3.1 Legislation

3.1.1 Tree Conservation Areas/Vacant Land

Prior written approval must be obtained from the Commissioner of Parks & Recreation for the removal or cutting of any tree with girth exceeding 1.0m (measured half a metre from the ground) growing on a designated Tree Conservation Area (TCA) or vacant land.

The two Tree Conservation Areas are:

**TCA1** - bounded by the Pan Island Expressway, Clementi Road, Pasir Panjang Road, Telok Blangah Road, Kampong Bahru Road, Lower Delta Road, Ayer Rajah Expressway, Alexandra Road, River Valley Road, Clemenceau Avenue, Fort Canning Road, Orchard Road, Prinsep Street, Selegie Road, Dunearn Road, Whitley Road, Mount Pleasant Road, Thomson Road and Lornie Road.

**TCA2** - bounded by Netheravon Road, Cranwell Road, Loyang Avenue, Loyang Way, Upper Changi Road North and Changi Village Road.

**Note:**

Unless otherwise stated, ‘tree’ includes single stem palms. Tree Conservation Areas are geographical areas in central and eastern Singapore designated by the Government to safeguard mature trees against unnecessary felling. These areas contain valuable stands of mature trees worthy of preservation for our future generations to enjoy.

Vacant Land means any land upon which no building or other structures exists; or any land where the Commissioner, Parks & Recreation, has reasonable grounds to believe is not occupied by anyone and includes any land upon which exists any building or other structure which is constructed or used contrary to any written law.
Conservation of Trees / Plants

Tree Conservation Area 1

12/07/2011
Conservation of Trees / Plants

Tree Conservation Area 2

12/07/2011
3.1.2 **Roadside Trees**

Written approval must be obtained from the Commissioner of Parks & Recreation for the removal or cutting of any tree or plant within a road reserve.

3.1.3 **Heritage Road Green Buffer**

3.1.3.1 Written approval must be obtained from the Commissioner of Parks & Recreation for the cutting or removal of any tree or plant within a designated Heritage Road Green Buffer, and/or for any -

a. altering, closing up or removal of any Heritage Road Green Buffer;

b. erecting or placing of any structure or object (whether temporary or permanent) in, above, across or under any Heritage Road Green Buffer;

c. erecting, constructing or laying within any Heritage Road Green Buffer any fence, retaining wall, foundation, manhole, pipe, cable, mains or any obstruction or structure (whether temporary or permanent).
 conservation of trees / plants

mandai road

south buona vista road

arcadia road

lim chu kang road

mount pleasant road

note:
the heritage roads scheme was implemented by the government in 2005 to recognise and protect roads with lush roadside trees and multi-layered vegetation that create "green walls" and "green tunnels" effects along certain roads.

the gazetted heritage roads to date are south buona vista road, mount pleasant road, mandai road, lim chu kang road and arcadia road.
Arcadia Road

The shaded areas shown in the Heritage Road plans are designated as Heritage Road Green Buffers.
Lim Chu Kang Road

The shaded areas shown in the Heritage Road plans are designated as Heritage Road Green Buffers.

Legend

Heritage Road Green Buffers (Width: 10.0m)
Mandai Road

The shaded areas shown in the Heritage Road plans are designated as Heritage Road Green Buffers.

Legend

Heritage Road Green Buffers (Width: 10.0m)
Mount Pleasant Road

The shaded areas shown in the Heritage Road plans are designated as Heritage Road Green Buffers.
Conservation of Trees / Plants

South Buona Vista Road

The shaded areas shown in the Heritage Road plans are designated as Heritage Road Green Buffers.

Legend

Heritage Road Green Buffers (Width: 10.0m)
3.2 Technical Requirements on Conservation of Trees

Purpose

Successful tree conservation within a development site occurs when the design, development and construction process has taken into consideration the conditions within the site, and surrounding areas, so that impact to trees is minimised or prevented. It requires the commitment of everyone involved in the development process.

The purpose of this section is to provide plan submission requirements and technical guidelines to support the tree conservation efforts and minimise the unnecessary removal of and damage to trees.

