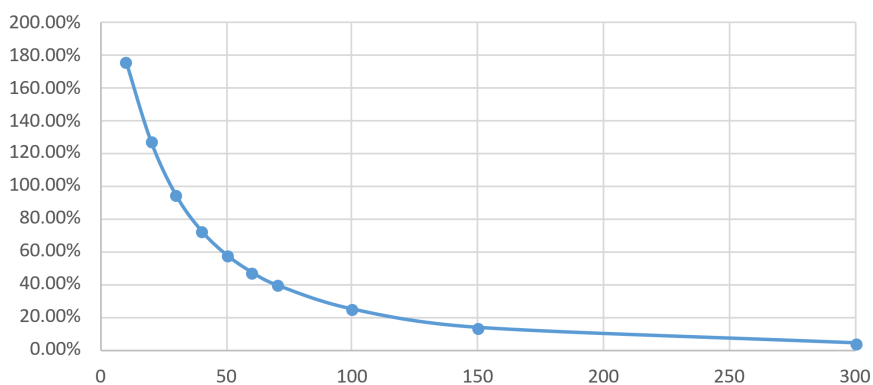
- Housing development project in Po Fu Lam South (PFLS): The project site is 8 ha. approximately (less than 10 ha of this project), 4,080 trees have been felled, including 29 trees with DBH > 1m (well over 954 trees to be felled, including 11 trees with DBH > 1m for this project). The average tree felling ratio for PFLS housing development is 510 tree/ha. of development, which is much higher than 95 tree/ha. of development for this

		<p>project.</p> <ul style="list-style-type: none"> Housing development project in Pik Wan Road (PWR): The project site is 2.6 ha. approximately (much less than 10 ha of this project), over 1,288 trees have been felled, (well over 954 trees to be felled for this project). The average tree felling ratio for PWR housing development is 495 tree/ha. of development, which is much higher than 95 tree/ha. of development for this project. <p>Low Ecological Value of Fragmented Woodland in Sub-Area 1:</p> <p>As noted from the examples above, total number of trees of 954 to be affected by this project is relatively smaller in quantity than other similar housing development projects, as over 60% of Sub-Area 1 is developed area of existing carpark, staff quarters, tennis courts & other sports ground.</p> <p>Except the preserved mixed woodland in the southern part of Sub-Area 1, all the existing trees within Sub-Area 1 are fragmented, i.e., no interconnection with other woodlands. Ecological value of these fragmented woodlands is not high, as compared with the existing woodlands in Sub-Areas 2 to 4 interconnected with each other, functioning as ecological corridors for the various fauna species.</p> <p>This further demonstrates that intensive effort has been taken to preserve the existing trees/woodlands with higher ecological value, echoing with the strategy of this project of balancing development and conservation needs.</p>																		
	<p>- provide detailed tree compensation plan including the numbers, species and tentative locations of compensatory tree planting to illustrate that the compensation would not result in adverse ecological impacts on sub-areas 2 to 4 while also considering plantation of native fruit trees and trees as habitats for fauna to enhance the ecosystem;</p>	<p>A plan showing the location of the compensated trees are incorporated into the EIA. A blow-up plan showing in detail the arrangement of the tree compensation, including the recommended species and the quantity for each species of compensated trees are also attached in Attachment 5.</p> <p>As shown on the plans, the compensated trees will be located in Sub-Area 3, as the area of the turfgrass is more abundant in Sub-Area 3 as compared with Sub-Area 2. The compensated tree will be planted to extend the existing woodlands, enhancing the habitats for the wildlife. A detailed list of species and the quantity of compensated trees are tabled as follows.</p> <table border="1" data-bbox="608 1536 1474 2121"> <thead> <tr> <th>Botanical Name</th> <th>Ecological Function</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td><i>Adenantha microsperm</i> 海紅豆*</td> <td>Flower nectar attractive to wildlife; larval food plant of butterfly</td> <td>10%</td> </tr> <tr> <td><i>Cinnamomum camphora</i> 樟*</td> <td>Fruits are attractive to wildlife; larval food plant of butterfly</td> <td>10%</td> </tr> <tr> <td><i>Sterculia lanceolata</i> 假蘋婆*</td> <td>Larval food plant of butterfly</td> <td>10%</td> </tr> <tr> <td><i>Cinnamomum burmannii</i> 陰香*</td> <td>Larval food plant of butterfly</td> <td>10%</td> </tr> <tr> <td><i>Cratoxylum cochinchinense</i></td> <td>Flowers nectar attractive to wildlife; larval food</td> <td>10%</td> </tr> </tbody> </table>	Botanical Name	Ecological Function	Quantity	<i>Adenantha microsperm</i> 海紅豆*	Flower nectar attractive to wildlife; larval food plant of butterfly	10%	<i>Cinnamomum camphora</i> 樟*	Fruits are attractive to wildlife; larval food plant of butterfly	10%	<i>Sterculia lanceolata</i> 假蘋婆*	Larval food plant of butterfly	10%	<i>Cinnamomum burmannii</i> 陰香*	Larval food plant of butterfly	10%	<i>Cratoxylum cochinchinense</i>	Flowers nectar attractive to wildlife; larval food	10%
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		<table border="1"> <tr> <td>黃牛木</td> <td>plant of butterfly</td> <td></td> </tr> <tr> <td><i>Sapium sebiferum</i> 烏柏</td> <td>Fruits, flower nectar and seeds attractive to wildlife</td> <td>10%</td> </tr> <tr> <td><i>Celtis sinensis</i> 朴樹</td> <td>Fruits attractive to wildlife; larval food plant of butterfly</td> <td>10%</td> </tr> <tr> <td><i>Acronychia pedunculata</i> 山油柑</td> <td>Larval food plant of butterfly</td> <td>10%</td> </tr> <tr> <td><i>Viburnum odoratissimum</i> 珊瑚樹</td> <td>Larval food plant of butterfly</td> <td>10%</td> </tr> <tr> <td><i>Machilus chekiangensis</i> 浙江潤楠*</td> <td>Fruits attractive to wildlife</td> <td>10%</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td>100%</td> </tr> </table> <p>The recommended species are in accordance with the Recommended Tree List for North District GMP based on "Street Tree Selection Guide" promulgated by DEVB, based on the principle of "Right Tree, Right Place". All the recommended species are native. Most of the species are also the existing species within the Old Course or affected by the housing development in Sub-Area 1.</p> <p>Besides the above tree species with ecological functions for wildlife, enhancing the complexity of a habitat by planting different growth forms (e.g. shrub, herb, climber etc.) is recommended. In general, microhabitats increase with habitat complexity, the more microhabitats can be provided, the higher the biodiversity including moth and bat.</p> <p>For example, larval food plants for the four butterfly species under the EIA Study Brief, fig trees for Short-nosed Fruit Bat and fruit-eating mammals such as Masked Palm Civet are also recommended:</p> <ul style="list-style-type: none"> • <i>Aristolochia tagala</i> 印度馬兜鈴 (climber) for <i>Troides Helena</i> 裳鳳蝶 and <i>Pachliopta aristolochiae</i> 紅珠鳳蝶; • <i>Abrus precatorius</i> 相思子 (shrub) and <i>Desmodium heterocarpon</i> 假地豆 (shrub), <i>Dunbaria podocarpa</i> 長柄野扁豆 (herb) for <i>Catochrysops strabo</i> 咖灰蝶; • <i>Mallotus apelta</i> 白背葉(tree), <i>Mallotus paniculatus</i> 白楸 (tree) for <i>Megisba malaya</i> 美姬灰蝶; • <i>Ficus variegata</i> 青果榕 (tree) for Short-nosed Fruit Bat and Masked Palm Civet. 	黃牛木	plant of butterfly		<i>Sapium sebiferum</i> 烏柏	Fruits, flower nectar and seeds attractive to wildlife	10%	<i>Celtis sinensis</i> 朴樹	Fruits attractive to wildlife; larval food plant of butterfly	10%	<i>Acronychia pedunculata</i> 山油柑	Larval food plant of butterfly	10%	<i>Viburnum odoratissimum</i> 珊瑚樹	Larval food plant of butterfly	10%	<i>Machilus chekiangensis</i> 浙江潤楠*	Fruits attractive to wildlife	10%	Total		100%
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	<p>4. Light Impact</p> <p>- provide detailed assessment of the light glare impact with the</p>	<p>1. INTRODUCTION</p> <p>Impact due to lighting glare of the proposed development has been assessed under Chapter 9 and Chapter 11 of the EIA for this project. It was concluded by the assessment that by adopting various</p>																					

