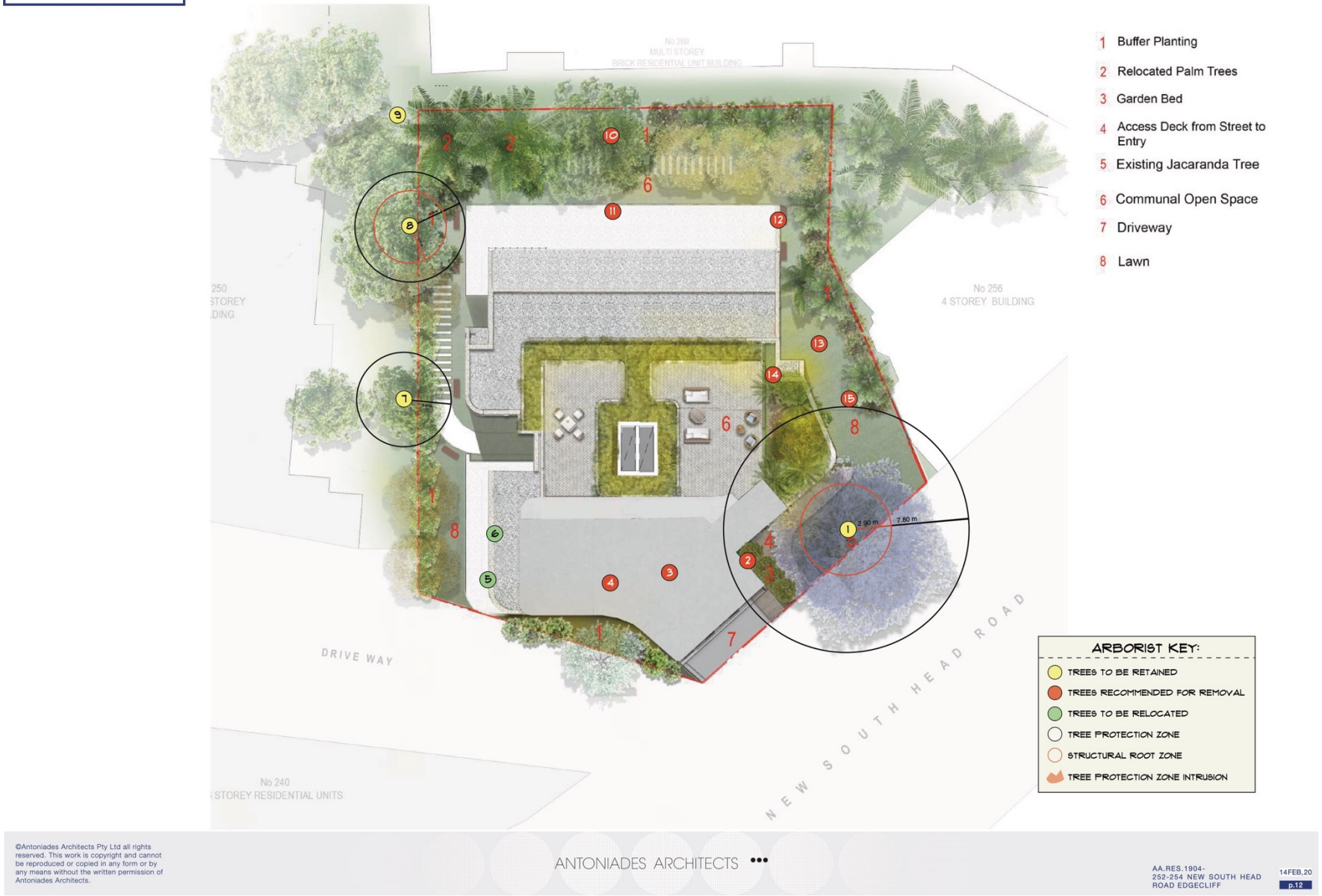
# *Appendix 1i: Site Plan with Trees and Proposed Development (Landscape)*

