

APPENDIX D

Landscape and Visual

APPENDIX D1

Mai Po Nature Reserve Infrastructure Upgrade Project for the Footpath and Tower Hides at Mai Po Marshes in DD 104 Updated Tree Survey Report (Issue 1)

1 BACKGROUND

1.1 Project Background

1.1.1 AEC Limited (AEC) has been commissioned to conduct an updating tree survey for Mai Po Nature Reserve Infrastructure Upgrade Project for the proposed footpath and tower hides at Mai Po Marshes in D.D. 104 (hereinafter referred to as “the Project”). A tree survey was previously conducted in February 2017 and January 2019 for all existing trees within the survey area for the Project to support a planning application (Urbis Limited, 2019). This Report has been prepared to survey and update the existing tree conditions for the Project.

1.2 Site Context

1.2.1 The Site is located within Mai Po Marshes in D.D. 104. It is designated as the Site of Special Scientific Interest (SSSI) in the current Outline Zoning Plan (OZP) S/YL-MP/6 – Mai Po & Fairview Park.

1.2.2 The Project involves upgrading of an existing footpath and construction of two tower hides (namely Tower Hide 2 and Tower Hide 3), and the associated access to these new tower hides.

1.3 Relevant Legislations, Guidelines, Database and Publications

1.3.1 In preparing this Report, references for tree survey methodologies and evaluation of each surveyed tree were made based on the following technical guidelines and publications:

- Lands Department Lands Administration Office’s Practice Note Issue No. 2/2020 on Tree Preservation and Removal Proposal for Building Development in Private Projects – Compliance of Tree Preservation Clause under Lease and the Guidance Notes;
- Development Bureau Technical Circular (Works) No.5/2020 – Registration and Preservation of Old and Valuable Trees;
- Development Bureau Technical Circular (Works) No. 6/2015 – Maintenance of Vegetation and Hard Landscape Features;
- Guidelines promulgated by the Greening, Landscape and Tree Management Section of Development Bureau, particularly ‘Guidelines on Tree Preservation during Development’;
- Agricultural, Fisheries and Conservation Department, Conservation Branch, Nature Conservation Practice Note No.2/2006 – Measurement of Diameter at Breast Height (DBH);
- Agricultural, Fisheries and Conservation Department, Conservation Branch, Nature Conservation Practice Note No.3 – The Use of Plant Names;
- Rare and Precious Plants of Hong Kong (Agricultural, Fisheries and Conservation Department, 2003);
- Forests and Countryside Ordinance (Cap.96) and Forestry Regulations; and
- Protection of Endangered Species of Animals and Plants Ordinance (Cap 586).

1.4 Tree Assessment Criteria

1.4.1 Each identified tree was assigned a tree reference number and surveyed individually in accordance with the tree survey assessment criteria listed in **Table 1**.

