

# **Guidelines for Tree Risk Assessment and Management Arrangement On an Area Basis and on a Tree Basis**



**GREENING, LANDSCAPE AND TREE MANAGEMENT SECTION  
DEVELOPMENT BUREAU**

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# **GUIDELINES FOR TREE RISK ASSESSMENT AND MANAGEMENT ARRANGEMENT ON AN AREA BASIS AND ON A TREE BASIS**

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**Tree Management Office  
Greening, Landscape and Tree Management Section  
Development Bureau  
[www.trees.gov.hk](http://www.trees.gov.hk)**

## **Guidelines for Tree Risk Assessment and Management Arrangement on an “Area Basis” and a “Tree Basis”**

### **1. Background**

1.1 Pursuant to the recommendation in the *Report of the Task Force on Tree Management – People, Trees, Harmony* published on 29 June 2009 and Coroner’s Court recommendation on fatal tree incident at Yuen Chau Kok dated 12 July 2011, the Development Bureau (DEVB) has introduced and updated a set of new tree risk assessment arrangements since January 2010 for implementation by the tree management departments in order to better protect public safety. These arrangements, which were formulated with reference to the international best practices with due consideration to the circumstances in Hong Kong, are based on a dual approach –

- (a) **“Area Basis”** assessment – departments concerned will first identify those areas where members of public will be affected if a tree fails; and
- (b) **“Tree Basis”** assessment – once an area is identified, staff in the department concerned will identify those trees which may be problematic/important, and assess their conditions in accordance with a standardised format with particular emphasis on the risk angle. Old and Valuable Trees (OVTs) will as a rule be included for close monitoring.

1.2 Appropriate risk mitigation measures will then be identified having regard to the specific conditions of individual trees that pose a risk to public safety. As recommended by the Task Force, in case of conflicts between tree preservation and public safety, the latter should be given a higher priority.

1.3 In view of the varying circumstances of the tree management departments and resource limitations, the Task Force considered it necessary to allow suitable flexibility in the implementation of the tree risk assessment arrangements across departments. It is envisaged that over time, Government will be able to systematically build up a comprehensive database of the conditions of trees located on government lands for guiding the formulation of necessary remedial actions and risk mitigation measures as well as facilitating future monitoring of the conditions of these trees.

1.4 In the light of the previous practical experience gained from the tree risk assessment exercise, the Tree Management Office (TMO) of DEVB has updated the Guidelines for Tree Risk Assessment and Management Arrangement for implementation.

## 2. Purpose of the Guidelines

2.1 Risk is the combination of the likelihood of an event and severity of the potential consequence. A systematic process for tree risk assessment is essential to identify, analyze and evaluate tree risk. The Guidelines elaborate on the methodology for demarcating tree risk management zones on an “Area Basis” and for carrying out tree risk assessment on a “Tree Basis”, including the application of the tree assessment forms *Form 1 – Tree Group Inspection Form* (in Annex A) and *Form 2 – Tree Risk Assessment Form* (in Annex B).

2.2 Tree risk management is not a one-off exercise. It constitutes a professional approach to tree management and helps ensure the long-term sustainability of our trees. The methodology set out in the Guidelines assist departments in identifying trees with health and/or structural problem in a systematic manner so that remedial actions can be taken in a timely manner to alleviate the potential risks.

## 3. Tree Risk Assessment on an “Area Basis”

3.1 Government is striving to uplift the quality of our living environment through active planting, proper maintenance and preservation of trees together with other vegetation. As trees are living organisms, their health and structural conditions will change with their life cycle and their surroundings, especially in inclement weather. Government has a duty of care on the proper maintenance of trees for the protection of public safety, through implementing the tree risk assessment and management.

3.2 With over millions of trees in urbanized areas of Hong Kong, it is not practical, if not impossible, to cover every tree with an individual tree assessment. Therefore, the objective of the “Area Basis” assessment is to focus on areas where targets will be subject to risk of significant/unacceptable harm in the event of a tree failure so that the tree management departments will allocate their resources to these areas with higher priority for more effective tree risk management.

### 3.3 The process of “Area Basis” tree risk assessment

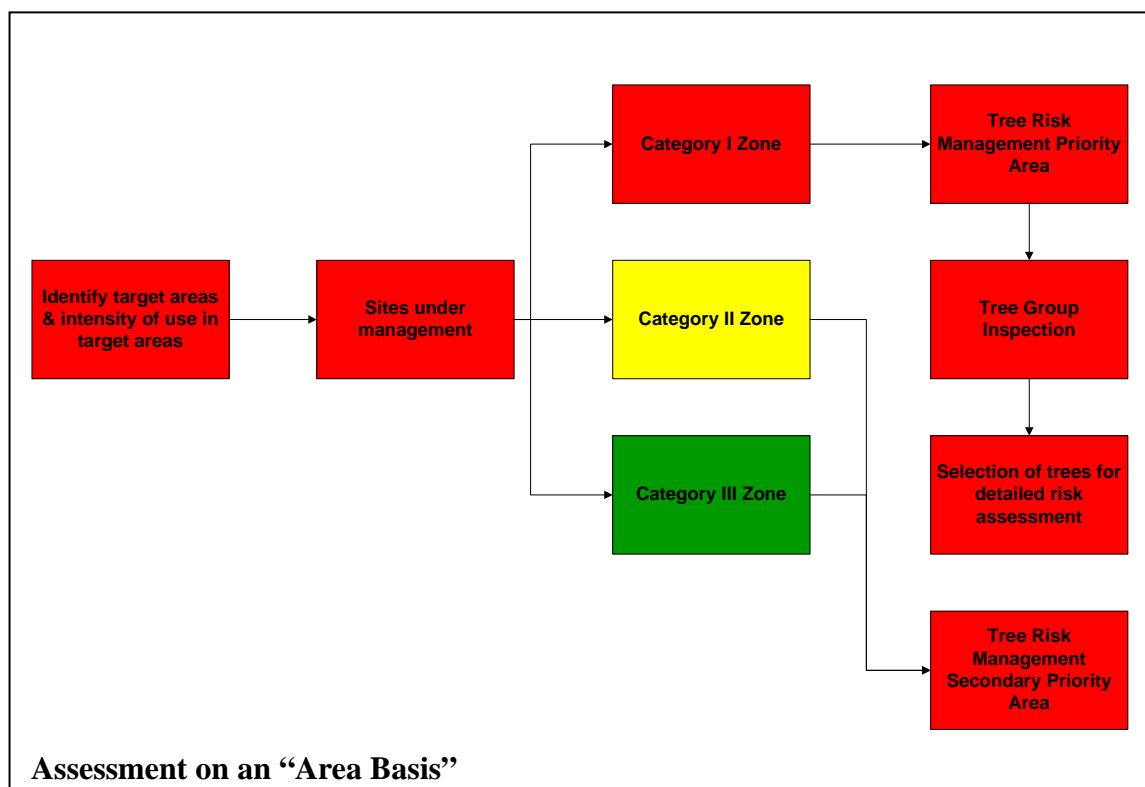
3.3.1 The “Area Basis” tree risk assessment aims to:

- (1) **Identify** areas where failure of tree will pose a hazard to public safety or cause disruption to human activity; and
- (2) **Prioritise** effort of tree risk management according to the frequency of use of the area.

3.3.2 Targets are people, property, or human activities that could be injured, damaged, or disrupted by a tree failure e.g. partial or complete closure of road traffic. A tree cannot be a hazard without the presence of a target. For sites managed by departments, tree risk management zones can be determined based on the intensity of use in target areas which can be affected by tree failure.

Intensity of Use in Target Area	Tree Risk Management Zone
<p><b><u>Intensive Use</u></b> Areas of high traffic flow and high pedestrian flow such as public parks, playgrounds, crowded streets, busy carriageways, schools, etc.</p>	<b>Category I</b>
<p><b><u>Infrequent Use</u></b> Areas of low traffic flow and low pedestrian flow such as road verges of limited access, countryside roads, village footpaths, etc.</p>	<b>Category II</b>
<p><b><u>Rare Use</u></b> Areas with very rare public access such as inaccessible areas, remote countryside slopes, dense woodlands, maintenance access not open for public, etc.</p>	<b>Category III</b>

**Determination of tree risk management priority areas**



3.3.3 Tree management departments are required to categorise sites under their management into tree risk management zones, such as Category I Zone, Category II Zone and Category III Zone being an “area basis” approach having regard to the intensity of use in the target areas. Category I Zone is designated as tree risk management priority area, whereas Category II Zone and Category III Zone are designated as tree risk management secondary priority areas. Such site categorization covers sites temporarily under the management of works departments during the course of public works projects. Works departments should approach the departments that previously managed the site for records of previous tree inspections to familiarize themselves with pre-existing tree conditions.

3.3.4 Tree risk assessment should be carried out regularly (at least annually) for Category I Zone and when necessary to cope with the changing conditions of the trees. We recommend tree management departments to carry out tree risk assessment for Category II Zone and Category III Zone when they have already completed tree risk assessment for all trees in Category I Zone and if resources permit. For Category II Zone, tree risk assessment to be programmed for at least every 3-5 years per cycle is recommended.