<p>support of scientific data including the positioning, design and layout of the proposed blocking of residential units, on the woodland habitat and associated fauna of the project site in both the construction and operational phases</p>	<p>mitigation measures such as lighting control during the construction and the operation phases, the lighting glare impact would be acceptable.</p> <p>There is no objective assessment criteria or guideline in Hong Kong with respect to glare impact assessment, nor established international standard providing acceptance limits for assessing lighting glare impact on habitat and associated fauna.</p> <p>The commonly adopted practice for lighting glare impact assessment includes identification of lighting sources and recommendations the way of minimizing lighting glare impact. Examples of EIA projects adopting qualitative assessment approach for lighting glare assessment include: -</p> <ul style="list-style-type: none"> • Housing sites in Yuen Long South; • Hung Shui Kiu New Development Area; • Tai Shue Wan Development at Ocean Park; • Development of Lok Ma Chau Loop. <p>While it is not a requirement under the EIAO TM nor EIA SB for detailed quantitative lighting glare assessment, further supplementary information is given below to address ACE members' concern, and to justify the conclusion in the EIA with the support of scientific data.</p> <p>2. MECHANISM TO MINIMIZE LIGHTING GLARE</p> <p>Inverse Square Law of Lighting</p> <p>According to “inverse square law” ($I=P/4\pi r^2$), lighting intensity will be decreased with the distance between the light source and the light receiver (as shown in the below graphical plot for general indication). The distance from the nearest woodland within Sub-Area 1 and Sub-Area 2 to the building is about 20 – 40 m away. That means the light intensity of the nearest building to the woodland will be decreased by 4 – 16 times. For building of 50 m from the woodland, the light intensity will be reduced by 25 times. For Sub-Area 3, which is 300 – 400 m away from Sub-Area 1, the light intensity will be decreased by about 1000 times. Hence, even if there is a direct light path without any screening measures, the light intensity is negligible.</p> <p>As an example, the total light intensity of a 40-storey residential building (with a platform of 3-storey) as compared with a 10m tall street-lamp will diminish quickly in the first 50m; See the graphical plot below. In fact, the total light intensity of a 40-storey residential building will be comparable with a street-lamp when the building is set back from the lighting sensitive receiver by 30 m approximately, which is the case for the nearest housing blocks in the southern side of Sub-Area 1 and the nearest woodland in the northern side of Sub-Area 2.</p>
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Total Light Intensity from a 40 Storey Building
As compared with a Street Lamp



3. AVOIDANCE APPROACH

Lighting glare impact is one of the considerations in formulating the block layout of the housing development. Most of the lighting glare from housing development has been **avoided in the first place**.

Strong light from Community Facilities

Compared to indoor lighting of residential flats, community facilities (e.g. public transport interchange, retail facilities and restaurants) are provided with more lighting parts, so that adequate lighting could be provided for public usage at evening & nighttime. As avoidance approach, these facilities could be located at the centre part of the site, rather than near the southern side of the housing development. Residential blocks would also provide effective screening between the community facilities and the woodlands in Sub-Area 2. Such design would provide effective screening of direct light to the woodlands at southern part of housing site. Above concepts are shown in **Attachment 6**. Further review on housing layout would be carried out in detailed design stage with a view to provide an optimum design that could balance the housing development and impact to the environment.

4. AT SOURCE MITIGATION

Public Lighting

As for the public lighting of the housing development, potential lighting glare impact can be controlled via adjustment of lighting intensity, installation of lighting shield to block the light towards the sensitive receivers, and using warm white light / long wavelength lights⁶ such as amber lamps (which are visible to human but invisible to most animals).

Indoor Lighting from Residential Flats

Various measures would be considered at detailed design stage to mitigate as far as practicable the potential lighting glare impact due to the indoor light of the residential flats. These include:

- (a) set back of domestic blocks from the site boundary facing Sub-Area 2 as far as practicable;
- (b) minimize openings at gable end walls of domestic blocks facing light sensitive area;
- (c) explore the use of architectural features to shade/ minimize light

⁶ One of the mitigation measures adopted in Hung Shui Kiu New Development Area EIA

impact.

Lighting from construction activities

No nighttime construction works will be carried out according to Noise Control Ordinance. The remaining potential lighting impact would be due to the security light, which would be properly controlled via adjustment of the lighting intensity, installation of lighting shield to block the light towards the sensitive receivers, and using warm white light etc. as far as practicable.