LANDSCAPE PLAN






ANTONIADES ARCHITECTS

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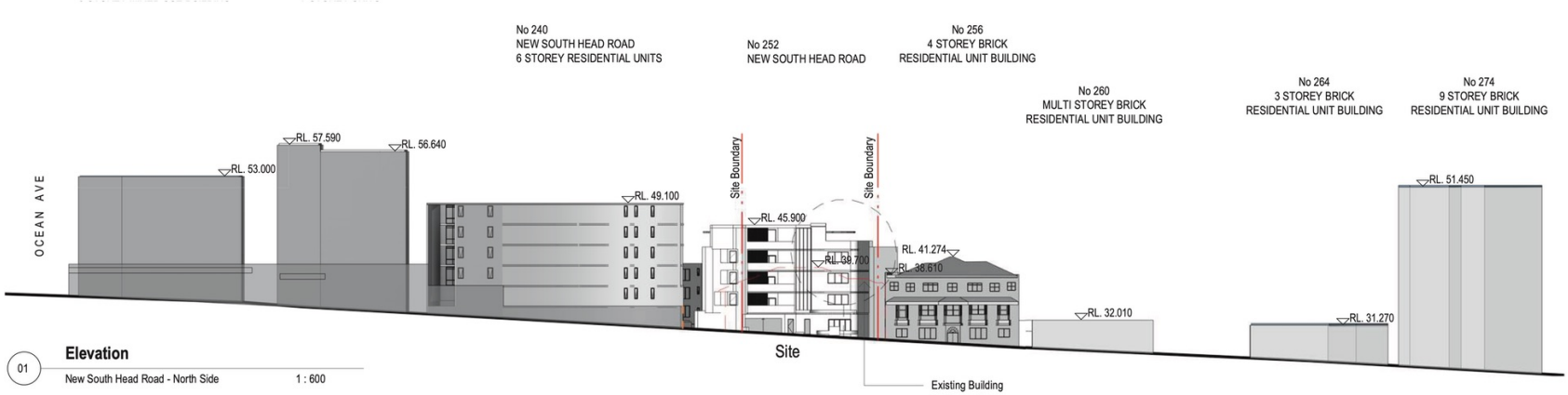
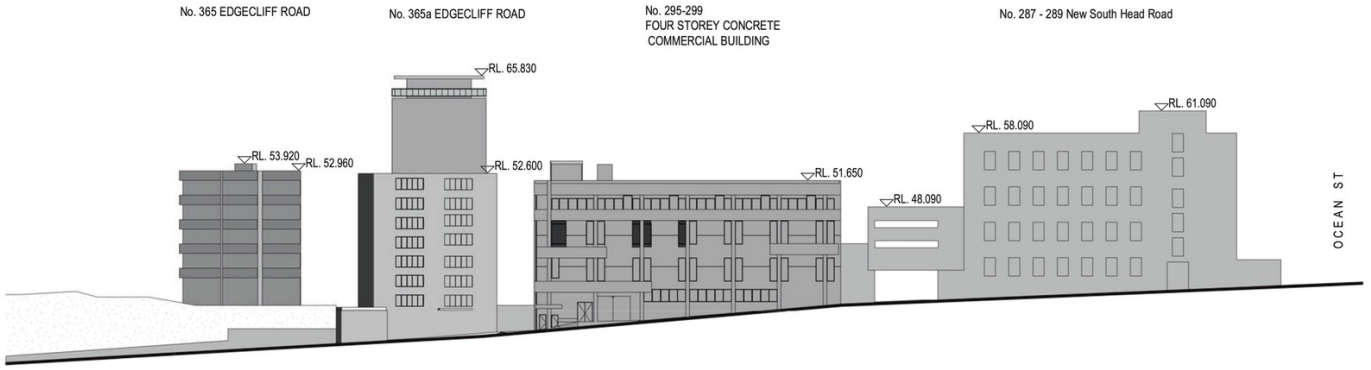
# *Appendix 1j: Site Plan with Trees and Proposed Development (Street Elevation)*