### 3.4 Working examples of demarcation of tree risk management zone on an “Area Basis”

3.4.1 An example in a country park

Example – AFCD case Shing Mun Country Park

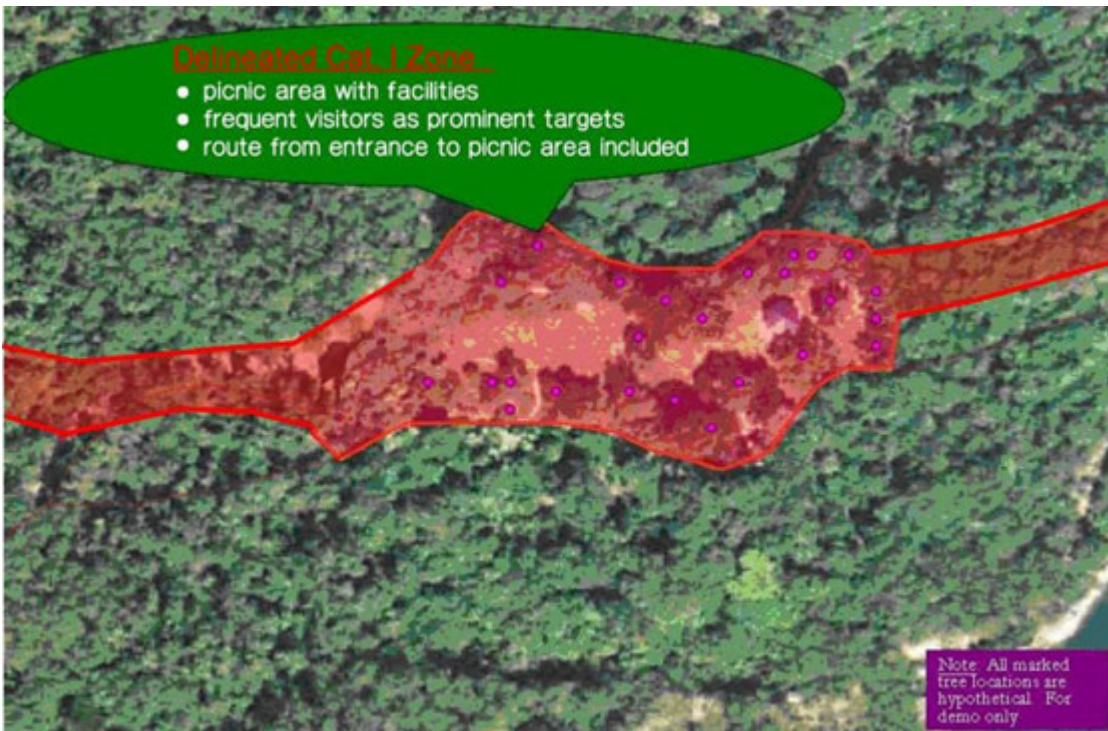
#### Step 1: Desktop Demarcation



## Step 2



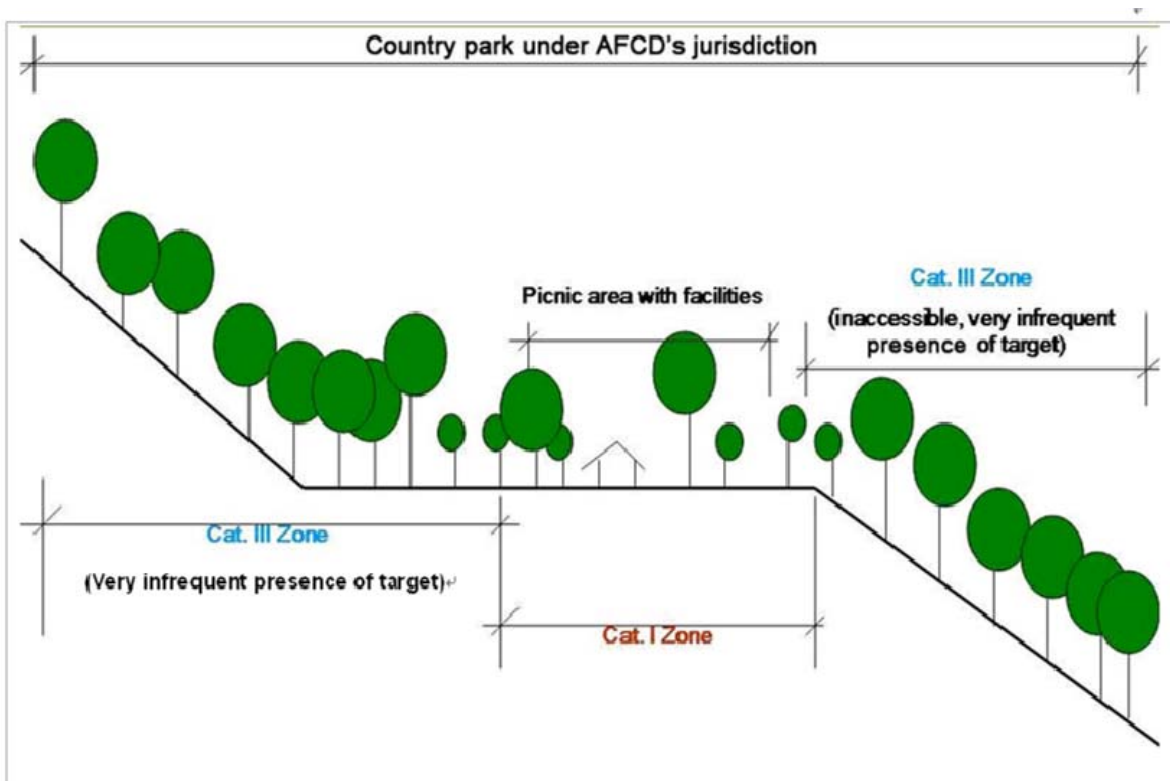
## Step 3



### Step 4



### Step 5





### 3.4.2 An example in a public park

Example – LCSD case Kowloon Park and along Nathan Road, Tsim Sha Tsui

#### Step 1: Desktop Demarcation



#### Step 2



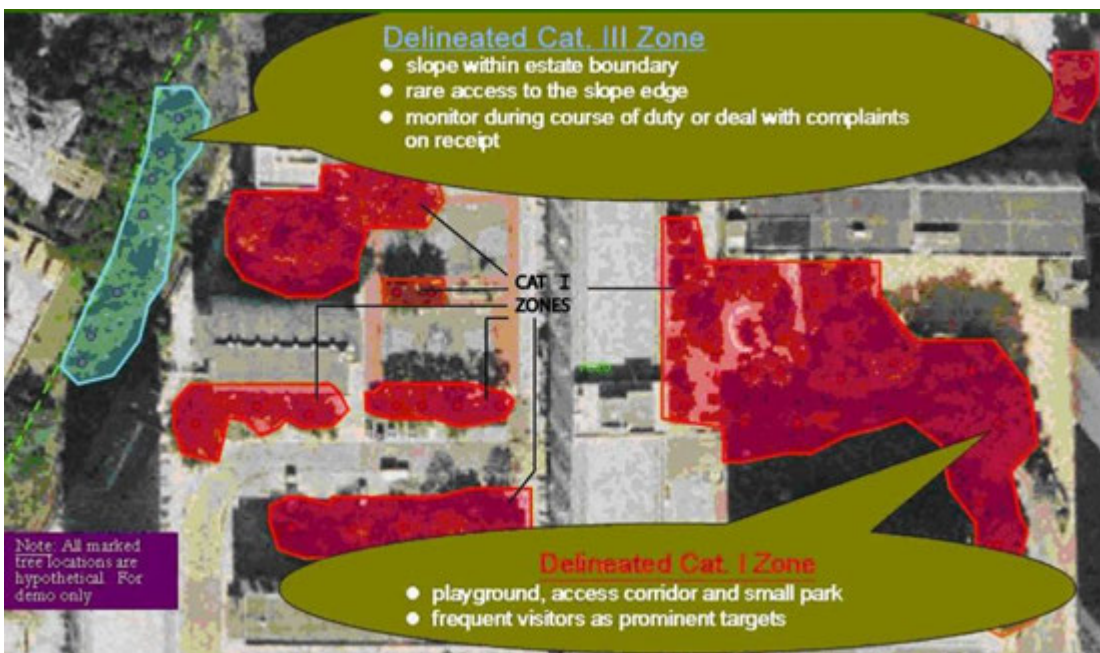
### 3.4.3 An example in a public housing estate