Examples of tree damage due to construction activities:

- Lack of Tree Protection Zone
- Change of soil level
- Damage to trunk
3.2.1 **Tree Protection Zone**

A Tree Protection Zone refers to an area identified to protect the entire tree, inclusive of its roots, from disturbance.

The objective of the Tree Protection Zone is to minimise the impact of construction activities on trees, including but not limited to mechanical injury to roots, trunks and branches due to contact with equipment, materials, debris or other activities. It also aims to minimise compaction of soil which results in poor functioning of roots, and changes in soil levels that can cut off or suffocate roots.

3.2.1a The minimum protection zones from the centre of a tree (within a development site) are as shown in **Table 3.2.1a**.

<table>
<thead>
<tr>
<th>Girth (m)</th>
<th>Minimum Protection Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 1.0m</td>
<td>2.0m</td>
</tr>
<tr>
<td>&gt; 1.0m but ≤1.5m</td>
<td>3.0m</td>
</tr>
<tr>
<td>&gt;1.5m but ≤ 2.0m</td>
<td>4.0m</td>
</tr>
<tr>
<td>&gt;2.0m</td>
<td>5.0m</td>
</tr>
</tbody>
</table>

This table serves as a general guideline for tree conservation. Depending on the root spread, especially for trees with a girth of more than 2.0m, a larger tree protection zone may be required as determined on a case-by-case basis.

**Note:**
NParks advises the developer to engage a Certified Arborist to provide conservation guidelines on trees that are identified for retention, to monitor their condition throughout the development stage and to regularly maintain them after the completion of the project.
3.2.1b The minimum clearance required between a proposed roadside element to the centre of an existing roadside tree/single stem palm, as shown in Table 3.2.1b and Diagram 3.2.1b.

**Table 3.2.1b**
Required Minimum Clearance of Proposed Roadside Elements from the Centre of an Existing Tree/Single Stem Palm
(Refer to Diagram 3.2.1b for illustration of the clauses below)

<table>
<thead>
<tr>
<th>Clause</th>
<th>Proposed roadside elements</th>
<th>Single stem palm</th>
<th>Small to medium size tree</th>
<th>Large tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Splay corner of: Entrance, bin centre access, substation access, MDF room access, fire engine access</td>
<td>1.0m</td>
<td>1.5m</td>
<td>2.5m</td>
</tr>
<tr>
<td>2</td>
<td>Roadside drain (from its external wall)</td>
<td>0.8m</td>
<td>0.8m</td>
<td>1.5m</td>
</tr>
<tr>
<td>3</td>
<td>Road kerb</td>
<td>0.8m</td>
<td>0.8m</td>
<td>1.5m</td>
</tr>
<tr>
<td>4</td>
<td>Scupper pipe/drain</td>
<td>1.0m</td>
<td>1.5m</td>
<td>2.5m</td>
</tr>
<tr>
<td>5</td>
<td>Lamp post</td>
<td>4.0m</td>
<td>4.0m</td>
<td>6.0m</td>
</tr>
<tr>
<td>6</td>
<td>OG box</td>
<td>2.0m</td>
<td>2.0m</td>
<td>2.5m</td>
</tr>
<tr>
<td></td>
<td>TAS manhole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sewer line and manhole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical post</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire hydrant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SCV box</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lighting control box</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Traffic control box</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Traffic light</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cement crossing (e.g. pushcart ramp for bin centre)</td>
<td></td>
<td></td>
<td>2.0m</td>
</tr>
<tr>
<td>8</td>
<td>Linkway/pedestrian overhead bridge column footing</td>
<td>at least 1.0m</td>
<td>at least 1.5m</td>
<td>at least 2.5m</td>
</tr>
<tr>
<td>9</td>
<td>Linkway roof eaves to the lowest branching of a tree</td>
<td></td>
<td>at least 0.3m</td>
<td></td>
</tr>
</tbody>
</table>

Note:
Table 3.2.1b serves as a guideline for tree conservation and on the basis that no major root (girth more than 0.2m) will be affected.