5. BUFFER ZONE BY EXISTING TREE CLUSTER

Within Sub-Area 1, it is designed to preserve some mixed woodland at southern part of housing site (about 1ha). As shown in **Attachment 7**, the preserved mixed woodland together with the woodland at northern part of Sub-Area 2, existing WSD's pumping station would serve as a **Landscape Buffer Area** (about 35m in width) to screen off most human disturbance (e.g. lighting) from the housing development. The average height of mixed woodland (with the tree clusters) within the Buffer Zone is about +40mpD, which is approximately 15m (about 5 floors) higher than the general ground level in the southern side of Sub-Area 1. As shown in **Attachment 8**, for housing flats at lower floors (below 20 floors), residual indoor lighting would be shielded off by the first layer of tree leaves. For housing flats at higher floors, the slant distance between the indoor lights to the woodland outside the Buffer Zone is about 70m (35m width and 60m height), implying light intensity of the nearest building to the woodland after Landscape Buffer Area will be decreased by 49 times. The light further diminishes quickly to the other part of woodland, pond, swampy woodland (over 1km away) in Sub-Areas 2 to 4, and its impact would be negligible based on "Inverse Square Law".

6. RECOMMENDATIONS OF MINIMIZATION OF ARTIFICIAL LIGHT

The mitigation as explained above have taken account of the recommendations as follows given by International Dark Sky Association (IDA, a non-profit making organization promoting eco-friendly outdoor lighting).

- Use only fully shielded, dark sky friendly fixtures for all outdoor lighting, so lights shine down, not up.
- Use only the right amount of light needed. Too much light is wasteful, harms wildlife and creates glare.
- Install timers and dimmer switches and turn off lights when not in use. If you must have security lighting, use motion sensors.
- Turn off lights in office buildings and homes when not in use.
- Use only lighting with a color temperature of 3000K and below. This means that there is less blue (cool) light that is more harmful to many animal species.
- Work with your neighbors and local governments to ensure outdoor lighting isn't harming the wildlife in your area.

		<p>Recommendations from IDA will be considered and incorporated into the design of the housing development and the works contract documents for the contractors to be in compliance with as far as practicable.</p> <p>7. MONITORING UNDER HABITAT MANAGEMENT PLAN</p> <p>As part of the Habitat Management Plan, ecological monitoring will be carried out to ensure effectiveness of the proposed mitigation measures for potential lighting glare impact. The Habitat Management Plan can be reviewed and further mitigation measures can be implemented if necessary to avoid long-term impact.</p>
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ACE Issues of Concern	CEDD response
Additional ecological surveys for bats, moths and birds	<ul style="list-style-type: none"> • Survey methodologies approved by the authority under the EIAO as per submitted Method Statement • EPD/AFCD agreed that the methodologies comply with SB and TM requirements • Findings of bird, bat and moth surveys conducted by the Hong Kong Golf Club since 2015 and released in 2018 have been included in the literature review and used to establish the baseline • Surveys conducted have served the purpose to fill the information gap and hence the findings of the EcoIA are comprehensive
Methodology for moth surveys	<ul style="list-style-type: none"> • Moth trapping and active search were used • Methodology advised by a moth expert, Prof. Wang • Travelling distances vary among different groups of moths, from a few dozens of meters to a few kilometers • Sample collection time of 2 hours is considered appropriate to avoid trapping moths from outside the Potential Development Area.
Impacts from Housing Development on other Sub-Areas	<ul style="list-style-type: none"> • Potential light impact from Sub-Area 1 to other Sub-Areas will be minimized through appropriate mitigation measures and the impact should be minimal with the distance attenuation • There should be no impact on flora in Sub-Areas 2 to 4 as from the hydrological assessment, surface run-off and sub-soil water in Sub-Area 1 will not flow towards Sub-Area 2. Water supply to the swampy woodland will be replenished through the HMP when necessary • Public access to Sub-Areas 2 to 4 will be controlled to protect the natural habitats • The tree compensation will further minimise the ecological impact to Sub-Area 2 to 4
Hydrological Impact Assessment	<ul style="list-style-type: none"> • Surface run-off and sub-soil water in Sub-Area 1 will not flow towards Sub-Area 2. • Main sources of water supply to the swampy woodland are the catchments to the south-east and north-west. • Historical records showed that the Chinese Swamp Cypress would not be affected by the plantation in Sub-Areas 1 to 3. • Water supply to the swampy woodland will be replenished when necessary, which is also being arranged by the Golf Club now

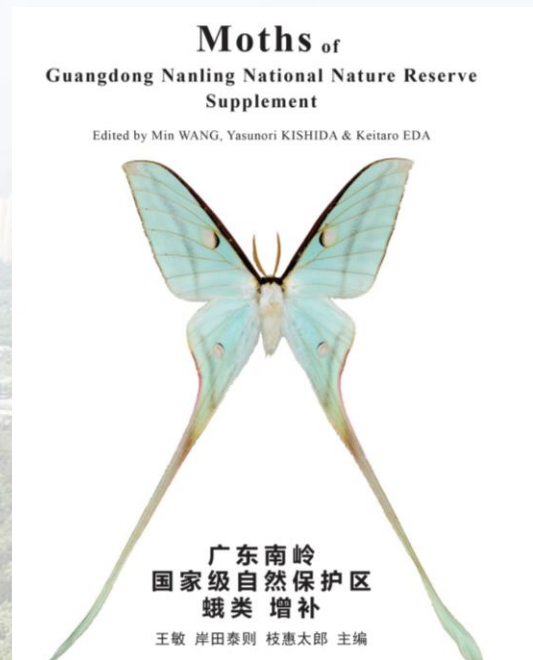
<p>Layout Plan and Landscape Impact</p>	<ul style="list-style-type: none"> • 30% green coverage requirement • Preserving the 11 TPIs (Tree of Particular Interest) is technically feasible • There are plenty of examples of successful cases in preserving trees within a housing development
<p>Tree felling and compensation plans</p>	<ul style="list-style-type: none"> • No registered OVT (Old and Valuable Tree) in the Potential Development Area • TPI were identified and preserved as far as practicable and compensation for the affected trees will be provided • Detailed tree survey and TPRP (Tree Preservation and Removal Proposal) submission at next stage → Chance to review housing block layout
<p>Light Impact</p>	<ul style="list-style-type: none"> • Qualitative assessment in EIA report meets the EIA SB requirement. • Literature review indicated that there are no objective assessment criteria locally and internationally • Assessment is conducted by using the Inverse Square Law of Lighting – attenuation over distance • Most of the lighting glare from housing development has been avoided in the first place as far as practicable • At source mitigation measures of lighting (Public Lighting, Indoor Lighting from Residential Flats, Lighting from construction activities) • With light source mitigation measures, the reduction of light due to the inverse square law, and that the first layer of trees/ leaves will screen off any light, it is expected that the light impact is minimal.

飛蛾調查 Moth Survey

香港哥爾夫球會2018的報告列出整個高球場具存護價值飛蛾累積有29種，但未有提供具潛力發展區所有不同分區的資料 → 調查主要目標包括，了解飛蛾在具潛力發展區內不同分區的分布。

According to HKGC 2018 report, cumulative moth species of conservation importance from the whole FGC was 29, but no specific data for each Sub-Area were provided → Main target includes, find out moth distribution in different Sub-Areas of the PDA.

