

Urban Forestry Advisory Panel (2023-24)
(Notes of the 1st Meeting)

Date and Time: 21 March 2023 (Tuesday) at 10:00 am

Venue: Conference Room 3, G/F, Central Government Offices, Tamar

Present

Miss Kathy Ng	Chairperson (H/GLTMS, DEVB)
Mr. Paul Chan	Member
Prof. Chau Kwai-cheong, JP	Member
Prof. Leslie Chen, JP	Member (via video conferencing)
Prof. Wendy Chen	Member
Prof. Chu Lee-man	Member
Dr. Dong Hui	Member (via video conferencing at Shenzhen)
Mr. Hincen NG	Member
Mr. Kevin Eckert	Member (via video conferencing at USA)
Dr. Billy Hau	Member
Mr. John Ho	Member
Prof. Anthony Leung	Member
Dr. Shi Shulin	Member (via video conferencing at Beijing)
Mr. Ken So	Member
Mr. Chiky Wong	Member (via video conferencing)
Prof. Charles Wong	Member (via video conferencing)
Mr. Yiu Vor	Member
Mr. Ryan Lin	Member (H/TMO, DEVB)
Mr. Eric Liu	Member (SConO(TS), AFCD)
Ms. Victoria So	Member (Act. SLA/VM(S), HyD)
Mr. Sunny Lo	Member (SLA/TDC, HD)
Miss Annie Fung	Member (CLM(PA), LCSD)
Mr. Hsu Ka-man	Secretary (AS(TM)3, DEVB)
Mr. Kun Chong-meng	Note-taker (TMO5, DEVB)

In Attendance

Ms. Vina Wong H(GLO), DEVB

UFAP Paper No. 01/2023

Mr. Jason Wong AS(GL)3, DEVB

UFAP Paper No. 02/2023

(i) Mr. Eric Chan SForO/TMG

(ii) Mr. Lam Chi-kin Leisure Manager (Arb)2, LCSD
Miss Esther Chan Leisure Manager (T) HKW, LCSD

UFAP Paper No. 03/2023

Mr. Franco Ng

Mr. Jonathan Picker

AS(TM)1, DEVB

Director, ATP

Action

1. The Chairperson welcomed Members to the first meeting of the current term of Urban Forestry Advisory Panel (2023-2024) introduced the six new Non-official Members, i.e. Mr. Paul Chan, Prof. Wendy Chen, Dr. Dong Hui, Mr. Hincen Ng, Dr. Shi Shulin and Mr. Ken So. She also welcomed Ms. Victoria So of Highway Department who also attended the meeting for the first time.

Item 1 : Confirmation of the minutes of the last meeting

2. The minutes of the last meeting were confirmed without amendment.

Item 2: Consultancy Study on Suitability and Sustainability of Roadside Trees (UFAP Paper No. 01/2023)

3. The Chairperson briefed Members that at the last meeting, Members were informed of the work of Task Force on Roadside Trees Planting and Maintenance (Task Force). The Task Force, which was set up by the Development Bureau (DEVB) subsequent to the tree collapse incident at Perth Street last year, had reviewed the current mechanism and practices, and then recommended some enhancement measures. One of the enhancement measures was related to the study on the suitability and sustainability of roadside trees (the S&S Consultancy Study). She invited AS(GL)3 to introduce the S&S Consultancy Study.

4. AS(GL)3 briefed Members on the proposal to commission the S&S Consultancy Study in 2023 to holistically review the criteria for determining suitability and sustainability of roadside trees, which may include but not limited to the tree's health and structural condition, stress level and potential problems, the adequacy of space for growth, conflict with structures or facilities, its amenity value offered in its location, the level of maintenance required, life-span of the tree species, etc. The S&S Consultancy Study would also develop a scoring system suitable for the local context based on the identified criteria. The scoring system would serve as a tool to assist the prioritization of large roadside trees that may require treatment in a systematic manner.
5. The Chairperson supplemented that a system would be developed to identify roadside trees with high potential risk and then measures would be derived to handle these trees.
6. A Member expressed his concerns about the outcome of the S&S Consultancy Study, which might lead to the removal of many large roadside trees located in areas with restricted root growth. This would result in the loss of many mature trees, while replanting in the limited space left would be difficult. He suggested measures should be considered in parallel to restore the original tree functions, such as reducing the heat island effect and filtering dust, and finding spaces to improve the growing environment for replanting, as outlined in CEDD's Greening Master Plan. Additionally, he proposed relocating some underground utilities to create more underground spaces for larger planters. Finally, he recommended to include public consultation for trees proposed for removal under the scoring system.
7. A Member expressed his support for the S&S Consultancy Study which aimed at exploring improvements to the growth environment for roadside trees. As the proposed scoring system would not be available until 2025, he questioned whether the S&S Consultancy Study would include any trial use of the scoring system at an earlier stage. Additionally, he raised concerns about the relationship between the current Tree Risk Assessment Management (TRAM) system and the future scoring system, as TRAM does not include elements to improve the growth environment of existing trees, but only focuses on risk identification.