Example – HD case Lei Muk Shu Estate, Kwai Chung

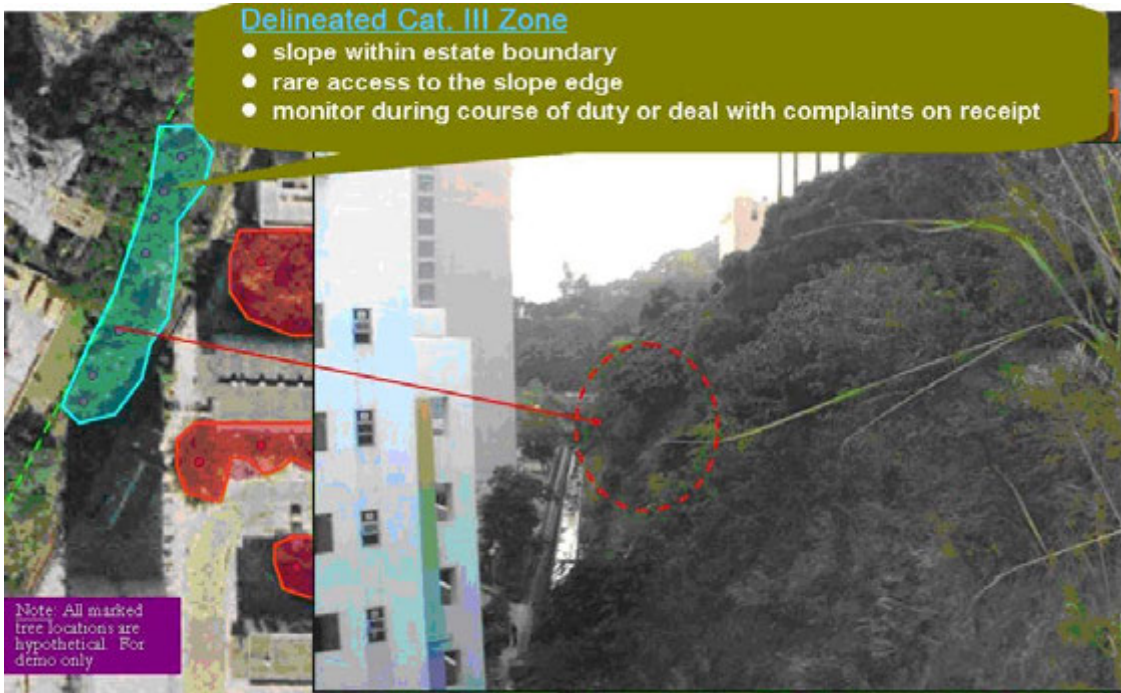
#### Step 1: Desktop Demarcation



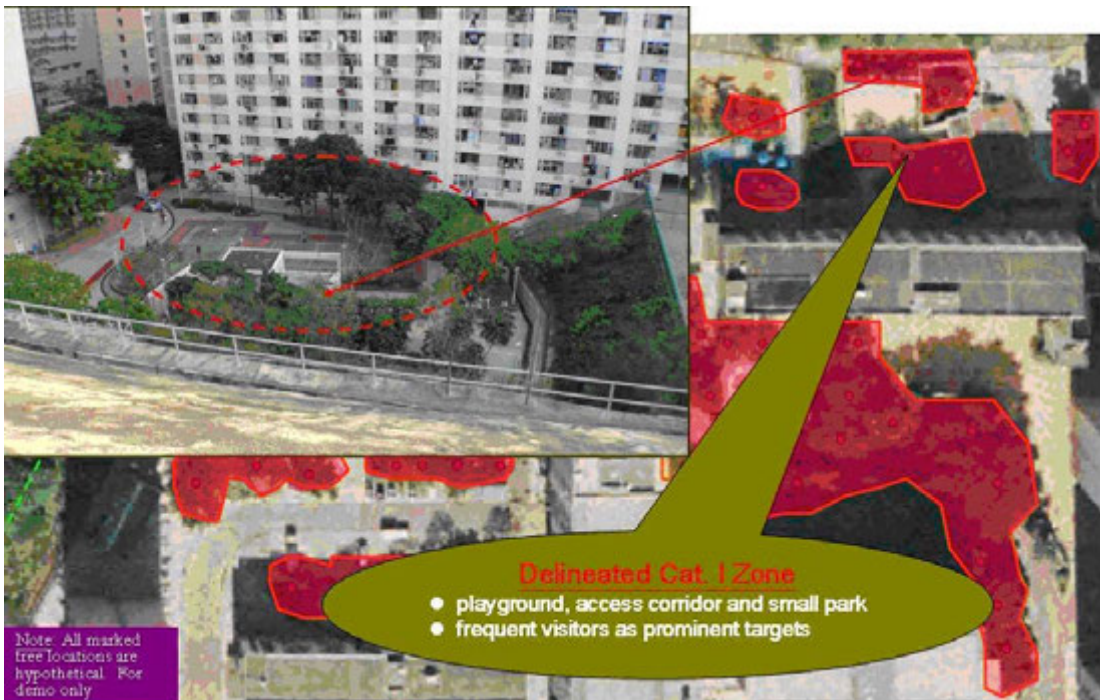
#### Step 2



### Step 3



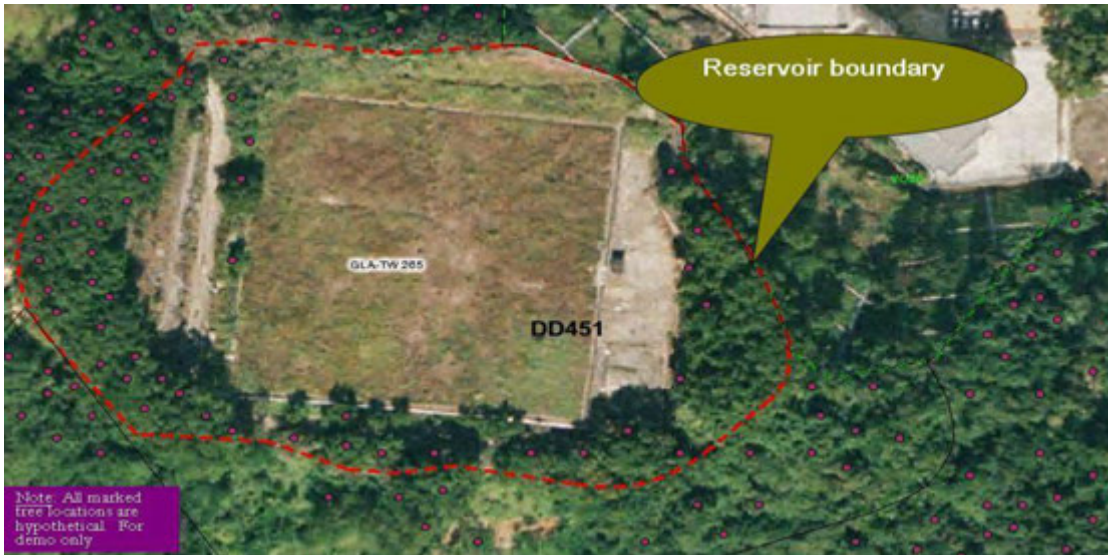
### Step 4



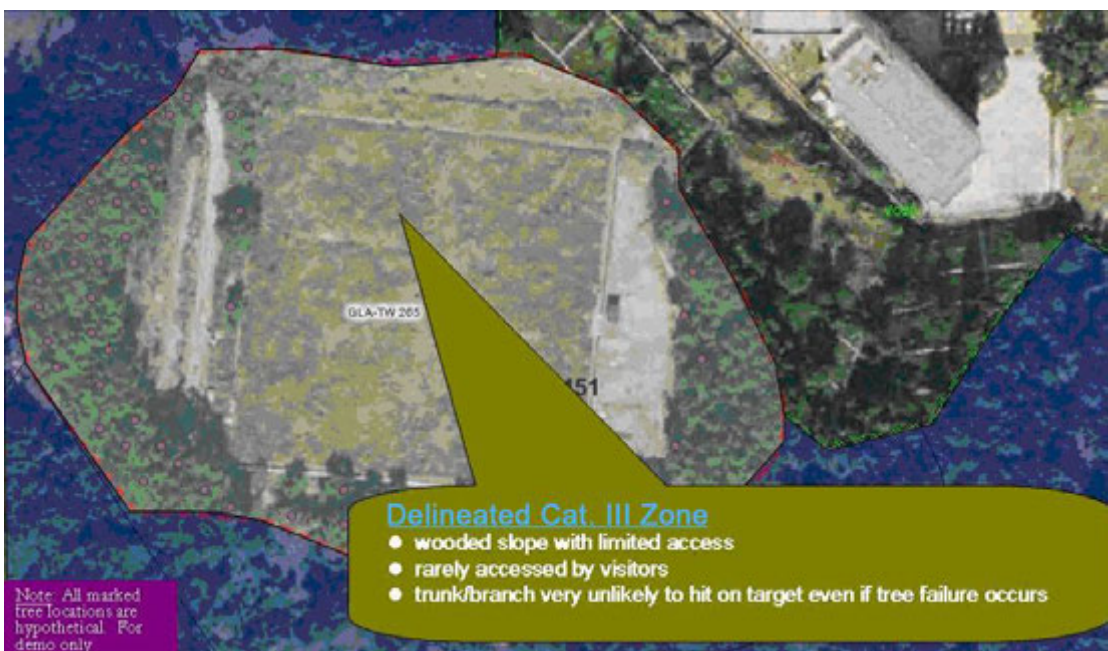
### 3.4.4 An example in a water service reservoir