Table 1 Tree Assessment Criteria

Tree Survey Assessment Criteria		Explanation
Tree No.		The identification number as marked on the tree tag/plate attached to the tree being surveyed is recorded. Tree(s) in the Register of Old and Valuable Trees would be highlighted with their registration numbers.
Species	Scientific Name	Guidance on proper use of scientific name of plants is given in the Agriculture, Fisheries and Conservation Department's Nature Conservation Practice Note No.3
	Chinese Name	
	Origin	The origin (native/exotic) of the species of the surveyed tree as indicated in "the Flora of Hong Kong Vol.1-4"
Measurements	Height (m)	Height of a tree was measured from 'soil level at tree root collar', which is the level of the base of a tree trunk, to the uppermost of tree crown. The measurement made reference to the topographical survey performed by a separate land surveyor.
	DBH (mm)	DBH of a tree refers to its diameter at breast height (i.e. measured at 1.3m above ground level). Guidance on DBH measurement is given in the Agriculture, Fisheries and Conservation Department's Nature Conservation Practice Note No.2. The measurement made reference to the topographical survey performed by a separate land surveyor.
	Crown Spread (m)	Spread of a tree was defined by the outermost branches of a tree. The measurement made reference to the topographical survey performed by a separate land surveyor.
Amenity Value (High/ Medium/ Low)		Amenity value of a tree was assessed by its functional values for shade, seasonal interest, screening, reduction of pollution and noise and also its fung shui significance, and classified into the following categories: <ul style="list-style-type: none"> - High (H): Trees that provide significant functional values and/or significant fung shui value. - Medium (M): Trees that provide moderate functional values. - Low (L): Trees that provide slight or negligible functional values.
Form (Good/ Fair/ Poor)		Form of a tree was assessed by its physical growth form, and classified into the following categories: <ul style="list-style-type: none"> - Good (G): Trees with balanced form, upright trunk and a good crown spread. - Fair (F): Trees of reasonable form and crown spread. - Poor (P): Trees with imbalanced form, canopy lopsided, serious leaning trunk or crooked tree trunk.
Health Condition (Good/ Fair/ Poor)		Health condition of a tree was assessed by its foliage density cover or the presence and severity of visible defects, and classified into the following categories: <ul style="list-style-type: none"> - Good (G): Trees in good health condition without signs of visible defects. - Fair (F): Trees of reasonable health and with few or no visible defects of health problems. - Poor (P): Trees in poor health conditions (e.g. suffered from severe stress, disease, insect/pest infection, thin foliage density cover or dieback of canopy).
Structural Condition (Good/ Fair/ Poor)		Structural condition of a tree was assessed by its structural integrity and risks of failure due to structural configuration, and classified into the following categories: <ul style="list-style-type: none"> - Good (G): Trees without observable significant structural risks. - Fair (F): Trees of average structural configuration. - Poor (P): Trees of poor structural configuration, such as heavy leaning, bending, overhanging broken branch, etc.
Anticipated Survival Rate after Transplanting	(High/ Medium/ Low)	Assessment took into account conditions of an individual tree at the time of survey (including health, structure, age and root conditions), site conditions (including topography and accessibility), and intrinsic characters of tree species (survival rate after transplanting).

Tree Survey Assessment Criteria		Explanation
	Remarks	<p>Major determining factors for the rating on suitability for transplanting, including but not limited to:</p> <ul style="list-style-type: none"> - Low amenity value, - Poor health, structure and form, - Irrecoverable form after transplanting (e.g. transplanting requires substantial crown and root pruning), - Low chance of survival upon transplanting, - Undesirable species (e.g. <i>Leucaena leucocephala</i> which is an invasive, exotic and self-seeding tree), or - Trees grown under poor conditions which have limited the formation of proper root ball necessary for transplanting.
Recommendation (Retain / Transplant/ Remove)		<p>Retain:</p> <ul style="list-style-type: none"> - Retain all tree(s) at its/their existing location(s) as far as practicable. <p>Transplant:</p> <ul style="list-style-type: none"> - If preservation is not practicable, transplant the affected tree(s) to other permanent location(s) within the project site or the maintenance area to minimise loss of vegetation in the local environs, or - If both preservation and local transplanting are not practicable, transplant the affected tree(s) to other permanent location(s), which would preferably be in adjacent areas in order to maintain its/their amenity value to the neighbourhood. <p>Remove:</p> <ul style="list-style-type: none"> - If preservation and transplanting is unsuitable or impracticable, - The tree has been irreparably damaged by inclement weather, - Dead tree(s), or - Any other justifications or circumstances.
Remarks		Any additional information deemed necessary for consideration of the proposed management recommendation

2 FINDINGS OF THE TREE SURVEY

2.1 General

- 2.1.1 The updating tree survey was conducted 3rd, 8th, 9th, 10th, and 15th of March 2021 by the Certified Arborist of International Society of Arboriculture (ISA), Ms. LEUNG Pui-chi (HK- 0060A). Tree data is valid for 2 years from the date(s) of survey.
- 2.1.2 In the previous tree survey conducted in January 2019 (Urbis Limited 2019), a total of **336** no. of trees were identified and surveyed, including **6** no. of dead trees. This updating tree survey conducted in March 2021 reviewed and re-surveyed these previous **336** nos. trees, among which **10** nos. trees (including **4** no. trees previously identified as dead trees) were missing during the updating tree survey. An addition of **57** nos. trees were identified during this updating tree survey. Based on this updating tree survey, a total of **383** nos. existing trees were identified and surveyed within the survey area of the Project, including **9** nos. dead trees.
- 2.1.3 The surveyed trees within the tree survey area are indicated in the Tree Survey Plan in **Figure 1**. Detailed conditions of each surveyed tree are described in the Tree Assessment Schedule in **Appendix 1**. Photographs of the surveyed trees are shown in **Appendix 2**.