8. A Member expressed reservations about the title of the S&S Consultancy Study, specifically the use of the terms "suitability and sustainability". He also questioned whether the study would include a review of the environmental conditions and history of the trees, as changes over time could have created limitations on tree growth. Therefore, he suggested that the S&S Consultancy Study should focus more on tree risk assessment and the identification of potential risks in the next five to ten years, rather than on suitability and sustainability.
9. A Member expressed concerns about the mitigation of the urban heat island effect and the significant contribution of large trees to biodiversity should many large trees would be removed. He agreed with other members that a comprehensive review of all factors, including suitability, structure, and tree safety, was required. He mentioned LandsD was working on a database on the utilities information for the northern part of Hong Kong, which could be a useful reference for tree replanting.
10. A Member commented that it was difficult to draw a line between saving and removing trees, and the presentation did not provide a clear message on how to do so. He suggested providing some guidelines or verifications to help draw the line, or leaving it up to the consultant to determine. He also noted that the discussions in previous UFAP meetings could be a useful reference for the consultant to resolve this grey area.
11. A Member expressed that assessing a tree growing in a restricted environment was very difficult for tree risk assessors. He supported the objectives of the S&S Consultancy Study, but noted that it would be complicated and require careful definition of many factors. For example, sustainability might involve considerations such as site uses, tree function, amenity, environmental function, or risk. Prioritizing these factors would be important and could affect the decision-making process for handling the tree. He also pointed out a technical issue with checking the underground root development, which was critical for making decisions about tree treatment. Finally, he expressed concern about the scoring system, which might draw a line for tree removal based on a certain score. He emphasized that tree removal should be assessed on a case-by-case basis.

12. A Member agreed with the objectives of the S&S Consultancy Study and commented that planting large roadside trees in urban areas some time ago led to current problems. Many of these trees were large, tall, and had wide-spreading root systems, leading to conflicts between the trees and citizens or public utilities. Therefore, he expected the S&S Consultancy Study to provide recommendations and direction for handling these trees. If the outcome indicated that most of them needed to be removed, the most difficult problem to be addressed would be public concern. He also pointed out that a small portion of roadside trees were good trees that were considered suitable and sustainable, and these trees should be protected. The consultancy report should suggest ways to protect them, such as avoiding excavation around them and diverting underground utilities away from their growing areas. He also expressed concern about the emergency excavation permits for, which could damage the tree root system without any control.
13. A Member questioned whether the need for the S&S Consultancy Study was due to the inadequacy of the current TRAM system, and how the new scoring system could interact with the TRAM. He also expressed concern that the new system might not be sustainable, as the removal of trees might not be solely caused by risk and could neglect ecological considerations. He also pointed out that assigning values in the scoring system that involved ecological aspects might lead to controversies.
14. A Member noted that carrying out tree risk assessment and conducting the S&S assessment would require different skill sets. He observed that the poor image of trees perceived by the public in recent years was associated with incidents caused by tree failure. Therefore, the S&S Consultancy Study should explain to the public about the concept of tree suitability and problems in the past associated with previous design.