STREET ELEVATION



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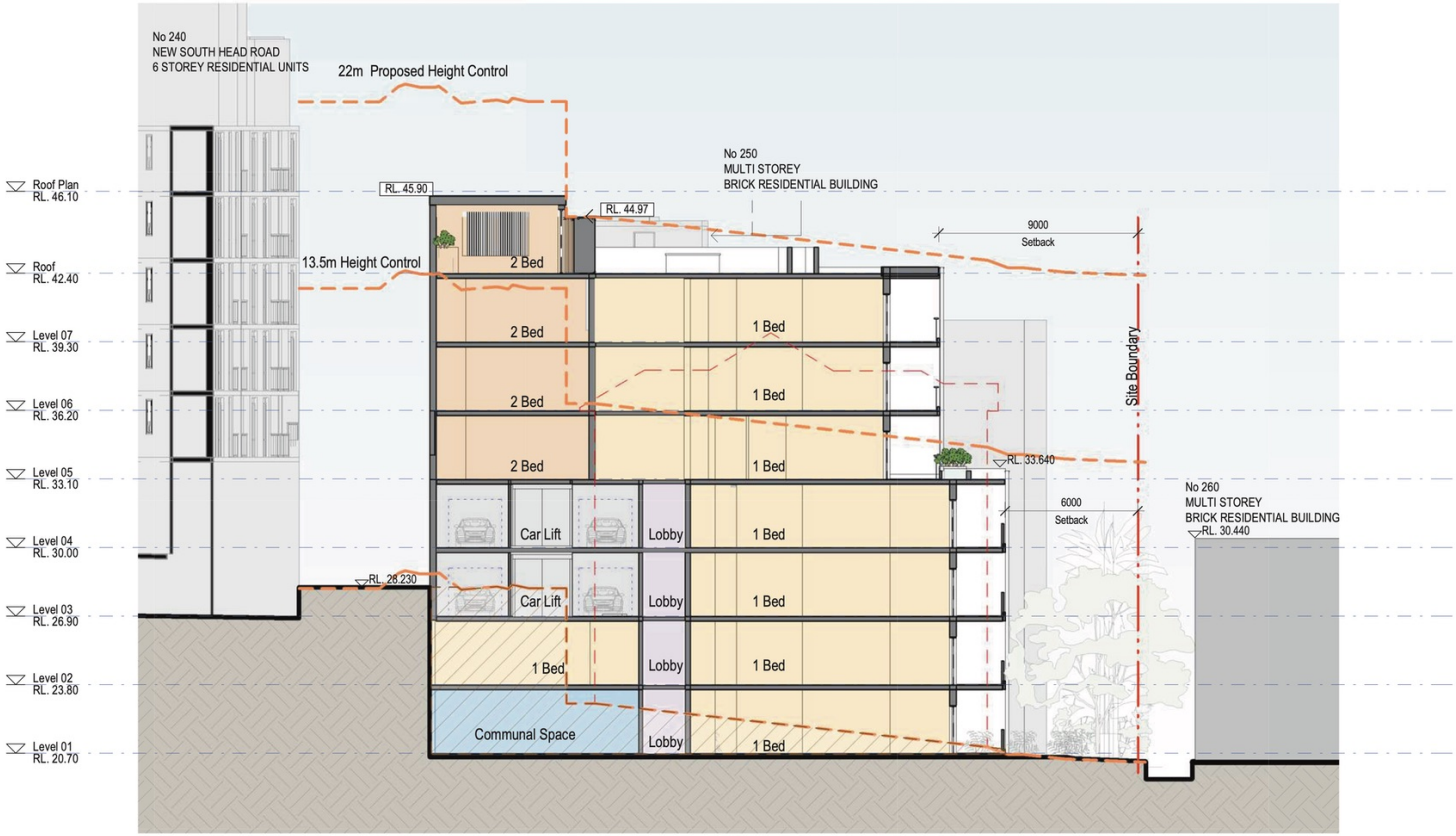
# *Appendix 1k: Site Plan with Trees and Proposed Development (Section)*