2.2 Tree Species Composition and Conditions

- 2.2.1 A total of **22** nos. tree species were identified, including **7** nos. native species, **15** nos. exotic species, and unidentified dead trees. Of the total **383** nos. trees surveyed, **261** nos. trees belong to native species, **113** nos. belong to exotic species, and **9** nos. are dead trees.
- 2.2.2 **Table 2** summarizes the tree species composition within the tree survey area. The most dominant tree species are the native tree *Celtis sinensis* (**66** nos. or 17.2%), and the exotic trees *Melia azedarah* (**53** nos. or 13.8%) and *Casuarina equisetifolia* (**51** nos. or 13.3%).

Table 2 Summary of Tree Species Composition

Scientific Name	Chinese Common Name	Origin	Number of Trees	% of Trees
1 <i>Albizia lebbek</i>	大葉合歡	Exotic	5	1.3%
2 <i>Artocarpus heterophyllus</i>	菠蘿蜜	Exotic	1	0.3%
3 <i>Bridelia tomentosa</i>	土蜜樹	Native	2	0.5%
4 <i>Casuarina equisetifolia</i>	木麻黃	Exotic	51	13.3%
5 <i>Celtis sinensis</i>	朴樹	Native	66	17.2%
6 <i>Cerbera manghas</i>	海杧果	Native	34	8.9%
7 Dead tree	死樹	N.A.	9	2.3%
8 <i>Dimocarpus longan</i>	龍眼	Exotic	1	0.3%
9 <i>Ficus microcarpa</i>	細葉榕	Native	10	2.6%
10 <i>Ficus subpisocarpa</i>	筆管榕	Native	31	8.1%
11 <i>Ficus virens</i>	大葉榕	Native	1	0.3%
12 <i>Heritiera littoralis</i>	銀葉樹	Native	4	1.0%
13 <i>Hibiscus tiliaceus</i>	黃槿	Native	39	10.2%

Scientific Name	Chinese Common Name	Origin	Number of Trees	% of Trees
14 <i>Ilex rotunda</i>	鐵冬青	Native	1	0.3%
15 <i>Kandelia obovata</i>	秋茄樹	Native	17	4.4%
16 <i>Litchi chinensis</i>	荔枝	Exotic	1	0.3%
17 <i>Litsea glutinosa</i>	潺槁樹	Native	3	0.8%
18 <i>Macaranga tanarius</i> var. <i>tomentosa</i>	血桐	Native	34	8.9%
19 <i>Melaleuca cajuputi</i> subsp. <i>cumingiana</i>	白千層	Exotic	1	0.3%
20 <i>Melia azedarach</i>	楝	Exotic	53	13.8%
21 <i>Morus alba</i>	桑	Native	1	0.3%
22 <i>Sapium sebiferum</i>	烏柏	Native	15	3.9%
23 <i>Sterculia lanceolata</i>	假蘋婆	Native	3	0.8%
Total			383	100.0%

2.2.3 The general tree conditions (except the dead trees) were **fair to poor**.

2.3 Trees of Particular Interest

2.3.1 No tree of particular interest was surveyed. No registered Old and Valuable Trees (OVT) were recorded in this tree survey according to the Register of Old and Valuable Trees (last update in April 2020). No protected tree species were recorded.

3 IMPACT TO EXISTING TREES ON SITE AND TREE RECOMMENDATION

3.1.1 All the existing trees surveyed are all located alongside the existing footpath or unpaved access. The original concrete footpath was designed not to affect any existing trees. The proposed upgrading works to the footpaths and access to the new tower hides will not require tree felling. The new boardwalks will be above the existing concrete footpaths which are retained *in-situ*. All boardwalks will be constructed of durable treated timber pre-fabricated concrete footings. The works will be of manual labour with hand-held power tools, hammers, etc.