Depending on the root spread, especially for tree with a girth of more than 2.0m, a larger tree protection zone may be required on a case by case basis.
**Diagram 3.2.1b**

Required Minimum Clearance of Proposed Roadside Elements from the Centre of an Existing Tree/Single Stem Palm (Diagrammatic Plan View)

(Refer to Table 3.2.1b for a description of the clauses indicated)

**Legend**

- **cl**: Clause (Refer to clause in Table 3.2.1b)
- **Tree**
- **Scupper**
- **Pipe/Drain**
- **Lamp Post**
- **Fire Hydrant**
- **Traffic Light**
- **SCV**: SCV Box (and other service boxes)

Required minimum clearance between roadside elements and centre of an existing tree/single stem palm
3.2.2 **Tree Protective Fencing/Hoarding - Within development site**

Tree protective fencing/hoarding is to be provided along the limits of the protection zone around the tree to identify the Tree Protection Zone within which activities are restricted.

There must be no excavation, raising/lowering of soil level, compaction or any form of construction activities including temporary works within the hoarded area.

No dumping of debris, excavated materials and/or storage of construction materials and equipment are allowed within the Tree Protection Zone.

**Illustration 3.2.2**
Sample of a Tree Protection Hoarding (within a development site)

**Notes:**
Protection hoarding is required, unless otherwise stated, and should be installed prior to site works; installed at point B around the edge of the protection area.
3.2.3 **Tree Protective Fencing/Hoarding - Within Road Sidetable**
Bright orange polyethylene fencing or other effective tree protection fencing should be put up around the Tree Protection Zone of roadside trees. There must be no excavation, raising/lowering of soil levels, compaction, storage of material and/or equipments and any form of construction activities including temporary works within the fencing.

**Illustration 3.2.3**
An example of tree protection hoarding (within Road Reserve)
3.2.4 Tree Protection Specification – During Construction Stage

a. Tree protective fencing/hoarding is to be provided along the limits of the protection zone around the tree to identify the Tree Protection Zone within which activities are restricted.

b. If major roots (each >0.2m in girth) are encountered during excavation, the applicant must contact NParks’ officer for a joint site meeting. Wherever possible, alternative proposals should be explored to avoid the need to cut the roots. Nevertheless, if approval is granted by NParks to cut the roots, this must be done with a clean cut using a chainsaw. Corresponding pruning of tree branches may be required to ensure tree stability. Temporary supports to the trees may also be required.

c. The demolition of drains, structures, etc within the Tree Protection Zone should be carried out manually and backfilled with loamy soil immediately.

d. All building debris and chemical wastes are to be hauled away from the trees/other plants and should not be burned or buried on the site.

e. Loamy topsoil is to be used immediately to fill around the tree base after the nearest proposed structure is built, e.g. a retaining wall.

f. Trees are to be watered regularly if rainfall is inadequate.

g. Trees are to be fertilised if soil tests or deficiency symptoms indicate they are nutrient stressed.

h. Roots system bridges may be installed to prevent soil compaction or damage to exposed roots.
3.3 Plan Submission Requirements

A registered architect/professional engineer is required to submit a completed NParks’ submission form, enclose the letter of authorisation from the developer, and sign all layers of drawing digitally.

3.3.1 The plans should comprise:

a. Key and location plans of the development site (scale 1:10,000 or 1:5,000) showing access to the site from the street or road
b. Site plan (scale 1:500, 1:200 or 1:100)
c. Address, lot and/or plot number of the development site and neighbouring lots
d. 1st storey plan (scale 1:500, 1:200 or 1:100)
e. Basement plan (scale 1:500, 1:200 or 1:100)
f. Survey plan (survey done less than 2 years at the point of application and endorsed by a qualified surveyor). This requirement is not applicable for “Alteration & Additions” proposals.
3.3.2 General site information should be provided as shown in Table 3.3.2.