SECTION



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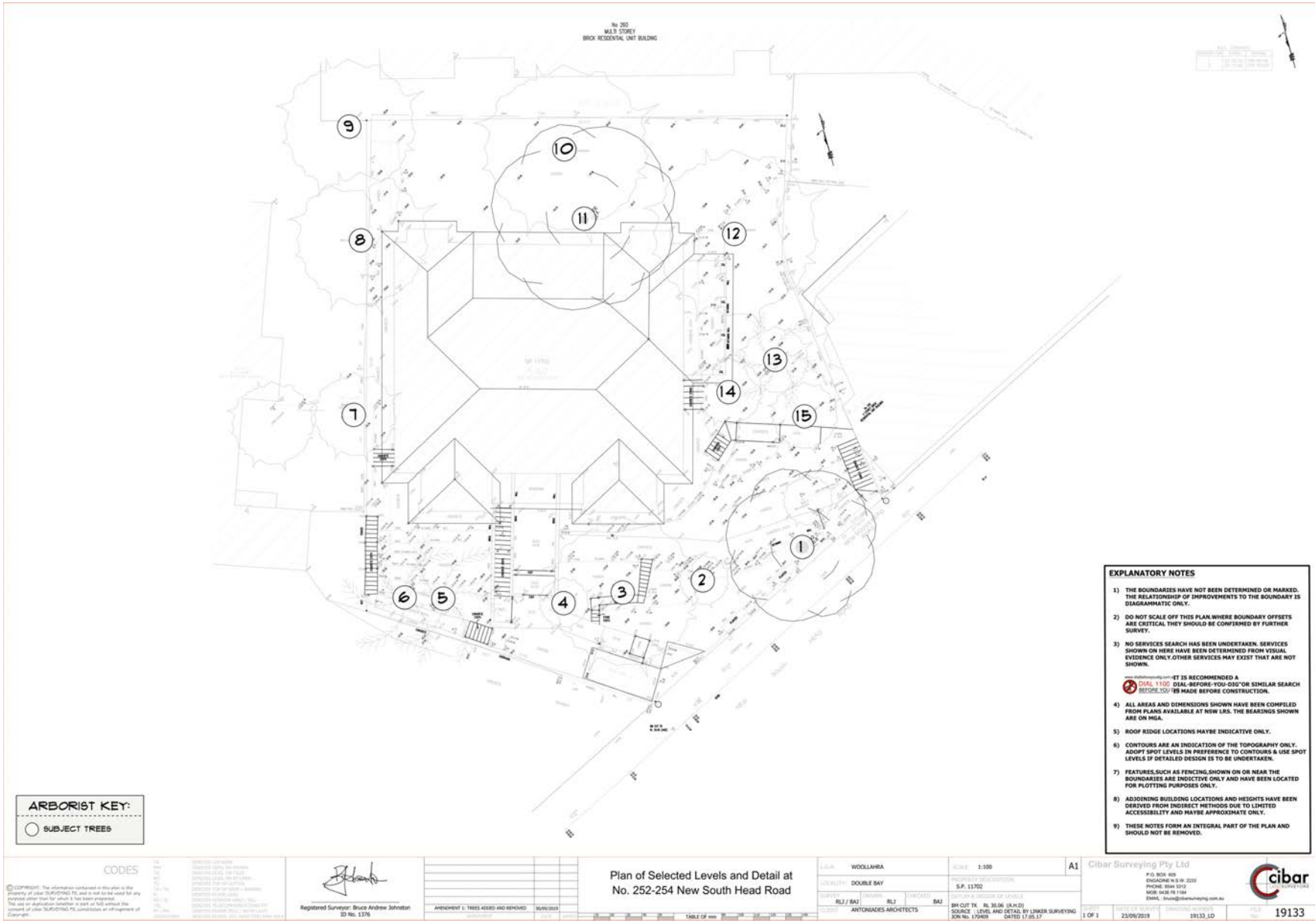