- 由於從未在環境影響評估內包括飛蛾影響評估，因此，本環評研究邀請了華南農業大學王敏教授(飛蛾專家)參與。 As moth assessment has not been carried out under any previous EIAs, involvement of Professor WANG Min of South China Agricultural University (Moth Expert) was invited.
- 王敏教授的個人簡歷已跟據環評研究概要的要求連同陸地及水生生態影響評估方法說明書一併呈交。
CV of Professor WANG submitted with Methodology Statement for the Terrestrial and Aquatic Ecological Impact Assessments under the requirement of EIA Study Brief.



王敏教授：

- 1982年毕业于新疆职业技术学院农学专业；
- 1993和1996年毕业于西北农林科技大学昆虫学专业，分别获硕士学位和博士学位；
- 1998年任华南农业大学昆虫学系副教授；
- 2004年12月至今年，任昆虫学系教授；
- 2000年4月至2001年3月，日本九州大学访问学者。
- 兼任中国昆虫学会蝴蝶分会副理事长。

飛蛾調查 Moth Survey

王敏教授的個人簡歷CV of Professor WANG

王敏 華南農業大學農學院

職位 昆蟲學系教授

任職資歷： 16年

昆蟲學系教授



學術及專業資格學會

- 西北農林科技大學博士學位 (1998)
- 西北農林科技大學碩士學位 (1993)
- 新疆職業技術學院農學專業 (1982)
- 中國昆蟲學會蝴蝶分會副理事長
- 生態環境部全國蝴蝶觀測專家組成員
- 《中國生物多樣性紅色名錄-昆蟲卷》鱗翅目組組長

主要資歷

- 研究昆蟲系統學和保護生物學
- 主講城市昆蟲學, 經濟昆蟲, 生物多樣性, 普通昆蟲學等
- 共在國內外學術刊物上發表論文 43 篇, 其中國外刊物 30 餘篇
- 已經發表蝶、蛾類新種 200 餘種

工作經驗

- 2004 年至今 **華南農業大學昆蟲學系教授**
- 1998 年至 2003 年 **華南農業大學昆蟲學系副教授**

獎項

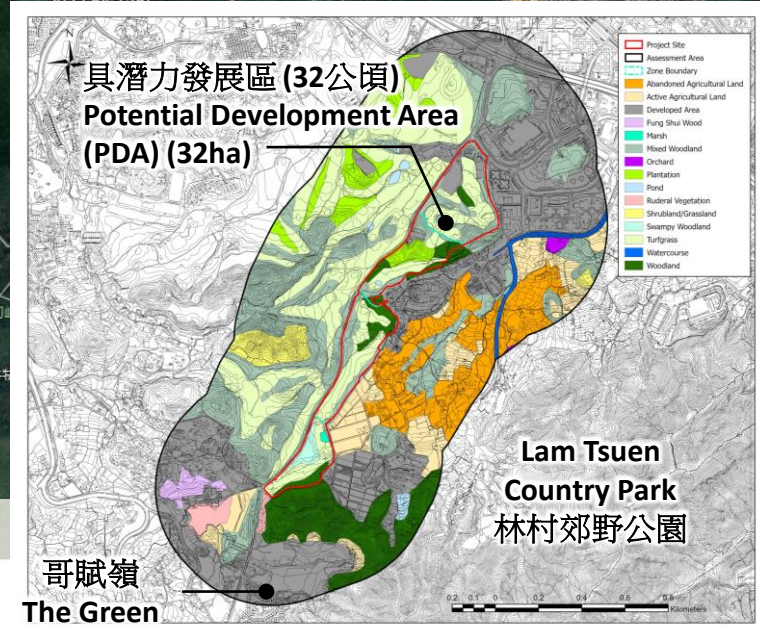
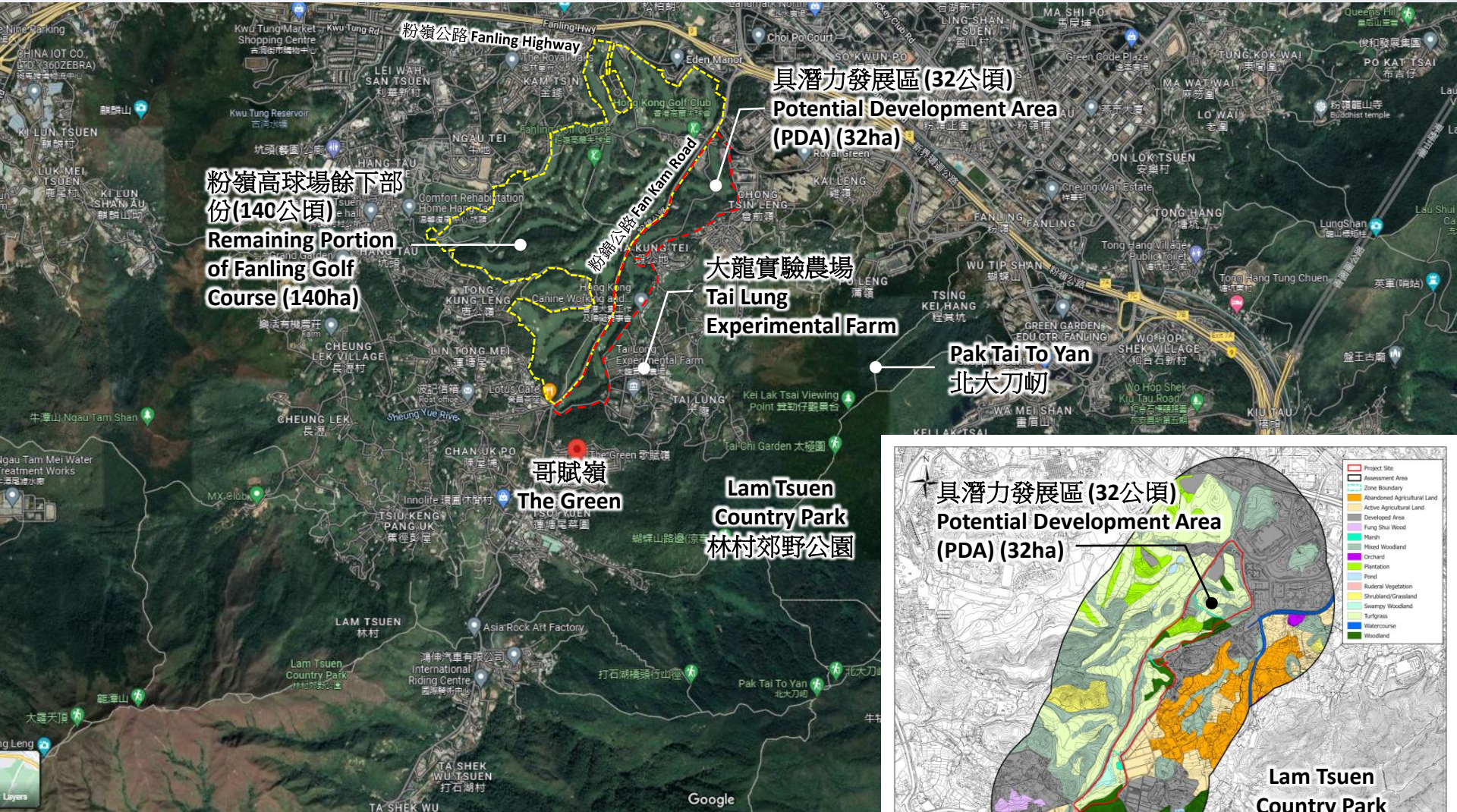
- 周堯昆蟲分類學獎勵基金 (三等獎)
- 日本蝴蝶學會第 11 屆林氏優秀學術著作獎
- 周堯昆蟲分類學獎勵基金 (一等獎)