3.1.2 All the existing trees will be **retained** and preserved on site. Proposed treatment to the surveyed trees are listed in the Tree Assessment Schedule in **Appendix 1**.

4 TREE PROTECTION MEASURES

4.1.1 For trees to be retained, proper tree protection measures shall be enforced during construction stage to ensure no trees are adversely affected by the works. Tree protection measures will be based on the following technical guidelines and publications:

- Section 25 of General Specification for Building (2017 edition);
- Development Bureau Technical Circular (Works) No. 4/2020 – Tree Preservation;
- “Tree Care during Construction” (Development Bureau);
- “Pictorial Guide for Tree Maintenance” (Development Bureau);
- “Design for Tree Protection Zone” (Greening, Lands and Tree Management Section, Development Bureau);
- Best Management Practices (Managing Trees During Construction);
- BS 3998: 2010 Recommendations for Tree Work;

- BS 4043: 1989 Recommendations for transplanting root-balled trees;
- BS 4428: 1989 Code of practice for general landscape operations (excluding hard surfaces);
- BS5837: 2012 Trees in related to Construction; and
- American National Standard for Tree Care Operations (Revision of ANSI A300 (Part 5)- 2005) – Tree, Shrub, and Other Woody Plant Management- Standard Practices (Management of Trees and Shrubs During Site Planning , Site Development, and Construction).