Example – WSD case – Tsuen Wan No. 2 Fresh Water Service Reservoir, Kwai Chung

#### Step 1: Desktop Demarcation



#### Step 2



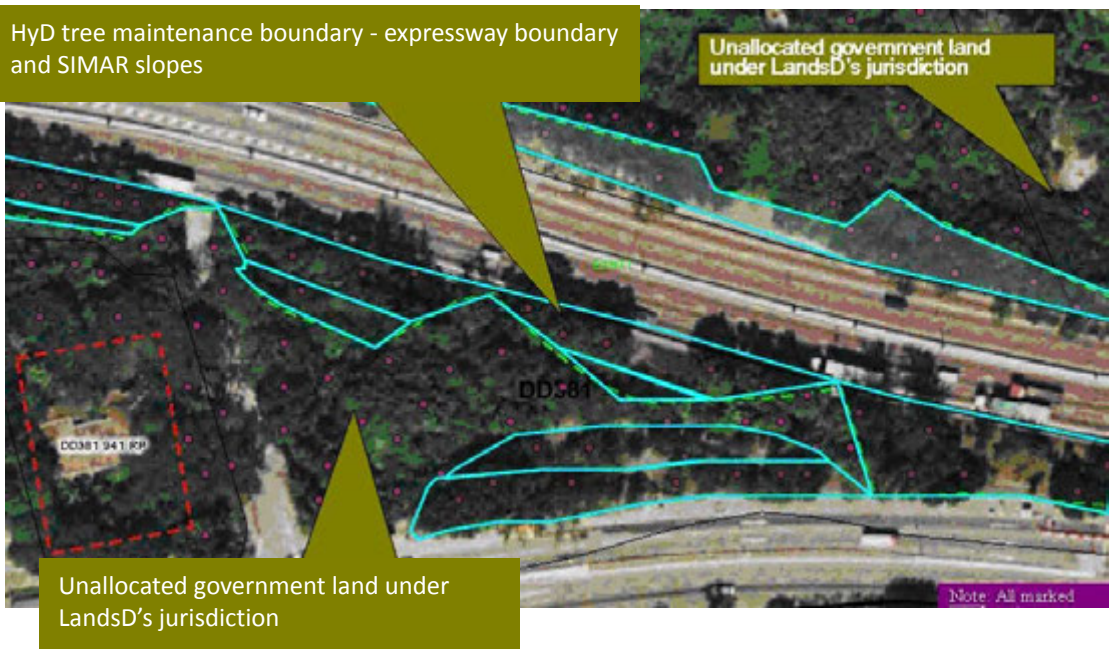
### 3.4.5 An example along a highway

Example – HyD case – a site along Tuen Mun Road

#### Step 1: Desktop Demarcation



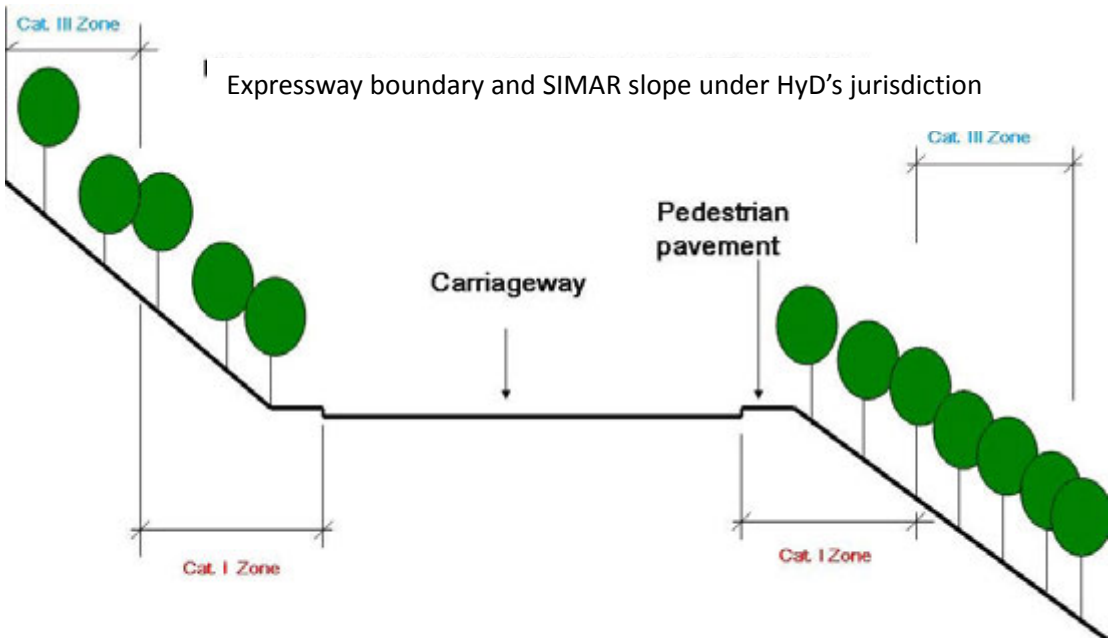
#### Step 2



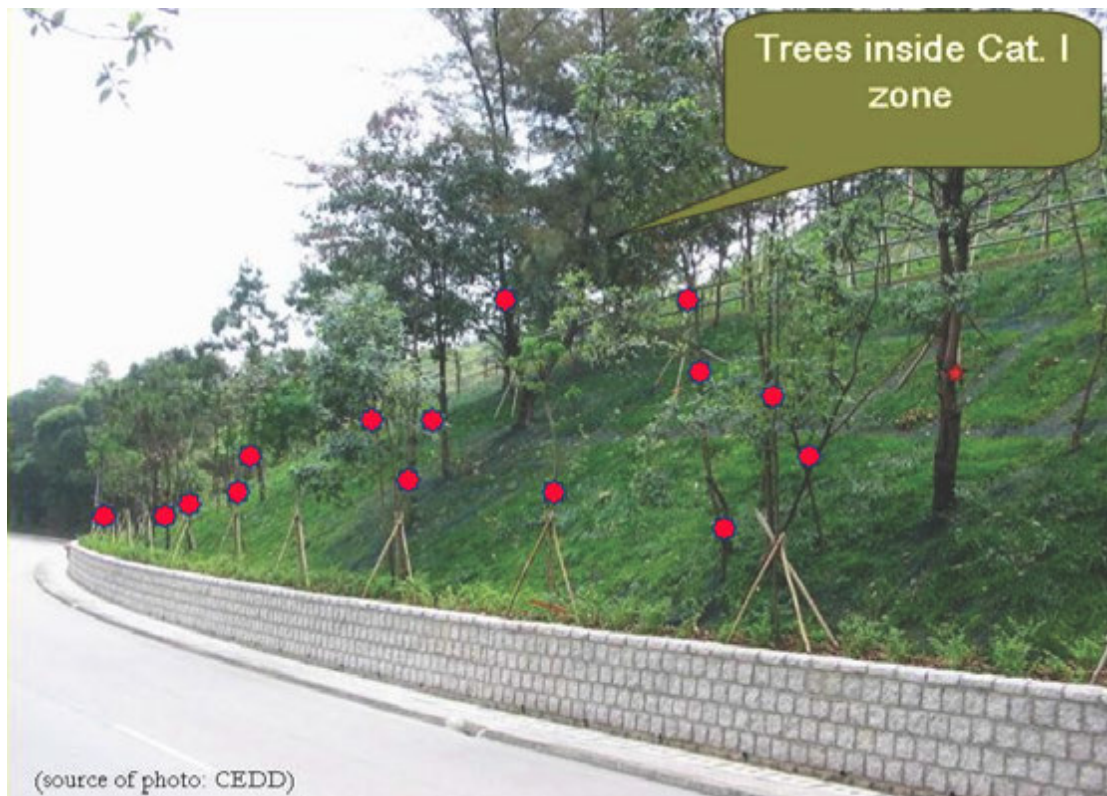
### Step 3



### Step 4



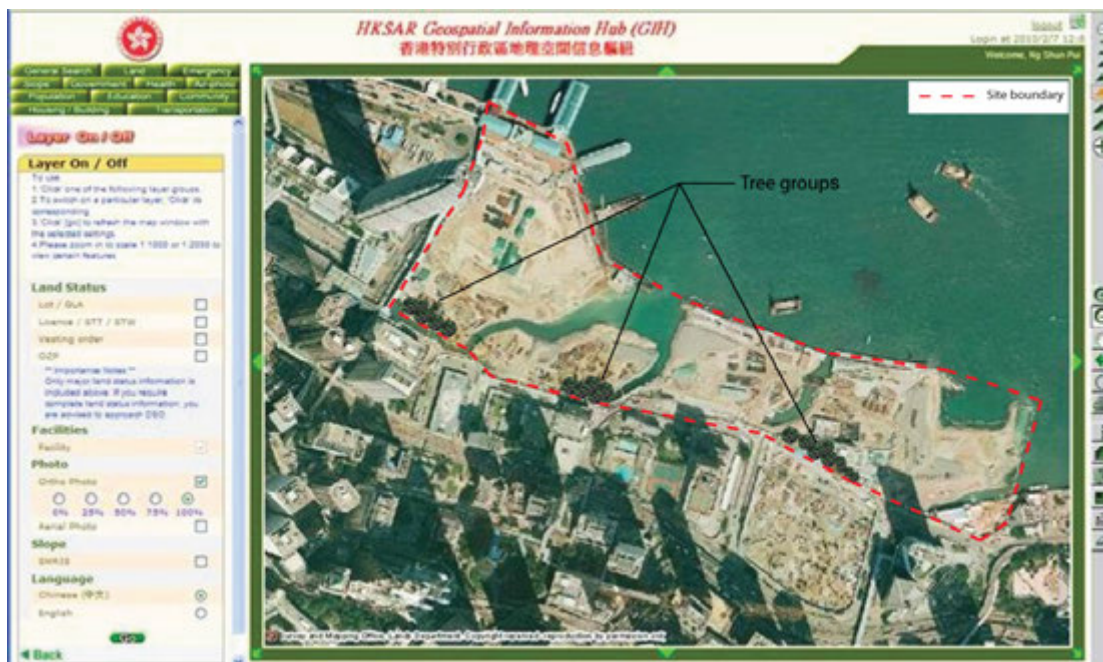
### A SIMAR slope maintained by HyD



#### 3.4.6 An example of a construction site

##### Example – CEDD case – construction site in Central

- 3.4.6.1 As a general principle, the party that is maintaining the tree when risk assessment is required should be responsible for undertaking the tree risk assessment. After construction, if a works department is still maintaining a tree during the establishment period or the aftercare period for Old and Valuable Trees, the works department concerned should be responsible for the tree risk assessment. If a tree has been handed over to the maintenance department for long-term maintenance after construction, the maintenance department concerned should be responsible for the tree risk assessment.
- 3.4.6.2 When carrying out tree risk assessment, if the site (or part of the site) falls in a Category I Zone, the department should proceed with a tree group inspection (Form 1) and, where appropriate, a detailed assessment using Form 2 for individual trees as necessary.



3.4.6.3 Construction sites are spaces that are in transition from an original use to a new use. In many cases a full tree survey may exist for the project that is under construction and this may be used to understand the baseline condition of the trees on the construction site.

3.4.6.4 In undertaking tree risk assessment the following considerations should be taken into account:

- ◆ Trees on site are normally hoarded off to protect them and this reduces the risk if areas within the hoarding area are not accessible, i.e. no target.
- ◆ The location of the trees on the site influences the risk. Trees located fully within the site and potentially affecting only the site area may be classed as Category II Zone. Trees located on site but potentially affecting a public area off site (e.g. adjacent to a public roadside) should be classed as Category I Zone.

3.4.6.5 Trees in construction sites may be subject to higher stress than normal due to changes in their original environmental conditions (e.g. changes in water table levels, dust, vibration, soil compaction, etc.) therefore more frequent (e.g. monthly) risk assessment should be conducted in the initial stage of the operation phase of the new development.

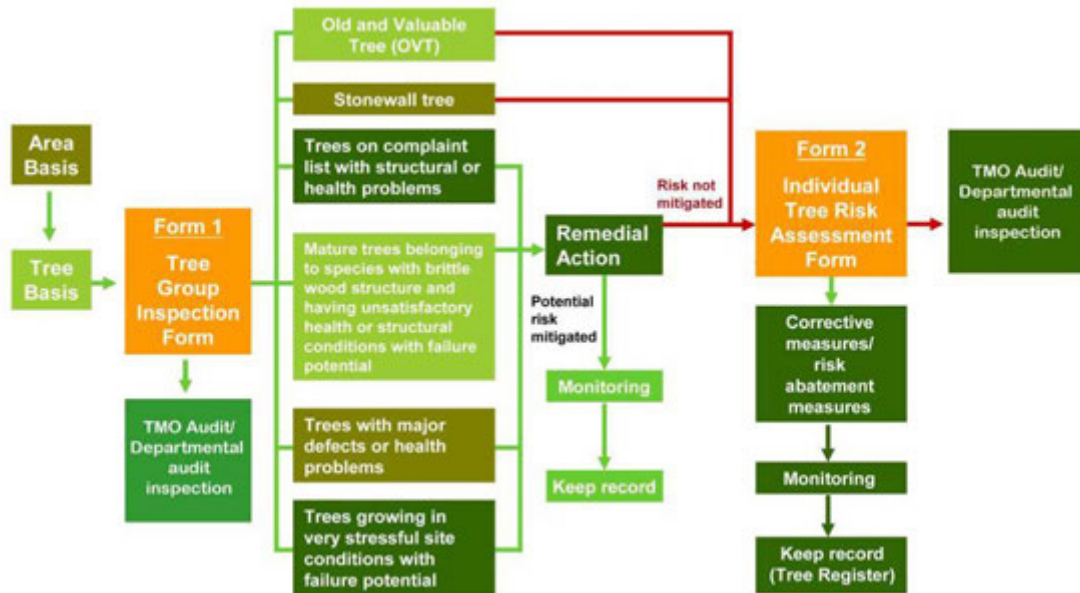
#### 4. Tree Risk Assessment on a “Tree Basis”

4.1 Once a tree risk management priority area is identified, staff in the department concerned should identify those trees which may be problematic/important, assess their health and structural conditions systematically and professionally with particular emphasis on the risk perspective, and



record the inspection findings using standardized forms promulgated by the TMO (i.e. Form 1 and Form 2)

#### 4.2 Procedure of tree risk assessment on an “Area Basis” and a “Tree Basis”



#### 4.3 Use of Form 1 – Tree Group Inspection Form

4.3.1 For trees in the tree risk management priority area, they will first be screened by way of a tree group inspection using **Form 1 - Tree Group Inspection Form**. For users with Tree Management Information System (TMIS) accounts, the use of Form 1 under the TMIS format is recommended. Tree group inspection is an important step to screen out problematic trees and those require special care. The use of binoculars in tree group inspection by obtaining a closer view of conditions of the canopy at higher level, when required, is desirable. To safeguard the quality of the tree group inspection, the size and coverage of each tree group should not be excessively large. Depending on the departmental needs and on-site situations, Inspection Officer should duly consider the limitations of visual tree assessment when devising the size and coverage of each tree group. The Inspection Officer can delineate the boundary of tree groups by location types, such as public park, SIMAR slopes, tree pits, etc.