發表文獻及學術報告

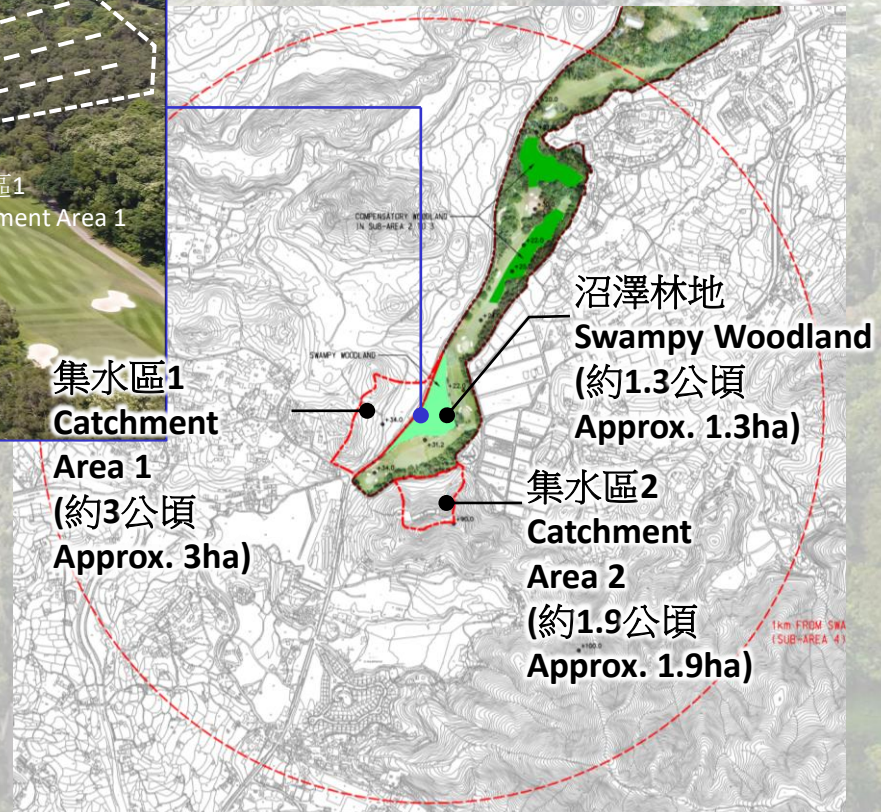
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- 林紅, & 王敏. (2005). 中國後窗網蛾屬一新紀錄種 (鱗翅目: 網蛾科). 華南農業大學學報, (3).



哥賦嶺 The Green



沼澤林地的主要水源分析 Main Water Sources of Swampy Woodland



樹木保護方法

Tree Protection Methodology

附件4 Attachment 4

樹木保育
Preservation of Tree

方法1 METHOD 1:

建立有額外緩衝區(例如外加3米)的優化樹木保護區

Establish **Optimized** Tree protection zone, **with additional buffer zone (e.g. 3m extra space)**

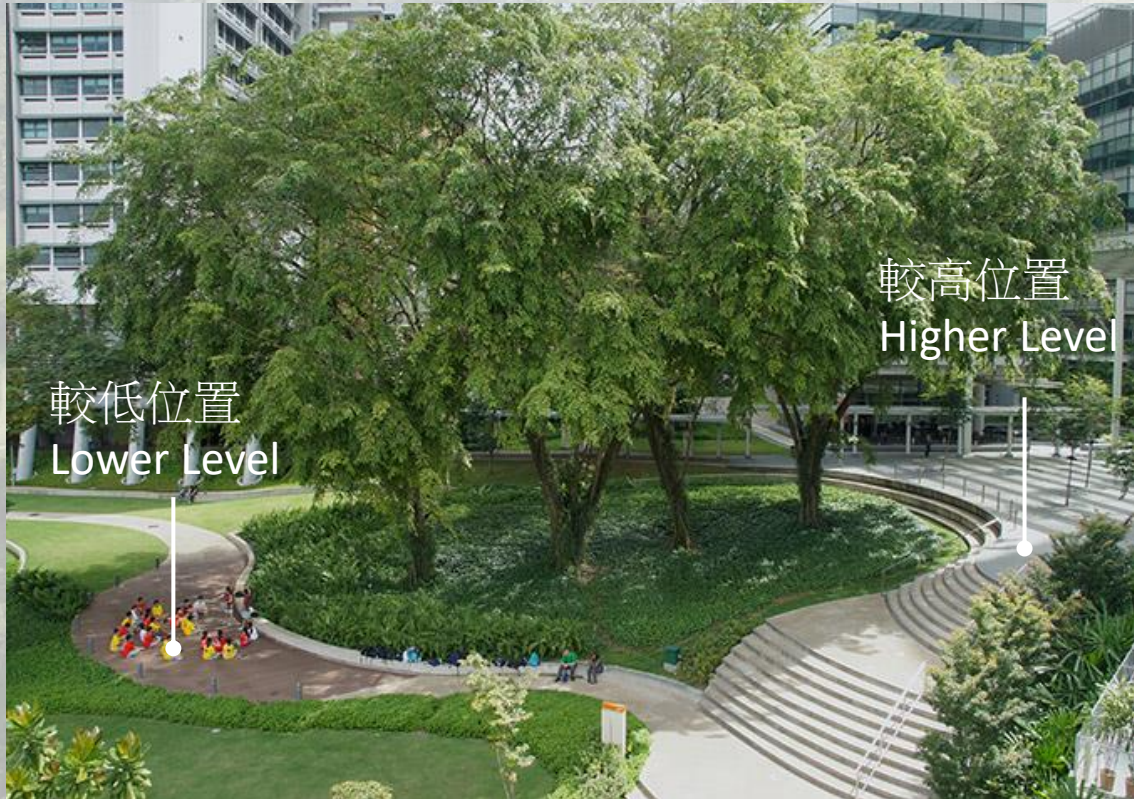
例子 Example: 在太子道東的大樹 Big Tree in Prince Edward Road East