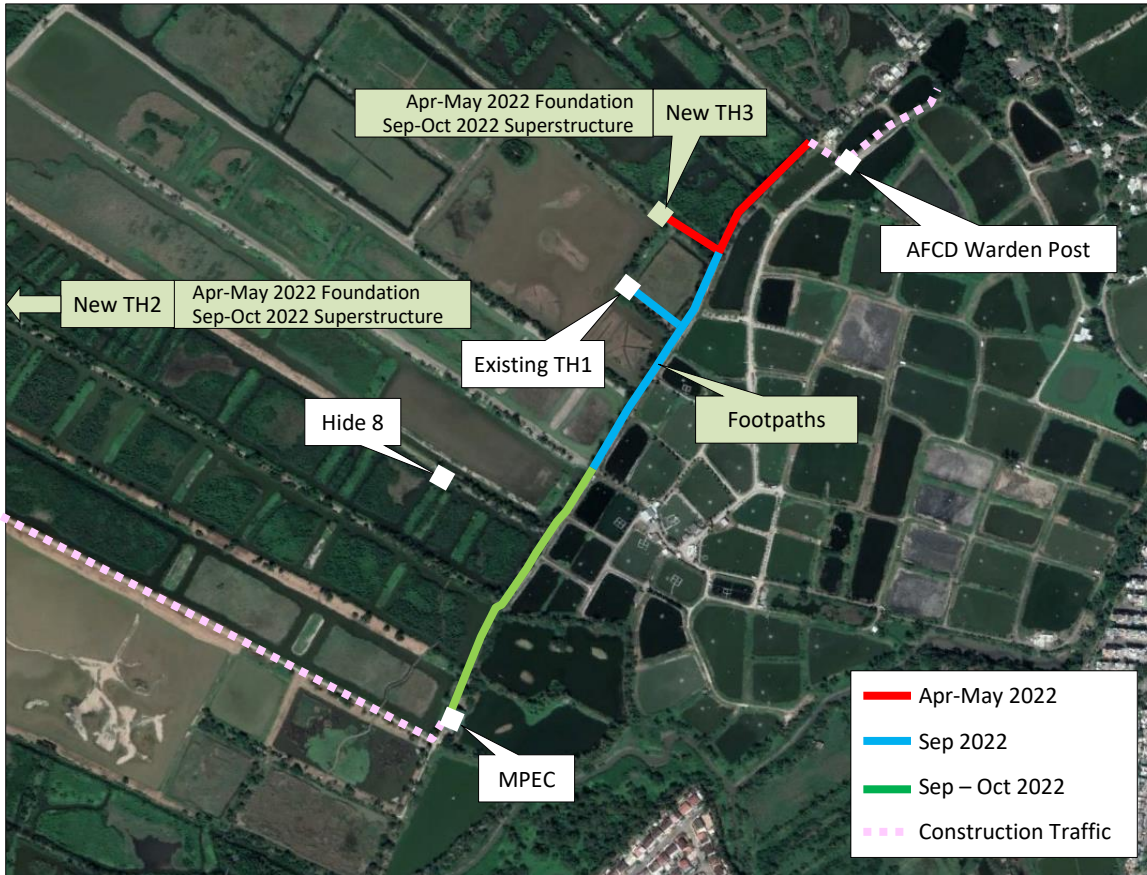
5 CONCLUSION

- 5.1.1 An updating tree survey was conducted in March 2021 to survey and update the conditions of existing trees in the tree survey area for the Project. A total of **383** nos. trees were surveyed, including **9** nos. of dead trees. Except for the dead trees, all the trees were in **fair** to **poor** conditions. All the surveyed trees are located alongside the existing footpaths. The new boardwalks will be above the existing concrete footpaths which will be retained. The upgrade works does not require tree felling and all the surveyed trees will be **retained *in-situ***.