- 4.3.2 Although Form 1 does not require details of individual trees in a tree group to be recorded, the Inspection Officer should inspect each tree in the tree group systematically, paying particular attention to potential tree hazards due to the health conditions or structural conditions of each individual tree. While not all trees falling into the tree risk management priority area need to be covered by detailed tree risk assessments using Form 2, for the purpose of identifying potential tree hazards for mitigation action, we encourage tree management departments to build up an inventory of these trees over time to facilitate future tree management. For tree risk management purpose in the present exercise, all trees meeting the following criteria and located on government land are required to be assessed with a **Form 2 – Tree Risk Assessment Form** –
- (i) Old and Valuable Trees (OVT),
  - (ii) Stonewall trees, and
  - (iii) Tree with mitigation measures outstanding / require continuous monitoring. Please refer to Annex C for an illustrated guide on identification of tree hazards.



Stonewall trees on Forbes Street

- 4.3.3 Trees meeting the criteria of **“Trees on complaint list with structural or health problems”**, **“Mature Trees belonging to species with brittle wood structure and having unsatisfactory health or structural conditions with failure potential”** **“Tree with major defects or health problems”** and **“Tree growing in very stressful site conditions with failure potential”** should be identified for implementing proper mitigation measures and/or monitoring. Where necessary, detailed tree risk assessment should be carried out to identify the tree hazard and appropriate mitigation measures, Form 2 or other similar report formats can be used for this purpose.

#### 4.3.4 Explanatory notes for Form 1

##### 4.3.4.1 General Information

- ◆ The main objective is to initially screen trees, keep records for further monitoring, and identify tree hazards for appropriate remedial measures or more detailed individual tree risk assessment using Form 2.
- ◆ Recent tree survey details, if available (i.e. details of surveys conducted within 2 years

before the date of the Form 1 inspections), of the site concerned could be consulted for the required information in “General Tree Information” upon verification or updating. The relevant tree survey report should be attached to Form 1 for reference. The Inspection Officer should refer to the records of previous inspections conducted for the same site and/or trees in the same site, as applicable, to help identify changes in the site conditions or tree conditions that warrant special attention.

- ◆ The “Inspection Officer” usually is the frontline staff member who conducts the tree risk assessment. To be qualified as “Inspection Officers” for Form 1, they are required to meet both requirements on training / qualification AND work experience:-

<b>Training / Qualification</b>	<p>(a) have attended and completed the following training courses organised by the TMO:-</p> <ol style="list-style-type: none"> <li>1. Comprehensive Tree Risk Assessment and Management Training Course with assessment organised; OR</li> <li>2. Refresher Course with assessment; OR</li> </ol> <p>(b) have undertaken equivalent departmental training recognised by the TMO; OR</p> <p>(c) have successfully undertaken training programmes recognised by the TMO, such as Tree Risk Assessment Course and Examination (TRACE) organised by the Pacific Northwest Chapter of the International Society of Arboriculture (ISA) or Professional Tree Inspection by LANTRA Awards; OR</p> <p>(d) have valid qualifications or certifications awarded by recognised institution or industry organisation on arboriculture, such as Certified Arborist of ISA, Registered Arborist (Level 3 or above) of Arboriculture Australia, Technician Member or above of the Arboriculture Association of the United Kingdom, Accredited Arboricultural Practitioner of the Hong Kong Institute of Landscape Architects, Professional Diploma Programme in Arboriculture of the Chinese University of Hong Kong, etc.</p>
<b>Work Experience</b>	<p>Have at least 2 years of work experience in tree care and are familiar with tree risk assessment/management.</p>

- ◆ For outsourced tree inspection works, the consultant/contractor staff can serve as the “Inspection Officer” to conduct the tree risk assessment, whereas the same requirements on training / qualification AND work experience apply.