樹木保護方法 Tree Protection Methodology

方法2 METHOD 2:
建立樹島/樹井 Establish Tree Island / Tree Well

例子 Example:
皇后山邨 Queen's Hill Estate



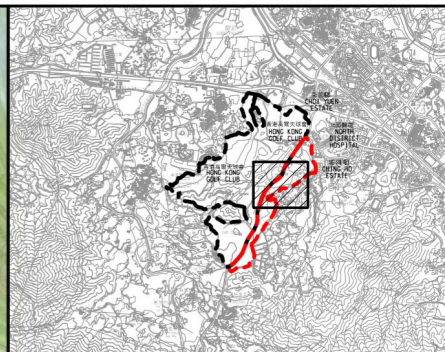
樹島 Tree Island



樹井 Tree Well



香港高爾夫球會
HONG KONG GOLF CLUB



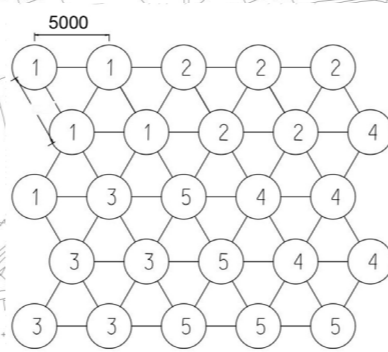
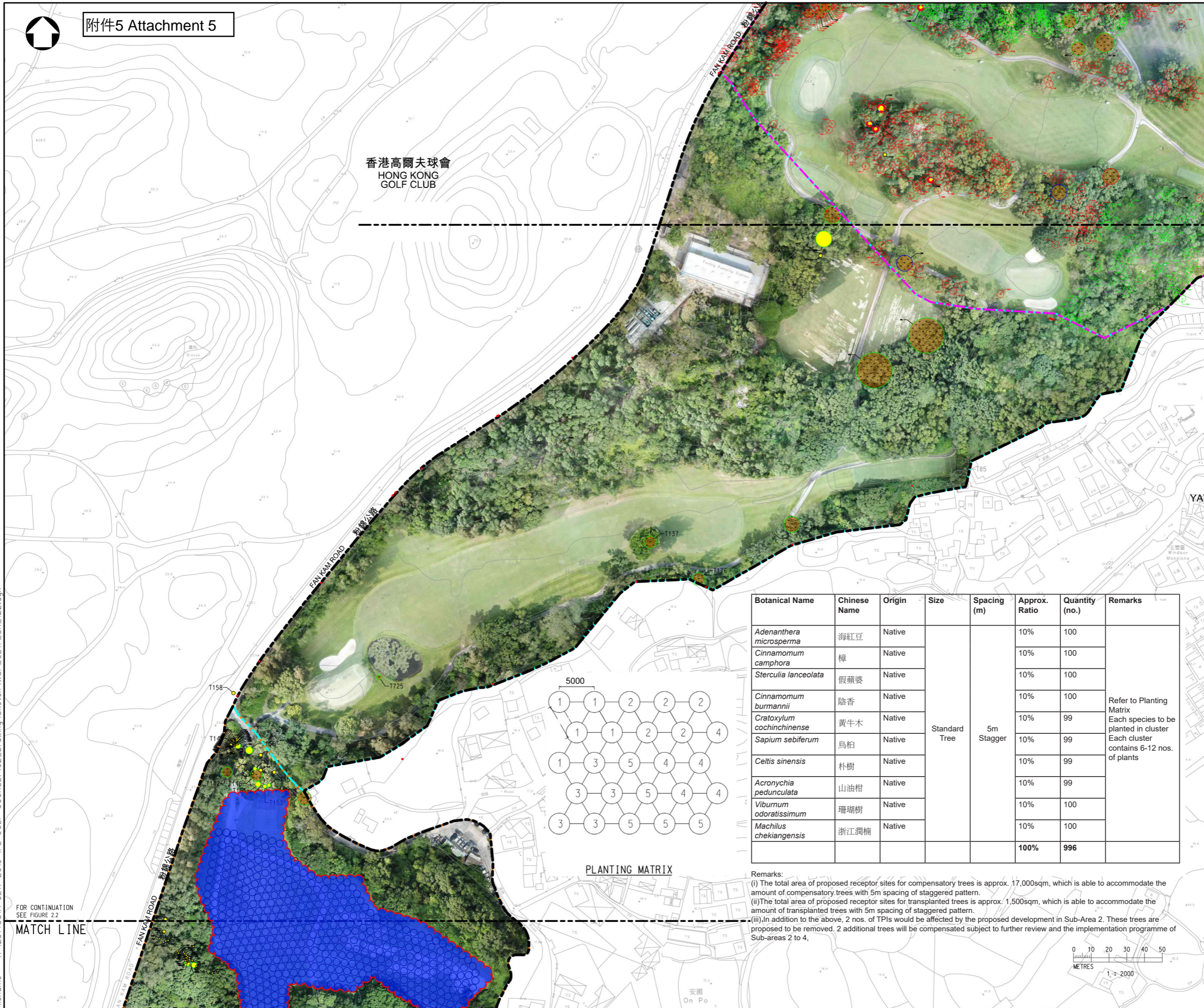
KEY PLAN

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (MPD).

LEGEND :

- POTENTIAL DEVELOPMENT AREA
- SUB-AREA 1 OF POTENTIAL DEVELOPMENT AREA
- SUB-AREA 2 OF POTENTIAL DEVELOPMENT AREA
- SUB-AREA 3 OF POTENTIAL DEVELOPMENT AREA
- SUB-AREA 4 OF POTENTIAL DEVELOPMENT AREA
- EXISTING TREES OTHER THAN TREES OF PARTICULAR INTEREST TO BE REMOVED
- TREES OF PARTICULAR INTEREST (MATURE TREES WITH DBH≥1m) TO BE RETAINED
- TREES OF PARTICULAR INTEREST (MATURE TREES WITH DBH≥1m) TO BE REMOVED
- AQUILARIA SINENSIS TO BE RETAINED
- AQUILARIA SINENSIS TO BE TRANSPLANTED
- GLYPTOSTROBUS PENSILIS TO BE RETAINED
- PROPOSED RECEPTOR SITE FOR COMPENSATORY TREES
- COMPENSATORY TREE PLANTING