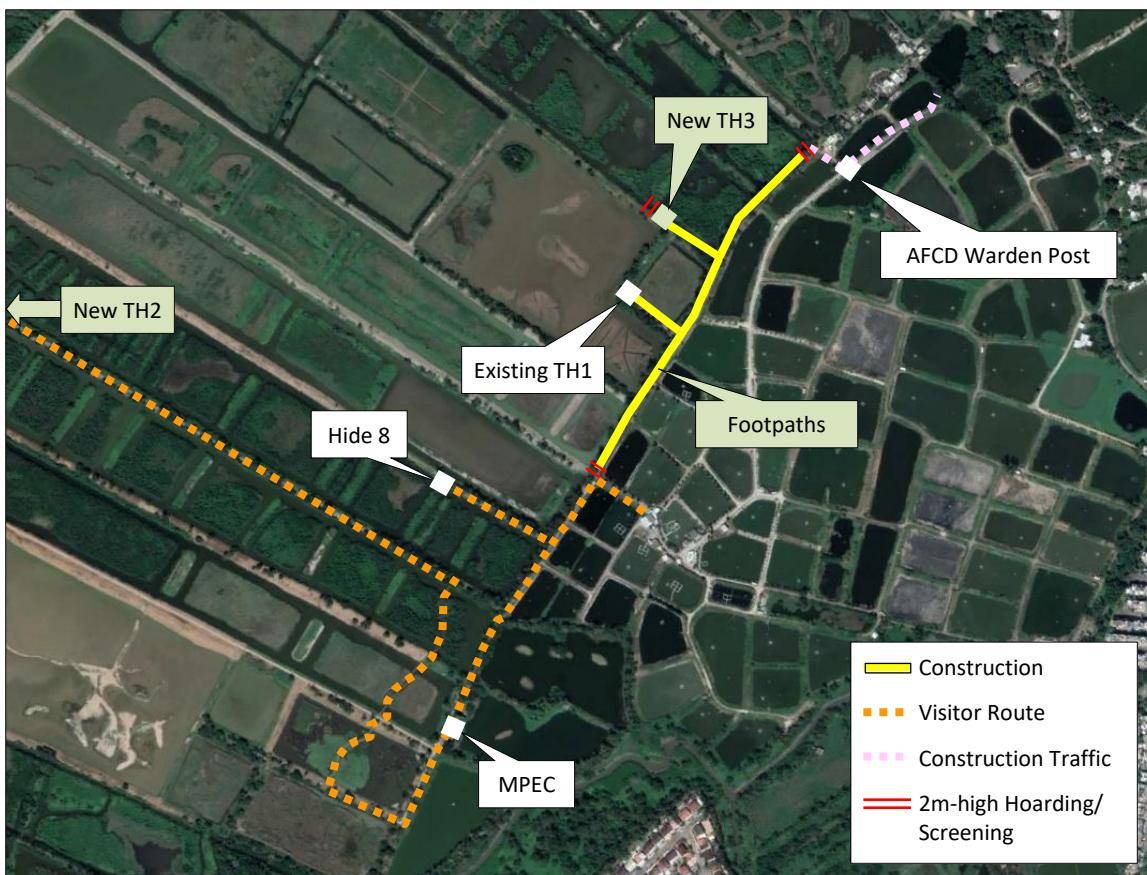
APPENDIX D2

Phased Construction Traffic and Visitor Routes During Construction and Operation

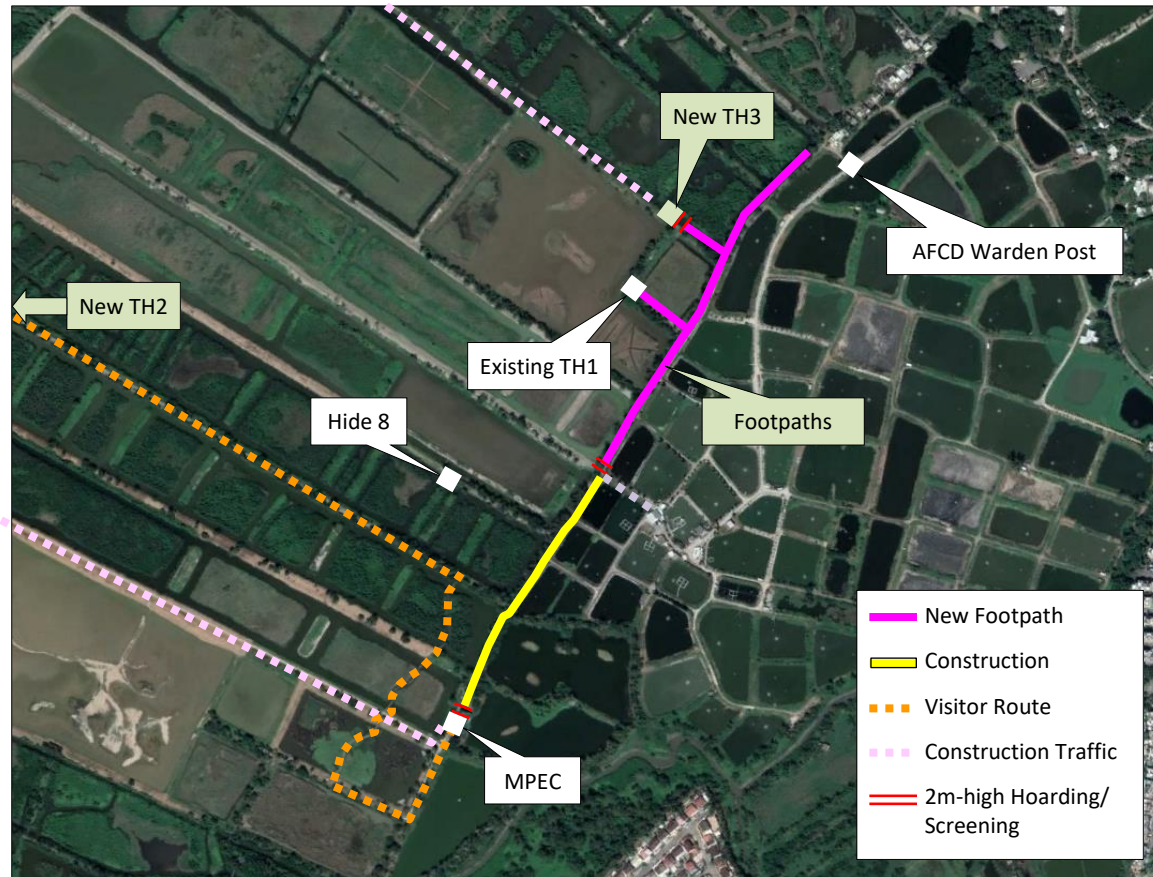
Phasing of Work for AFCD Path and TH3



Construction and Visitor Routing: April to September 2022 (6 months)



Construction and Visitor Routing: September – October 2022 (2 months)



Visitor Routing: November 2022 Onwards