| (a) | Development boundary verged in red | Indicate | - |
| (b) | Proposed development layout | Indicate | - |
| (c) | Existing and proposed road reserve line verged in red | Indicate | Indicate |
| (d) | Width of proposed road | Indicate | - |
| (e) | Category of existing and proposed roads | Indicate | - |
| (f) | Existing and proposed road sidetable | Indicate | - |
| (g) | Existing and proposed levels of the development site | Indicate | Indicate |
| (h) | Basement line highlighted in brown dotted line | Indicate | - |
| (i) | Boundary/retaining wall is to be highlighted in orange | Indicate | - |
| (j) | Schematic engineering drawing with dimensions of retaining/boundary wall and foundation | - | Indicate |
| (k) | Fire engine access and fire hardstanding areas | Indicate | - |
| (l) | Tabulation of existing trees with species, girth and height (if available) | Indicate | - |
3.3.3 **Information on Trees within Development Site**

a. The site and survey plans should show existing trees within the development boundary and up to 5.0m from the boundary with the following information provided:

i. species
ii. girth – measured 0.5m from the ground
iii. tree height (if available)
iv. all trees are to be uniquely numbered. The numbering should be consistent with architectural plans (if applicable) throughout the project.

b. All existing trees indicated on the survey plan are to be reflected in Tree Survey Information Form.

c. Clear photographs of trees proposed for conservation are to be attached. The photograph should show the entire height of the trees.

d. The trees in the photographs are to be numbered according to the numbering shown on the plan.

*Note:* The Qualified Person/Surveyor is to obtain permission from the neighbouring owner(s) to gather the requisite tree information within the neighbouring lot(s).
Method of measuring girth of a tree:
Generally, the girth of a tree is to be measured at 0.5m from ground level, except for multi-leader and low branching trees, as shown below.

I. For a simple single trunk tree and buttressed tree – measure the girth at 0.5m above the ground. [Figure I]
II. For a multi-leader tree where the leaders sprout from the collar - measure the girth of each individual stem at 0.5m above the ground, and treat each stem as a separate tree. [Figure II]
III. For a low branching tree with the lowest branching below 0.5m height from the ground – measure the girth at the point just below the lowest branching. [Figure III]
3.3.4 Information on Roadside Trees/Cluster Palms/Shrubs

a. The site and survey plans should show roadside trees/cluster palms/shrubs abutting the development boundary and up to 10.0m on both sides of the boundary with the following information provided:
   i. species
   ii. girth – (for tree) measured 1.0m from the ground
   iii. height (if available) and number of cluster palm/shrub
   iv. The numbering should be consistent with architectural plans (if applicable) and throughout the project.

b. All existing trees/cluster palms/shrubs indicated on the site plan are to be reflected in the Tree Survey Information Form.

3.3.5 Information on Trees/Plants Within Heritage Road Buffer

a. The site and survey plans should show all existing trees/plants within the Heritage Road Green Buffer of the development boundary and up to 5.0m from the development boundary with the following information provided:
   i. species
   ii. girth – (for tree)
   iii. height (if available) and number of plants
   iv. The numbering should be consistent with architectural plans (if applicable) and throughout the project.

Advisory Note:
For a development site that does not fall within a Tree Conservation Area or Vacant Land, NParks' written approval for removal of trees within the development site is not required. However, the developer is advised to minimise the number of trees to be felled and to take all necessary precautions to protect non-affected trees.

The developer is also advised to engage a Certified Arborist to assess and monitor the condition and safety of all trees to be conserved/retained.

12/07/2011
Conservation of Trees / Plants

3.3.6 The colour code for existing trees/cluster palms/shrubs is as shown in Table 3.3.5.

Table 3.3.5
Colour Code for Existing Trees/Cluster Palms

<table>
<thead>
<tr>
<th>Status of existing trees/palms</th>
<th>Outline in colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be retained</td>
<td>Green</td>
</tr>
<tr>
<td>To be removed</td>
<td>Yellow</td>
</tr>
<tr>
<td>Removed without written approval</td>
<td>Red</td>
</tr>
<tr>
<td>Removed with written approval</td>
<td>*Yellow (indicate the approved date in the tree schedule)</td>
</tr>
<tr>
<td>Non-existence after investigation</td>
<td>Indicate a ‘cross’ on tree symbol</td>
</tr>
</tbody>
</table>

3/07/2011