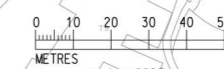


PLANTING MATRIX

Botanical Name	Chinese Name	Origin	Size	Spacing (m)	Approx. Ratio	Quantity (no.)	Remarks
<i>Adenanthera microsperma</i>	海紅豆	Native	Standard Tree	5m Stagger	10%	100	Refer to Planting Matrix Each species to be planted in cluster Each cluster contains 6-12 nos. of plants
<i>Cinnamomum camphora</i>	樟	Native			10%	100	
<i>Sterculia lanceolata</i>	假蘋婆	Native			10%	100	
<i>Cinnamomum burmannii</i>	陰香	Native			10%	100	
<i>Cratoxylum cochinchinense</i>	黃牛木	Native			10%	99	
<i>Sapium sebiferum</i>	烏柏	Native			10%	99	
<i>Celtis sinensis</i>	朴樹	Native			10%	99	
<i>Acronychia pedunculata</i>	山油柑	Native			10%	99	
<i>Viburnum odoratissimum</i>	珊瑚樹	Native			10%	100	
<i>Machilus chekiangensis</i>	浙江潤楠	Native			10%	100	
					100%	996	

Remarks:

- (i) The total area of proposed receptor sites for compensatory trees is approx. 17,000sqm, which is able to accommodate the amount of compensatory trees with 5m spacing of staggered pattern.
- (ii) The total area of proposed receptor sites for transplanted trees is approx. 1,500sqm, which is able to accommodate the amount of transplanted trees with 5m spacing of staggered pattern.
- (iii) In addition to the above, 2 nos. of TPIs would be affected by the proposed development in Sub-Area 2. These trees are proposed to be removed. 2 additional trees will be compensated subject to further review and the implementation programme of Sub-areas 2 to 4.



FOR CONTINUATION
SEE FIGURE 2.2

MATCH LINE

Rev	Description	By	Date



Project title
AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT
OF FANLING GOLF COURSE SITE
- FEASIBILITY STUDY

Drawing title
PLANTING PALETTE (1)

Drawn CAD	Date 02/22	Checked SF	Approved EW
Scale 1:2000 (A3)	Status		

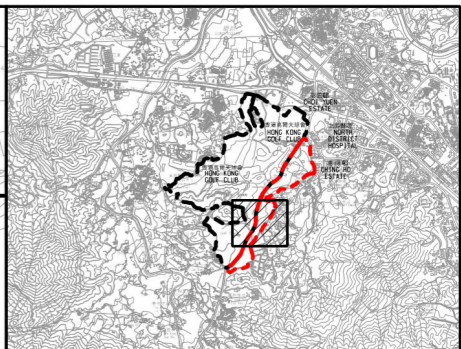
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CIVIL ENGINEERING AND DEVELOPMENT
DEPARTMENT
北拓展處
NORTH DEVELOPMENT OFFICE

Date : 12/10/2021
 Filename : X:\2514\331A CE17-2019 (FL GOLF COURSE)\02_Drawing\Sketch\WSP_CE17_SK_123.dgn



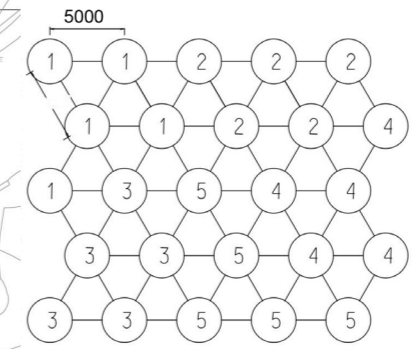
FOR CONTINUATION
 SEE FIGURE 2.1
 MATCH LINE



KEY PLAN

- NOTES :
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

- LEGEND :
- POTENTIAL DEVELOPMENT AREA
 - SUB-AREA 1 OF POTENTIAL DEVELOPMENT AREA
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 - PROPOSED RECEPTOR SITE FOR COMPENSATORY TREES
 - COMPENSATORY TREE PLANTING
 - PROPOSED RECEPTOR SITE FOR TRANSPLANTED TREES/PLANTS
 - TRANSPLANTED TREE PLANTING



PLANTING MATRIX

Botanical Name	Chinese Name	Origin	Size	Spacing (m)	Approx. Ratio	Quantity (no.)	Remarks
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<i>Cinnamomum burmannii</i>	陰香	Native			10%	100	Refer to Planting Matrix Each species to be planted in cluster Each cluster contains 6-12 nos. of plants
<i>Cratogeomys cochinchinense</i>	黃牛木	Native	Standard Tree	5m Stagger	10%	99	
<i>Sapium sebiferum</i>	烏桕	Native			10%	99	
<i>Celtis sinensis</i>	朴樹	Native			10%	99	
<i>Acronychia pedunculata</i>	山油柑	Native			10%	99	
<i>Viburnum odoratissimum</i>	珊瑚樹	Native			10%	100	
<i>Machilus chekiangensis</i>	浙江潤楠	Native			10%	100	
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Rev	Description	By	Date
Consultant			
Project title			
AGREEMENT NO. CE17/2019 (CE) TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE - FEASIBILITY STUDY			
Drawing title			
PLANTING PALETTE (2)			
Drawing no.		Rev.	
FIGURE 2.2		-	
Drawn CAD	Date 02/22	Checked SF	Approved EW
Scale 1:2000 (A3)		Status -	
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土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT 北拓處 NORTH DEVELOPMENT OFFICE			