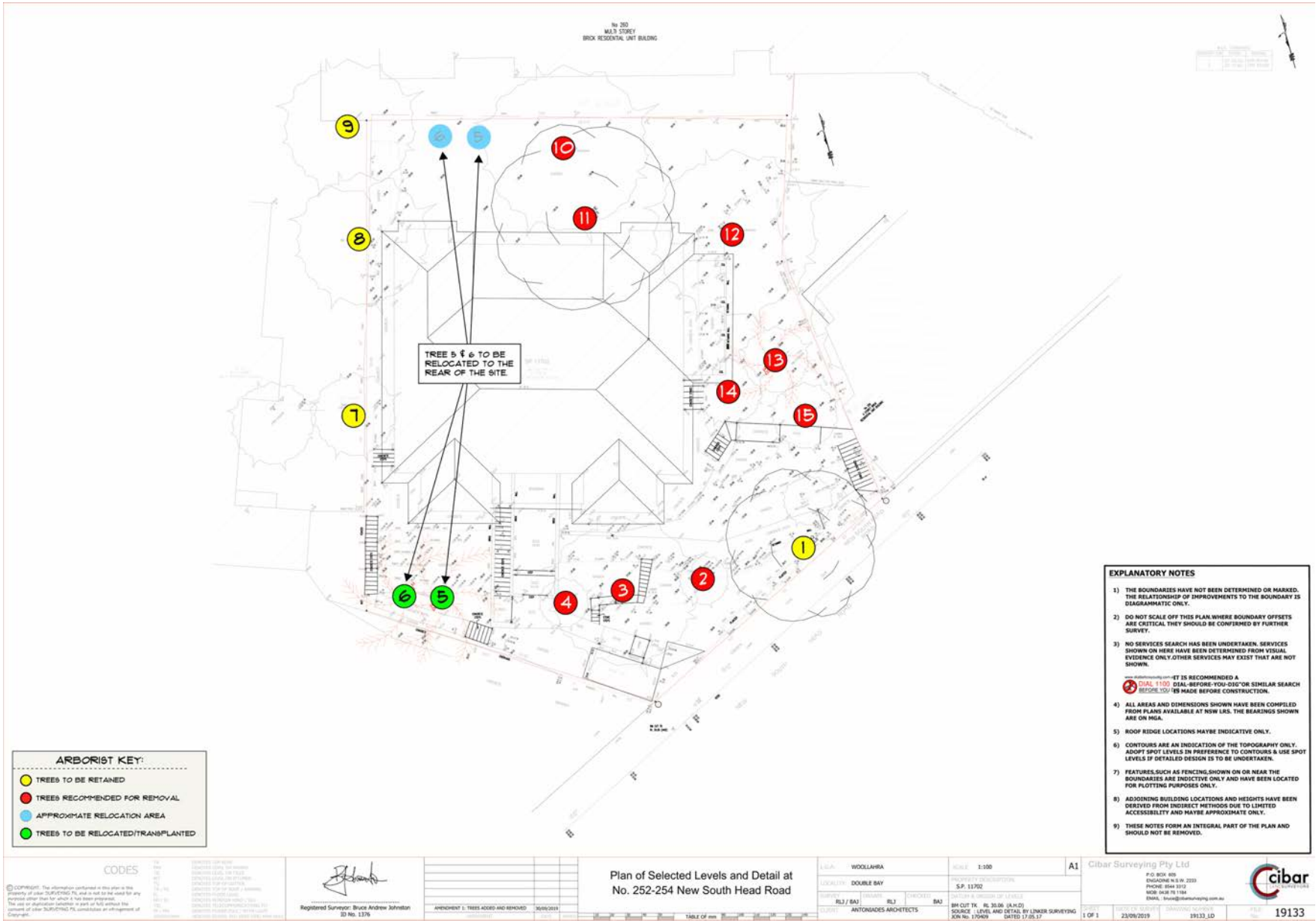
# *Appendix 1L: Site Survey with Trees and Existing Development*