- ◆ The “Endorsement Officer” is the supervisory/managerial staff at a rank higher than Inspection Officer who oversees the tree risk assessment process. To be qualified as “Endorsement Officers” for Form 1, they are required to meet the requirements on training / qualification:-

<b>Training / Qualification</b>	<p>(a) have attended and completed the following training courses organised by the TMO:-</p> <ol style="list-style-type: none"> <li>1. Comprehensive Tree Risk Assessment and Management Training Course with assessment organised; OR</li> <li>2. Refresher Course with assessment; OR</li> <li>3. Tree Risk Management Training Course with assessment; OR</li> </ol> <p>(b) have undertaken equivalent departmental training recognised by the TMO; OR</p> <p>(c) have successfully undertaken training programmes recognised by the TMO, such as Tree Risk Assessment Course and Examination (TRACE) organised by the Pacific Northwest Chapter of the International Society of Arboriculture (ISA) or Professional Tree Inspection by LANTRA Awards; OR</p> <p>(d) have valid qualifications or certifications awarded by recognised institution or industry organisation on arboriculture, such as Certified Arborist of ISA, Registered Arborist (Level 3 or above) of Arboriculture Australia, Technician Member or above of the Arboriculture Association of the United Kingdom, Accredited Arboricultural Practitioner of the Hong Kong Institute of Landscape Architects, Professional Diploma Programme in Arboriculture of the Chinese University of Hong Kong, etc.</p>
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- ◆ For outsourced tree inspection works, the supervisory/managerial staff of the consultant/contractor firm can serve as “Endorsement Officers”, whereas the same requirements on training / qualification apply.

#### 4.3.4.2 Location Information

- ◆ This information is self-explanatory. Additional information that may help identify the location of the tree group (e.g. lamp post no., SIMAR slope no., other prominent landmarks nearby, etc.) should be recorded in the “Others” field.

#### 4.3.4.3 General Tree Information

- ◆ **Main tree species in the group (DBH  $\geq$  95mm) and minority tree species of significant size (i.e. approximately DBH  $\geq$  300mm)** – an indicative description of the diversity and distribution of tree species in the tree group. The approximate quantity (in

number) of each tree species in the tree group should be recorded under “Approximate number of trees”.

- ◆ **Range of tree height** - an indicative description of the tree height of each specified tree species.
- ◆ **Overall health condition and overall structural condition** - (Refer to **Annex C – ‘Pictorial Guide for Tree Maintenance to Reduce Tree Risk’**). These two sections record the overall health and structural conditions of each specified tree species.
- ◆ **Other remarks** - Additional information on trees which require further attention should be recorded in this column to facilitate identification of appropriate follow-up action and future monitoring of tree conditions.

#### 4.3.4.4 Target

- ◆ **Target** - Targets are people, property, or human activities that could be injured, damaged, or disrupted by a tree failure. For the roadside case, with reference to the prevailing international practices, the possible Tree Fall Zone (TFZ) is defined as 1.5 times of the height of a tree planted along the roadside kerb or slope. The TFZ should be adjusted according to the angle of the lean of a tree and site condition (e.g. the gradient of the slope where the tree is located.)
- ◆ **Does target exist?** - The Inspection Officer should consider if any target exists within the target area of the tree group.
- ◆ **Can target be moved?** - For example, a picnic table beneath a defective tree inside a country park can be moved to other areas to minimize the presence of the target near the tree.
- ◆ **Can use of the site be restricted?** - For example, fencing off the site to avoid presence of target beneath the tree.
- ◆ **Frequency of use of location**
  - ◇ **Constant use** - For example, presence of a house next to a tree is “constant use” as the house is static and a pavement along Nathan Road with very busy pedestrian and vehicular flow is under “constant use”.
  - ◇ **Frequent use** - For example, a park with regular visitors is “frequent use”.
  - ◇ **Intermittent use** - A recreational cycling path used intermittently is an example.
  - ◇ **Occasional use** - For example, a maintenance path with restricted access and limited to use by the maintenance party is “occasional use”.

#### 4.3.4.5 Identification of Trees for Remedial Action or Detailed Tree Risk Assessment (Form 2)

During the tree group inspection (Form 1), it is essential to identify potential tree hazards so that remedial action or detailed tree risk assessment (Form 2) for the trees concerned can be carried out in a timely manner. The identification process should cover the following types of trees:

- ◆ **Old and Valuable Trees (OVTs) and Stonewall Trees** - OVTs and stonewall trees are generally regarded as important features of high conservation, heritage and amenity values. All OVTs should be covered by a detailed tree risk assessment using Form 2, irrespective of the tree size. For Stonewall Trees, those with a tree diameter at breast height, measured at 1.3m from the base of the main root on the wall, 95 mm or more should be covered by a detailed tree risk assessment using Form 2.
- ◆ **Trees on complaint list with structural or health problems** - Trees may be under complaint for various reasons. Detailed tree risk assessment is required only for outstanding tree complaints related to **structural** or **health** problems. It is not mandatory to conduct a detailed tree risk assessment for a tree under complaint if remedial action has already been taken or will be taken immediately to alleviate/eliminate the potential risk.
- ◆ **Mature trees belonging to species with brittle wood structure and having unsatisfactory health or structural conditions with failure potential** - Some tree species have brittle wood structure which makes them more prone to branch or trunk failure. These species include *Delonix regia* (鳳凰木), *Erythrina variegata* (刺桐), *Alstonia scholaris* (糖膠樹), *Aleurites moluccana* (石栗) and *Celtis sinensis* (朴樹). Trees species with brittle wood structure but of smaller mature size such as *Bauhinia* are not included in this category. It is not mandatory to conduct detailed tree risk assessment for a tree species of mature size with brittle branches if no obvious defect that will promote failure is observed. The objective of highlighting this criterion is to remind Inspection Officers to pay special attention to tree defects of these species and consider whether a detailed assessment using Form 2 is required for monitoring purpose.
- ◆ **Trees with major defects or health problems** - (refer to Annex C – ‘Pictorial Guide for Tree Maintenance to Reduce Tree Risk’). - Signs and symptoms of health problems or defects of varying nature can be found in trees in the course of their lifecycle. Attention should be paid for the presence of Brown Root Rot Disease, particularly for large mature

trees. The information on symptoms and control measures for Brown Root Rot Disease is available in the Development Bureau Tree Management Office's website (<http://www.trees.gov.hk/en/home/index.html>) and the intranet under Cyber Manual for Greening (<http://devb.host.ccgo.hksarg/en/treerisk/index.html>) for reference. If the defects/health problems are of a minor nature, it may not be necessary to mandatorily conduct a detailed tree risk assessment. If the identified defects or health problems can be remedied with immediate follow-up measures, for example, removal of hangers and dead branches, to alleviate the potential risk, it would not be necessary to conduct a detailed tree risk assessment. In case of doubt, we recommend conducting a detailed assessment using Form 2 on the subject tree to determine the required risk attenuation action.

- ◆ **Trees growing in very stressful site conditions with failure potential** - Stressful site conditions may weaken the tree health and/or structural condition and increase the failure potential. The following examples include:
  - (a) **Confined growing area** – For example, shotcreted slopes or concrete footpaths where tree roots are severely restricted by concrete. Trees in tree pits surrounded by permeable flexible paving may be excluded from this category.



**Confined planting area create stressful condition**



**Confined planting area create stressful condition**



**Confined planting area create stressful condition**



**Dumping around the base of trees can cause root suffocation and damage to tree trunks**

(b) **Trees under cover or low headroom** – For example, trees under building canopies or footbridges where there is limited space for tree crown extension.