照明眩光評估 Lighting Glare Assessment

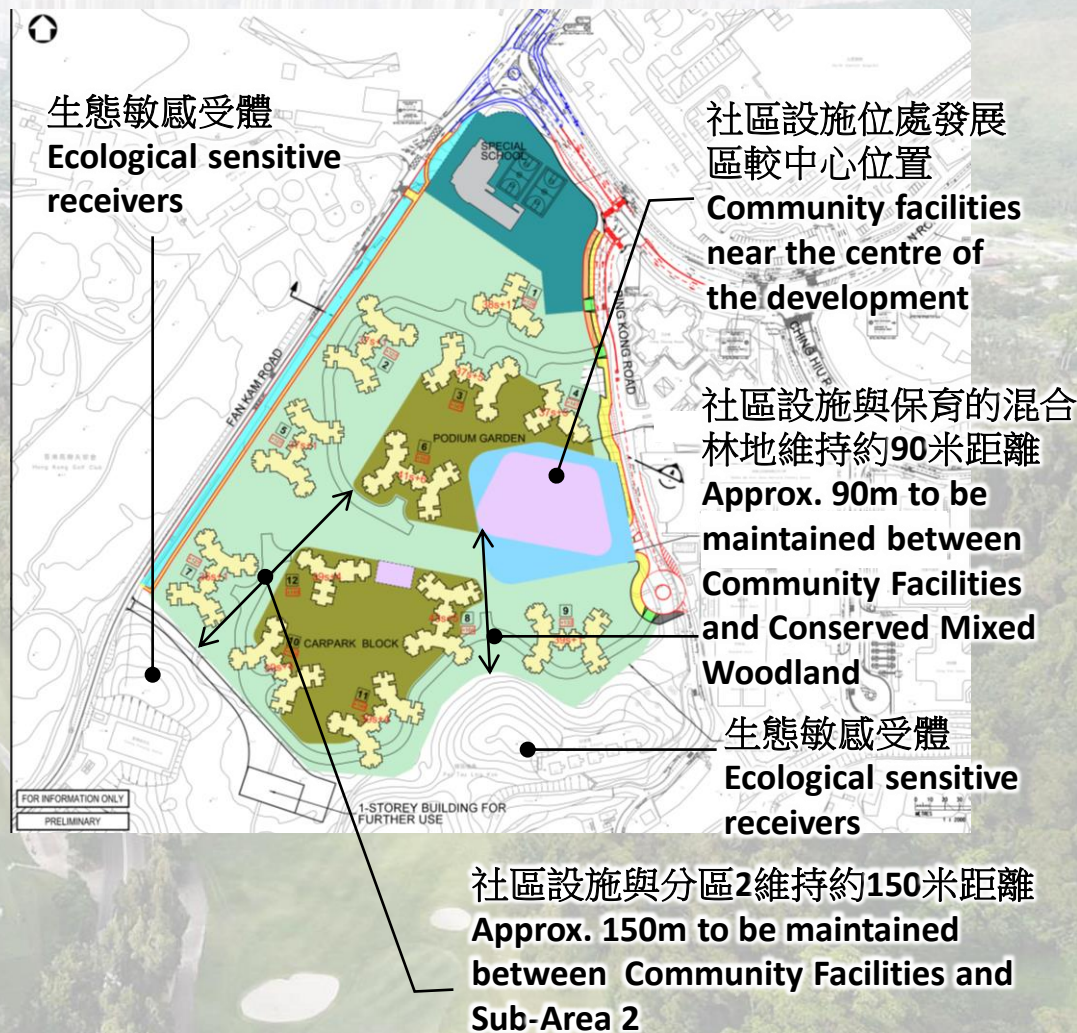
反平方定律 Inverse Square Law

- 參考反平方定律，會嘗試在發展圖上維持在樓宇和生態敏感受體之間盡量長的距離

With reference to Inverse Square Law, the layout would try to maintain distances between buildings and ecological sensitive receivers as far as possible

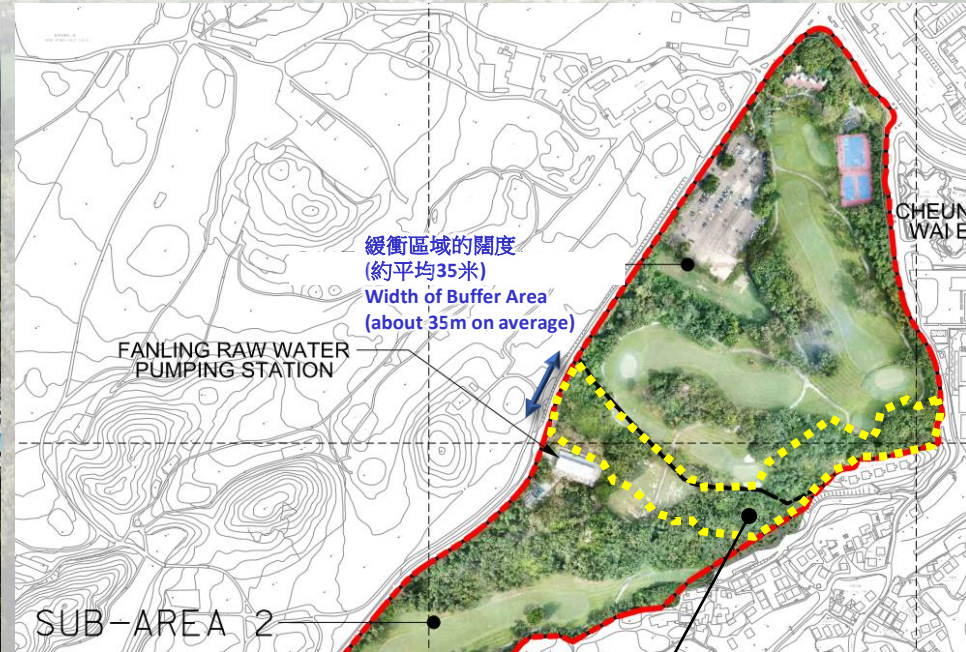
以一般街燈在距離地面10米作基準計算：
With a typical street lamp at 10 m from ground as the basis:

地點 Location	最短距離 (米) Nearest Distance (m)	光線強度的減少 (倍) Reduction in Light Intensity (times)
社區設施至保留的混合林地 Community Facilities to Preserved Mixed Woodland	90	1/81
社區設施至分區2 Community Facilities to Sub- Area 2	150	1/225



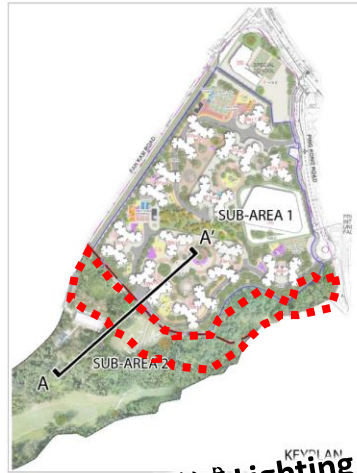
照明眩光評估 Lighting Glare Assessment

景觀緩衝區
Landscape Buffer Area



景觀緩衝區
Landscape Buffer Area

照明眩光評估 Lighting Glare Assessment



景觀緩衝區 – 直接光線影響將被第一排的樹木/植物屏蔽
Landscape Buffer Area – Direct light impact would be screened off by the first row of trees/vegetation

光線強度遞減 Lighting Intensity diminishes

屏蔽範圍
Screen Off Area

景觀緩衝區
Landscape Buffer Area

SUB-AREA 2 | SUB-AREA 1 | BLOCK 10 | BLOCK 12

+149.0

20/F

+37.0

+17.0

A

A'

SECTION A-A'

具潛力發展區的其他部份(在粉嶺抽水站後的林地)
Other part of PDA (e.g. woodlands after Fanling Raw Water Pumping Station)

照明眩光評估 Lighting Glare Assessment

景觀緩衝區 – 直接光線影響將被第一排的樹木/植物屏蔽

Landscape Buffer Area – Direct light impact would be screened off by the first row of trees/vegetation

具潛力發展區的其他部份(在粉嶺抽水站後的林地)

Other part of PDA
(e.g. woodlands after Fanling Raw Water Pumping Station)