15. A Member appreciated the effort to develop the S&S Consultancy Study. In addition to previous comments made by members, she suggested expanding the criteria to include tree interaction with pedestrians, rather than solely focusing on the trees themselves. She also noted that Hong Kong has many typhoons, and suggested including weather impacts, such as strong winds, in the assessment of tree's suitability and sustainability.
16. A Member supplemented that several members expressed concern about the scoring system for roadside trees. He emphasized the need to consider technical requirements and the approach to conducting the consultancy study. For example, he suggested that the S&S Consultancy Study should include scientific measurements rather than solely visual inspection, which would not be persuasive.
17. The Chairperson thanked members for their valuable comments. She explained that the outcome of the S&S Study would form a longer-term management tool, and would be complementary to the TRAM system. She further elaborated the intention of the scoring system was to assist in prioritizing trees for management actions, rather than concluding the tree treatment.

Item 3: Report on the Conditions of Old and Valuable Trees (OVT) (UFAP Paper No. 02/2023)

18. The Chairperson invited SForO/TMG, ArchSD to share the department's effort in maintaining the OVT No. ARCHSD KWT/4 growing at SIMAR slope feature no. 7SW-C/FR39 in Lions College, Kwai Chung.
19. SForO/TMG, ArchSD introduced the background of the OVT No. ARCHSD KWT/4 which was a *Ficus altissima* with DBH of 2000mm and tree height of 14m. The OVT was confirmed to be infected with of BRRD in October 2016. The chronology of the OVT's conditions, ArchSD's follow-up actions and the proposed way forward were also presented.

20. A Member asked about the details of the methodology in the application of fungicide, including the application frequency, dosage, equipment used and the post-application assessment. He also asked if there was any successful case in BRRD control by using fungicide in Hong Kong.
21. SForO/TMG, ArchSD responded that they applied the fungicide once every 3 months since the OVT had been infected with BRRD. The fungicide was mixed with water, and was sprayed with a garden spray bottle at the trunk base, at the roots and soil surface around the trunk. Other than trying to eliminate the fungus causing BRRD, the application of fungicide mainly aimed to reduce the spread of the disease in the tree and to other trees.
22. The Member further queried about the application method and expressed that, based on his experience in pesticide application, the manufacturer's application instruction and technical details should be followed. Moreover, he added that the fungicide used for preventive measure should be sprayed on larger area surrounding the OVT, and the application should cover the trees in the vicinity.
23. A Member informed that, during his visit to the OVT about 2 to 3 years ago, he found that the condition of the tree was less than satisfactory. Noting that there was more severe root decay recently and resistograph inspection was only carried out in 2017 but not in recent years, he asked if further assessment on its internal decay would be conducted in order to support its "medium" risk rating in the assessment.
24. SForO/TMG, ArchSD expressed that they would conduct a resistograph inspection very soon to check the situation of its internal decay.

[Post-meeting note: Resistograph inspection (a total of 11 drills) was carried out on 29 March 2023 at the trunk, aerial roots anchored in ground and ground roots at the tension side of the tree. The result confirmed that the tree was currently stable and the risk of failure was moderate.]

25. The Chairperson invited LM(T)HKW and LM(Arb)2, LCSD to present the two OVTs under LCSD's maintenance.
26. LM(T)HKW and LM(Arb)2, LCSD briefed on the tree information, the chronology of root decay and crown condition, the assessments on internal decay, the mitigation measures, the conclusions and recommendations for the two *Ficus microcarpa* (OVT Nos. LCSD CW/77 and No. CW/78).
27. A Member asked if there was any successful case for curing a BRRD infected tree. Moreover, he had reservation on the effectiveness of use of compost for BRRD infected trees as compost would keep soil moisture which was favorable for fungal growth. He also commented that the best time to control BRRD related to the life cycle of the pathogen and the treatment method. He reiterated that the effort spent to save a BRRD infected tree was just like "fighting a losing battle".
28. The Chairperson responded that DEVB issued the manual on handling BRRD infected trees quite some time ago and government departments were familiar with it. BRRD was a world-wide disease and trees infected by BRRD were incurable. When a DNA test ascertained that a tree was confirmed being infected by BRRD, all trees except the OVTs should be removed within 4 weeks. As for the infected OVTs, Government departments were all along working hard to delay their decline.
29. The Member expressed that quite a number of OVTs disappeared from the OVT Register and BRRD was deemed to be the main cause. He suggested the Government should review the guidelines and derive the preventive measures, for example, disinfection of the site and its nearby tree growing area
30. The Chairperson supplemented that the manual provided the steps on how to remove the trees and disinfect the area so as to prevent disease spreading. Moreover, keeping the tree health was a preventive measure and day-to-day proper maintenance was the way to achieve.