# *Appendix 1m: Site Survey with Trees and Existing Development Showing Trees to be Relocated*



# *Appendix 2: Photographs*

Figure 1: Tree 1.

Figure 2: Tree 2.

Figure 3: Tree 3.

Figure 4: Tree 4.

Figure 5: Tree 4 - showing split.

Figure 6: Tree 5 & 6.

Figure 7: Base of Tree 8.

Figure 8: Crown of Tree 8.

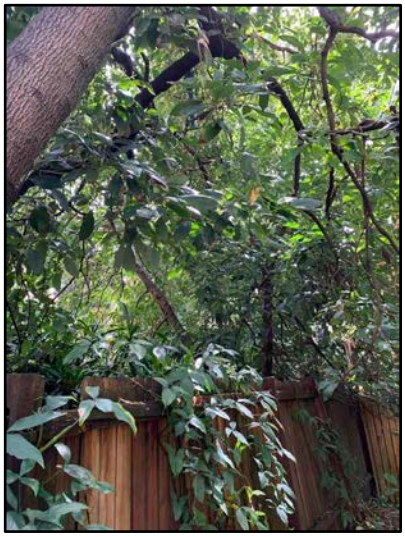


Figure 9: Tree 9.

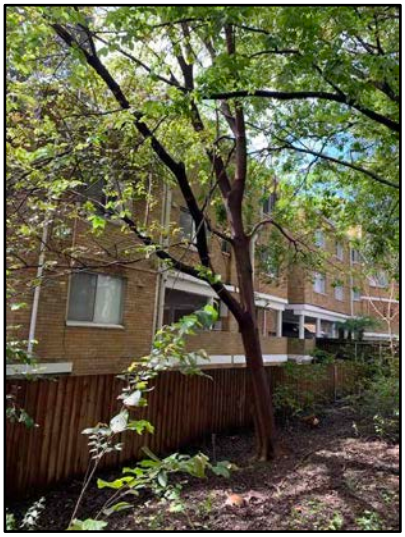


Figure 10: Tree 10.

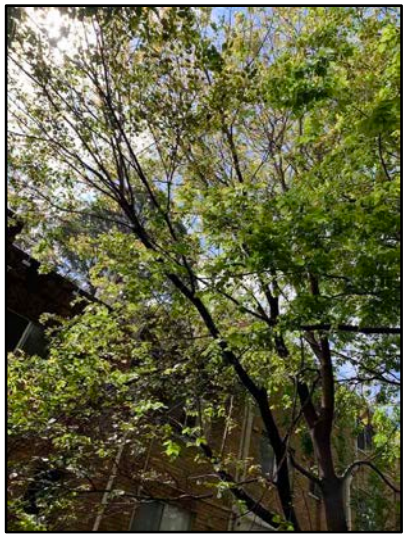


Figure 11: Showing the crown of Tree 10.

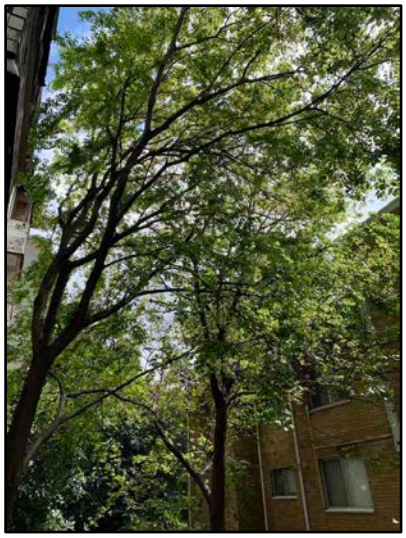


Figure 12: Tree 11 & 10.

Figure 13: Tree 11.

Figure 14: Tree 11.

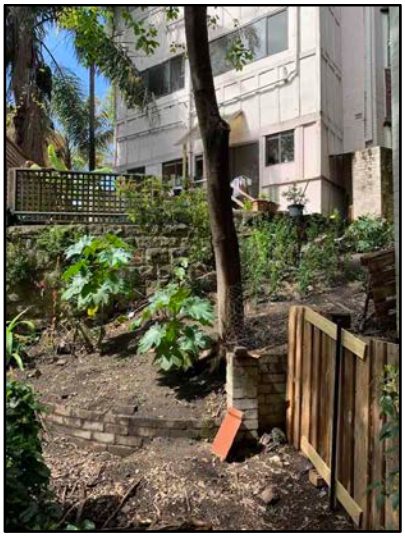


Figure 15: Tree 12.

Figure 16: Tree 13.