Limited  
headroom for  
tree growth

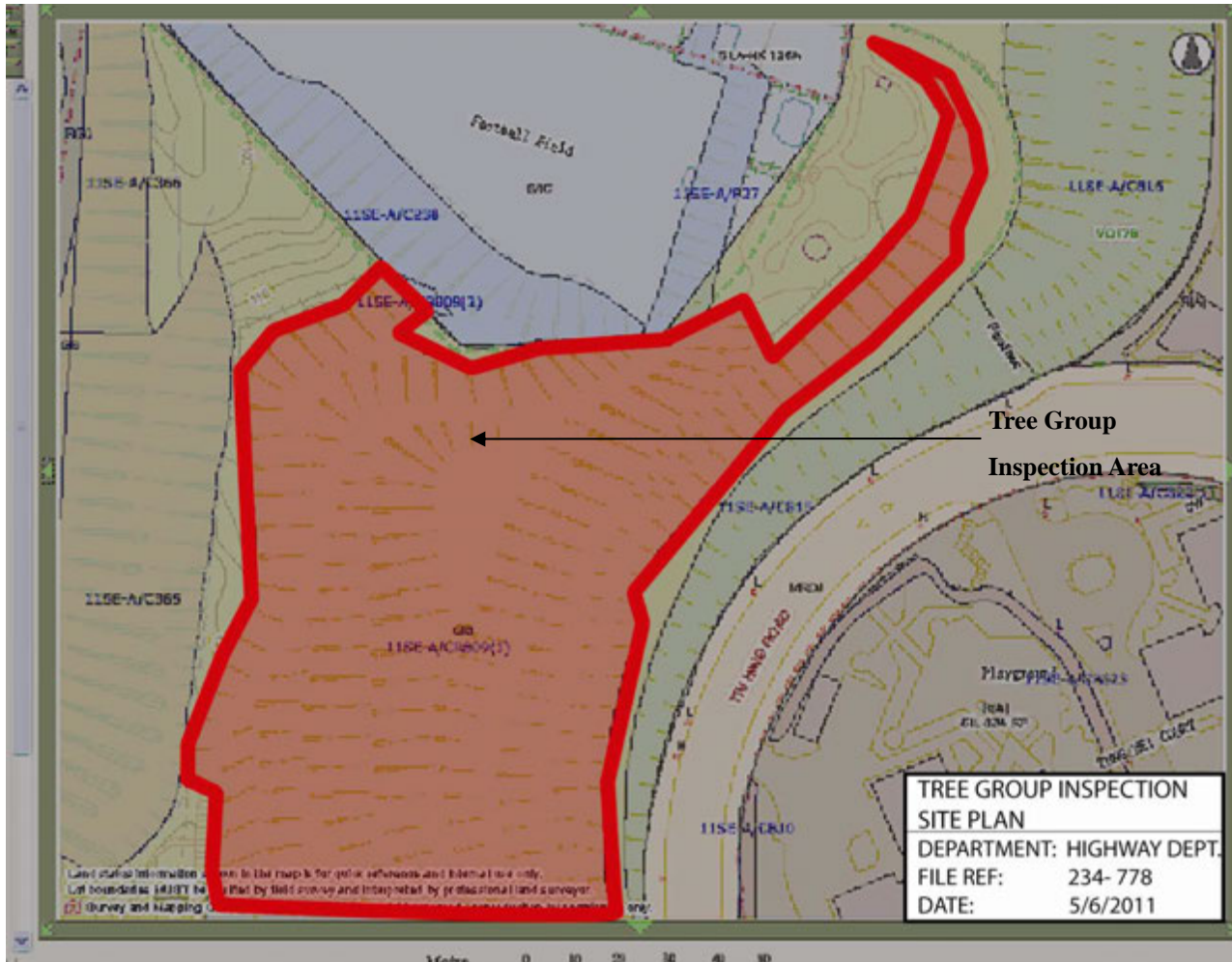
**Tree growing under a footbridge with restricted headroom**

- ◆ Apart from assessing the health condition/structural stability of these trees and identifying appropriate remedial action, consideration should be given to formulate measures that can effectively relieve the stressful site condition (e.g. expand the tree planter, transplant the tree, remove the clutter under the tree, etc.) subject to consideration of the site conditions and detailed tree inspections.
- ◆ **Anticipated Date of Completion** – It is necessary for the tree maintenance departments to record the anticipated date of completion for the works to be carried out for record, necessary monitoring and audit purpose.



#### 4.3.4.6 Attached Information

(a) Example of a site plan



(b) Example of tree photos – overview and close-up photos

- ◆ **Photographic Record** – The completed Form 1 should be accompanied by photographic record showing an overview of the tree group inspection site and diagnostic features of trees defects observed to facilitate follow-up action on tree problems, and for audit as well as future monitoring and reference. Sample photos are shown below. Please also refer to the ‘**Guidelines For Photo-Taking During Tree Risk Assessment**’ at **Annex D for the detailed requirements**. If the tree species cannot be identified on site, the Inspection Officer can take photos of the tree and seek professional assistance afterwards. The Inspection Officer may use supplementary sheets to record the details of the tree species under assessment.



**Site Plan**



**Photo no.1 - Site condition**



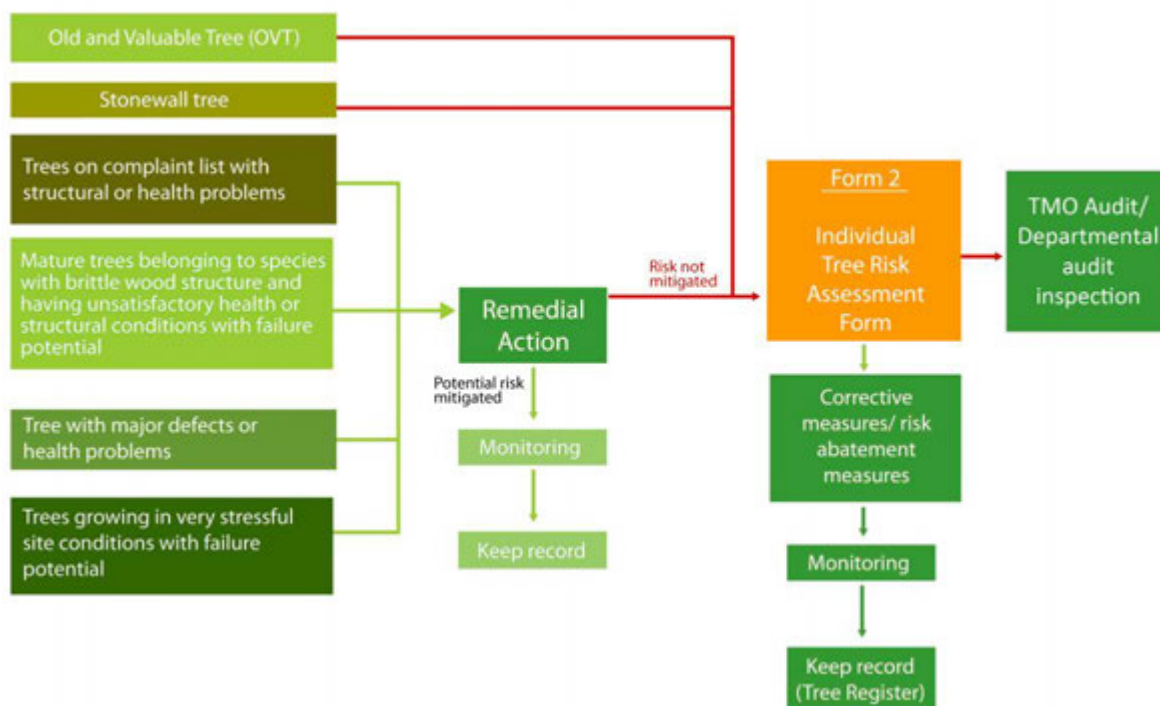
**Photo no.2 - *Ficus hispida* to be removed**

## 4.4 Use of Form 2 – Tree Risk Assessment Form

### 4.4.1 Objective of Form 2

This Form is used for conducting detailed assessment of individual trees that need special attention. For users with TMIS accounts, the use of Form 2 under the TMIS format is recommended. Appropriate equipment and hand tools such as binoculars, mallet, hand spade and probe etc should be used for individual tree assessment when required. The Inspection Officer is required to give a tree hazard rating with recommendations on follow-up corrective actions to address the identified defects and tree problems. It is mandatory to carry out Form 2 inspection on all OVTs and stonewalls trees. Other types of trees that are subject to Form 2 tree inspection are shown in the chart in 4.4.2.

### 4.4.2 When to use this Form



## Tree Risk Assessment Arrangement

### 4.4.3 Explanatory notes for Form 2

#### 4.4.3.1 General Information

- ◆ The “Inspection Officer” undertaking a Form 2 inspection are required to have met both

requirements on training AND qualification AND work experience:-

<b>Training</b>	<p>(a) have attended and completed the following training courses organised by the TMO:-</p> <ol style="list-style-type: none"> <li>1. Comprehensive Tree Risk Assessment and Management Training Course with assessment organised; OR</li> <li>2. Refresher Course with assessment; OR</li> </ol> <p>(b) have undertaken equivalent departmental training recognised by the TMO; OR</p> <p>(c) have successfully undertaken training programmes recognised by the TMO, such as Tree Risk Assessment Course and Examination (TRACE) organised by the Pacific Northwest Chapter of the International Society of Arboriculture (ISA) or Professional Tree Inspection by LANTRA Awards.</p>
<b>Qualification</b>	<p>Preferably have valid qualifications or certifications awarded by recognised institution or industry organisation on arboriculture, such as Certified Arborist of ISA, Registered Arborist (Level 3 or above) of Arboriculture Australia, Technician Member or above of the Arboriculture Association of the United Kingdom, Accredited Arboricultural Practitioner of the Hong Kong Institute of Landscape Architects, Professional Diploma Programme in Arboriculture of the Chinese University of Hong Kong, etc.</p>
<b>Work Experience</b>	<p>Have at least 2 years of work experience in tree care and are familiar with tree risk assessment/management.</p>