31. A Member appreciated LCSD's efforts. He also doubted the effectiveness of fungicide in BRRD control according to his experience. He commented that LCSD was endeavoring to slow down the impact of BRRD, but the infected tree might spread the disease and kill other trees nearby. The removal of BRRD infected tree was regarded as a preventive measure. Therefore, he concurred the recommendation for immediate removal of the OVTs in order to preserve other trees. Moreover, trees currently not growing well in a restricted area could not be regarded as "Right Tree Right Place". Their removal and replacement by other trees could build a stronger urban forest that would be more resilience.
32. A Member also supported the removal of the two OVTs in view of their poor condition. As for the use of tomography for inspections as mentioned in the presentation, he reminded that the tomography setup should avoid fixing to the aerial roots of *Ficus* species. It was because the gap between aerial roots and the trunk would create an incorrect result. As for the preventive measures, he supplemented that a balance of different kinds of fungi in the soil, especially the beneficial ones, might contribute to healthy soil which controlled fungal disease. The application of fungicide should be cautious as it would decrease the population of beneficial fungi. He was aware that the contractors always extensively sprayed the fungicide without understanding the rationale behind for the application.
33. A Member observed from the presentations respectively from ArchSD and LCSD that two departments seemed to work differently in tree inspection and disease treatment. He asked whether there would have some general practices on disease analysis. Moreover, he concurred another Member's (Prof. Chau Kwai-cheong) views that the presented spraying techniques might cause problems.
34. The Chairperson explained that the departments in general had followed the manual and LCSD had put extra efforts for the trees on Garden Road as it was a well-patronised location.
35. LM(Arb)2, LCSD supplemented that more objective and scientific evidences were required to support their decision on handling the two sensitive OVTs.

36. A Member concurred that, if the BRRD was irreversible, continuous evaluation and discussions on the cultural and ecological importance for the community versus the tree decline before coming to the decision of tree removal would take a long time and a lot of efforts. She suggested that it was necessary to think about the overall picture about the contributions of OVTs, and the best time for their removal and replacement if their decline was irreversible.
37. A Member expressed that issues on declining BRRD infected OVTs were discussed many times in the past and he could not see any change on handling BRRD infected OVTs in Hong Kong. He was still in doubt about the way to prevent BRRD spreading. The two OVTs, which were quite close to each other, were in fact isolated physically. However, both of them were infected. He opined that it was worth to study the ways of BRRD spreading first as reference to identify the preventive measures. His another opinion was that quite a lot of control measures had been implemented and it was worthwhile to review the effectiveness of these control measures.
38. The Chairperson thanked Members for their advices.

Item 3: The Use of Sonic Tomography in Tree Structure Analysis and Tree Root Mapping (UFAP Paper No. 03/2023)

39. The Chairperson invited AS(TM)1 and the consultant, Mr. Jonathan Picker, Director of Asia Tree Preservation, Ltd., to brief Members on this discussion item.
40. AS(TM)1 briefed Members of the background, prevailing technology used in tree risk assessment and a trial of using sonic tomography in tree structure analysis and tree root mapping. Mr. Jonathan Picker then elaborated on the technology background and theory, and progress.
41. Observing that trees always leaned towards the road, a Member asked if a highly compacted side of pavement (near the road) would determine the leaning direction of a tree in a tree pit on a pavement.