- ◆ For outsourced tree inspection works, the consultant/contractor staff can serve as the “Inspection Officer” to conduct the tree risk assessment, whereas the same requirements on training AND qualification AND work experience apply.
- ◆ The “Endorsement Officer” is the supervisory/managerial staff at a rank higher than Inspection Officer who oversees the tree risk assessment process. To be qualified as “Endorsement Officers” for Form 2, they should meet the requirements on training / qualification:-

<b>Training / Qualification</b>	<p>(a) have attended and completed the following training courses organised by the TMO:-</p> <ol style="list-style-type: none"> <li>1. Comprehensive Tree Risk Assessment and Management Training Course with assessment organised; OR</li> <li>2. Refresher Course with assessment; OR</li> <li>3. Tree Risk Management Training Course with assessment; OR</li> </ol> <p>(b) have undertaken equivalent departmental training recognised by the TMO; OR</p> <p>(c) have successfully undertaken training programmes recognised by the TMO, such as Tree Risk Assessment Course and Examination (TRACE) organised by the Pacific Northwest Chapter of the International Society of Arboriculture (ISA) or Professional Tree Inspection by LANTRA Awards; OR</p> <p>(d) have valid qualifications or certifications awarded by recognised institution or industry organisation on arboriculture, such as Certified Arborist of ISA, Registered Arborist (Level 3 or above) of Arboriculture Australia, Technician Member or above of the Arboriculture Association of the United Kingdom, Accredited Arboricultural Practitioner of the Hong Kong Institute of Landscape Architects, Professional Diploma Programme in Arboriculture of Chinese University of Hong Kong, etc.</p>
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- ◆ For outsourced tree inspection works, the supervisory/managerial staff of the consultant/contractor firm can serve as “Endorsement Officers”, whereas the same requirements on training / qualification apply.

#### 4.4.3.2 Location information

- ◆ Please refer to the guidelines for Form 1 as set out in 4.3.4.2.

#### 4.4.3.3 No. of Tree Trunk and Tree DBH

- ◆ The tree with multiple trunks shall have each trunk numbered in sequence (i.e. #1, #2...etc) and the photographic records should include this number.
- ◆ The Diameter at Breast Height (DBH), measured at 1.3 m above the ground. For measurement of trees with multiple trunks, please refer to AFCD’s Nature Conservation Practice Note No. 02 (Rev. Jun 2006) “*Measurement of Diameter at Breast Height (DBH)*” at [http://www.afcd.gov.hk/english/conservation/con\\_tech/con\\_tech.html](http://www.afcd.gov.hk/english/conservation/con_tech/con_tech.html) and Development Bureau’s Technical Circular (Works) ETWB TC(W)No. 3/2006 “**Tree Preservation**” at <http://www.devb.gov.hk/TechnicalCirculars.aspx?section=53&lang=1>.

#### 4.4.3.4 Tree height

- ◆ The height of the tree above ground to the top of the tree crown. An indicative estimate would suffice. For accurate measurement, the use of a clinometer/range pole is recommended.

#### 4.4.3.5 **Tree spread**

- ◆ The width of the tree crown. An indicative estimate would suffice. For asymmetric tree crown, please measure the longest axis.

#### 4.4.3.6 **Age class**

- ◆ A broad indication of the tree age class would suffice.

#### 4.4.3.7 **General condition, Crown condition, Branch condition, Trunk condition and Root condition**

- ◆ Please refer to **Annex C - ‘Pictorial Guide For Tree Maintenance To Reduce Tree Risk’**.

#### 4.4.3.8 **Site condition**

- ◆ Site disturbed by construction activities –Self-explanatory.
- ◆ Soil condition –Self-explanatory.
- ◆ Restricted root growth area inside dripline – The Inspection Officers should tick the most appropriate box to reflect the site condition.
- ◆ Tree location with exposure to wind.

#### 4.4.3.9 **Target**

- ◆ Please refer to the guidelines for Form 1 as set out in 4.3.4.4
- ◆ “Use under tree” – The Inspection Officer should tick the relevant use of areas under the tree. Please specify in the “Others” column as appropriate.

#### 4.4.3.10 **Hazard rating**

- ◆ In tree risk assessment, a hazard is the tree part(s) identified as a likely source of harm. The hazard rating helps to conclude the overall risk level and decide on the appropriate follow-up action so as to reduce the risk posed to public safety. The focus is on identifying and prioritizing appropriate hazard abatement measures for high-scoring trees. The hazard rating consists of three components:-

Failure Potential	This relates to the likelihood of failure of a defective tree or branch.
Size of Part	This relates to the diameter of a defective part and affects the consequence of failure.
Target Rating	This relates to use of target area which affect the likelihood of impacting a target by a defective tree part.

Generally speaking, trees with a total score of 9 to 12 warrant special attention.

#### 4.4.3.11 Remedial/Risk Mitigation Measures

- ◆ To recommend remedial/risk mitigation measures to reduce the potential tree risk.
- ◆ To provide a record of continuous tree monitoring/management procedure.
- ◆ The removal of defective parts of the tree, installation of support system, pest and disease control should be undertaken in a timely manner.
- ◆ The date of completion of the risk mitigation measures should be recorded when the required action has been carried out. It is necessary to mitigate the tree risk promptly to protect public safety.

#### 4.4.3.12 Attached Information

- ◆ A **Site Plan** with tree location and tree photo(s) should be attached to the Form 2 in every case.
- ◆ Please attach record of tree inspection by resistograph or tomography, if available as supplementary information.
- ◆ **Photographic Records** – The completed Form 2 should be accompanied by photographic record showing an overview of the site and the trees under assessment. Please refer to the detailed requirements in ‘**Guidelines on Photo-taking of Tree Conditions in the Process of Tree Risk Assessment**’ (Annex D) for details.



Location Plan



Photo no. 2 – Highly restricted growing



Photo no. 1 - Overview



Photo no. 3 - Wounds on branches

## **5. Audit Inspection**

5.1 Tree Management departments are required to set up a departmental audit checking mechanism to ensure that tree risk assessments, whether using Form 1 or Form 2, are properly and professionally carried out, and that necessary mitigation measures are carried out promptly so as to protect public safety.

5.2 Departments are required to keep a retrievable and accurate record of the tree risk assessments, risk mitigation measures and monitoring programme undertaken for the trees under their management. In carrying out the audit checks, departments should, in particular, review the accuracy and completeness of the records made as well as the appropriateness of the remedial measures and the timeliness of their completion. Since tree conditions may change over time, the audit checks should be conducted as soon as practicable so as to monitor the quality of the assessment. Any irregularities identified during the audit checks should be followed up promptly.

5.3 Departmental audit checks cover tree risk assessment and follow-up actions carried out by both in-house staff and outsourced service providers. The “Guideline for Auditing of Tree Risk Assessment for Tree Management Departments” is available in the Cyber Manual for Greening for reference.

5.4 If there are complex, doubtful or sensitive cases and/or situations that are likely to arouse significant public/media concern, colleagues should draw such cases to the attention of the directorate officers within their departments who, if considered necessary, may approach the Tree Management Office of the Development Bureau for advice.

5.5 Tree risk assessment and related procedures carried out by departments are subject to further audit checks by the Tree Management Office of the Development Bureau.

## **6. Development Bureau’s Tree Register**

6.1 Information on trees on government land which have undergone a detailed tree inspection (using Form 2) and risk not mitigated is required to be uploaded to the Tree Register at [www.trees.gov.hk](http://www.trees.gov.hk) to enhance transparency and to facilitate community surveillance of the conditions of the trees concerned.

6.2 Departments are required to submit the required tree information as well as subsequent updates to the Tree Management Office in a timely manner for uploading onto the Tree Register for



public information. Reference should be made to “Guidelines on Tree Register – data in and updating” in the Cyber Manual for Greening.

6.3 Departments should closely monitor the conditions of trees included in the Tree Register so that timely actions will be taken in response to any change in the tree conditions and relevant information is sent to the Tree Management Office for updating the Tree Register.

## **7. Points to Notes – Remedial/Risk Mitigation Measures and Compensatory Planting**

7.1 In the process of carrying out tree risk assessment and remedial/risk mitigation measures/actions on trees, officers should ensure that no trees are unnecessarily felled or excessively pruned as stipulated in ETWB TCW No. 3/2006 ‘Tree Preservation’. Departments are requested to note that tree preservation and conservation remains a primary concern. Reference should be made to guidelines promulgated by the Tree Management Office, Development Bureau on proper pruning practices (e.g. ‘General Guidelines on Tree Pruning’ and ‘Dos and Don’ts in Pruning’). Tree removal should be the last resort.

7.2 The treatment of hazardous trees due to natural causes such as lightning, typhoon, torrential rain or landslide; or dead/dying/diseased trees; weedy invasive species such as *Leucaena leucocephala* which prevent natural succession of indigenous species; and woodland management, works should follow the requirements in paragraphs 32 and 33 of ETWB TCW No. 3/2006. Compensatory planting should be encouraged as far as practicable. However, factors such as sufficient growing space and soil to sustain healthy tree growth, gradient of slopes, etc., should be considered. The requirement stated in the Technical Circular on ‘Tree Preservation’ (ETWB TC(W) No. 3/2006) on compensatory planting should be followed.