42. Mr. Jonathan Picker replied that, though the tree grew in a very restricted area, its roots could still proliferate into the cracks in the compacted soil. The tree leaning as observed might potentially be caused by phototropism.
43. H/TMO supplemented that the pavement and the carriageway were compacted to about 95% and 98% respectively according to the standard in Hong Kong. As such, it was believed that the leaning towards the carriageway side might be contributed by other factors such as shading, building nearby or even the wind.
44. A Member asked if vibration on roadside and noise would affect the assessment result.
45. Mr. Jonathan Picker replied that sonic tomography was sensitive to vibration. It was necessary to suspend the measurement when a large vehicle was passing the spot. Moreover, the sensor could be tapped more times to help eliminate errors.
46. A Member enquired whether the use of sonic tomography could differentiate the dead wood from those alive, and identify root density in multi-layers.
47. Mr. Jonathan Picker replied that sonic tomography could not identify layers of roots overlapping to each other. The technique based on different sound travelling time to differentiate the sound roots and the decay roots. The latter had low capacity for sound travelling. From a structural standpoint, dead roots without decay or with minimal decay can still contribute to holding a tree upright. Tomography stress waves could still pass through these types of roots. However, if a dead root becomes significantly decayed to the point of degradation, the tomography stress wave would no longer be transmittable and would show as “no root” in the resulting graph.
48. The Member supplemented that a dead root still had a connection to the root system but differed from a living root which had water content. It seemed that variation in water content might give a little difference in travel speed. The BRRD infected root should have low value of water content that would be considered as guidelines to identify the root condition.

49. Mr. Jonathan Picker responded that it was possible to identify root areas that contribute to tree structural support and those that do not. Moisture content was a factor in consideration of stress wave velocity.
50. A Member asked the following questions –
- (i) whether the paving around the trees would be removed for verification after scanning;
 - (ii) any experience and findings for assessing a tree root wrapping on a water pipe; and
 - (iii) any database would be built up to give specific reading for wood density of different tree species.
51. AS(TM)1 responded that only those samples with suspected root decay after assessment might be removed and their root distribution would be checked after tree removal. Mr. Jonathan Picker responded that the pipe wrapped by the root would give noise as the sound would travel direct to the pipe material. There was no current information on wood density.
52. Two Members asked about the limitations of applying this technology in root detection.
53. Mr. Jonathan Picker replied that previous trials had demonstrated tree roots were identifiable at least 2cm width to a depth of approximately 50cm. Additional trials had also demonstrated that larger diameter roots had been identifiable below 50cm depth.
54. A Member expressed that, based on the principle used in this technology, there should be a contrast on the density of roots and utilities. As the moisture content of a tree would change and the wave transmission between living root and dead root was quite different, he enquired if there was any treatment prior to the measurement, and the resolution of the result. Moreover, he also noted from the colour code that the moisture content in the forest soil was higher than that in the urban soil.

55. Mr. Jonathan Picker confirmed that high moisture content in the soil would likely impact the measurement result and that the measurement was not recommended during and immediately after rain. Since sensors were installed on the tree trunk and an additional sensor of the same system was used at the root detection measurement location, this would help to reduce interference and identify underground objects such as roots that were mechanically connected to that specific tree. Regarding the colour code difference between roots located in natural and compacted soil, the velocity in meters per second might vary. However, it only gave a rough approximation of the density of the roots.
56. A Member expressed that he was aware of this technology several years ago and glad to see its application for root inspection, especially associated with the sustainability study. He understood that water content was quite critical in the application and asked if a summary of the limitations would be available in applying this technology to stone wall trees (SWTs). He also noted that the technology could not provide information about the depth of the root, but he wished to know whether the information about the root size would be available.
57. Mr. Jonathan Picker replied that a SWT might have its roots growing over the top of the wall or just into the wall and it would be good to evaluate both scenarios.

If there was an air gap between the covering material (concrete, brick, or asphalt) and the soil, the stress wave (sound wave) might not be able to transmit because the technology relied upon a mechanical connection for stress wave transmission and would not be able to pass through air.

Regarding the size of identifiable roots, the technology could only estimate the root volume and could not differentiate roots according to their size. A group of small roots or one large root might appear similar in the measurement result. However, estimated root volume could be used when calculating tree root anchorage and overall tree stability by comparing the estimated root volume and the tree's estimated bending moment. From a structural standpoint, both types of roots would contribute to tree root anchorage and support in a similar manner.

58. AS(TM)1 thanked Members for bringing out the issues and expressed that the consultancy study aimed to find out opportunities and constraints on the application of this technology.
59. Chairperson thanked Members for valuable comments. There being no other business, the meeting was adjourned at 12:45 pm. The next meeting was tentatively scheduled to be held in November 2023.

**Greening, Landscape and Tree Management Section
Development Bureau
May 2023**