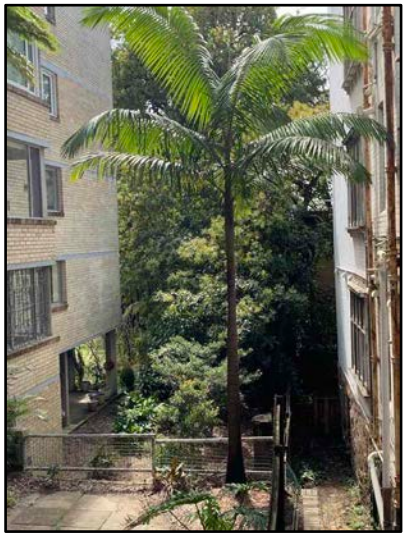


Figure 17: Tree 13.

Figure 18: Tree 13.

Figure 19: Tree 13.

Figure 20: Tree 14.

Figure 21: Tree 14.

Figure 22: Tree 14.

Figure 23: Tree 15.

# *Appendix 3: Notes on Tree Assessment*

| Key | Criteria | Comments |
|---|---|---|
| **Tree No** | Must relate to the number on your site diagram | |
| **Species** | Botanical name and common name of Tree | |
| **Diameter of trunk** | DBH Diameter at Breast Height (1.4 metres)<br>DGL Diameter at Ground Level | |
| **Height** | In metres | |
| **Spread** | Average diameter of canopy in metres | |
| **Crown Condition** | Overall vigour and vitality<br>0 Dead<br>1 Severe decline (<20% canopy; major dead wood)<br>2 Declining (20-60% canopy density; twig and branch dieback)<br>3 Average/low vigour (60-90% canopy density; twig dieback)<br>4 Good (90-100% crown cover; little or no dieback or other problems)<br>5 Excellent (100% crown cover, no deadwood or other problems) | This requires knowledge of species. |
| **Age class** | Y Young = recently planted<br>SM Semi-mature (< 20% of life expectancy)<br>M Mature (20-80% of life expectancy)<br>OM Over-mature (> 80% of life expectancy) | |
| **Special Significance** | A Aboriginal<br>C Commemorative<br>Ha Habitat<br>Hi Historic<br>M Memorial<br>R Rare<br>U Unique form<br>O Other | This may require specialist knowledge. |
| **Services/adjacent structures** | Bs Bus stop<br>Bu Building within 3m<br>HVo High voltage open-wire construction<br>HVb High Voltage bundled (ABC)<br>LVo Low Voltage open-wire construction<br>LVb Low Voltage bundled (ABC)<br>Na No services above<br>Nb No services below ground<br>Si Signage<br>Sl Street light<br>T Transmission lines (>33KV)<br>U Underground services<br>O Other | More than one of these may apply. |
| **Defects** | B Borers<br>C Cavity<br>D Decay<br>dw Deadwood<br>E Epicormics<br>FA Forest Architecture<br>H/D Height/Diameter ratio<br>I Inclusions<br>L Lopped<br>LDCMP Leaf damage by chewing mouthpiece insects<br>M Mistletoe/Parasites<br>MBA Multiple Branch Attachments<br>PD Parrot Damage<br>PFS Previous Failure Sites<br>S Splits/cracks<br>T Termites<br>TL Trunk Lean<br>TW Trunk Wound<br>O Other | More than one of these may apply.<br><br>H/D if ratio is higher than 50:1 then tree is defective (Mattheck, et al., 1994). |

| Key | Criteria | Comments |
|---|---|---|
| **Root zone** | C Compaction<br>D Damaged/wounded roots (e.g. by mowers)<br>E Exposed roots<br>Ga Tree in garden bed<br>Gi Girdled roots<br>Gr Grass<br>Kb Kerb close to tree<br>L+ Raised soil level<br>L- Lowered soil level<br>M Mulched<br>Pa Paving/concrete/bitumen<br>Pr Roots pruned<br>O Other | More than one of these may apply. |
| **Failure Potential** | Identifies the most likely failure and rates the likelihood that the structural defect(s) will result in failure within the inspection period.<br>1. Low – defects are minor (e.g. dieback of twigs, small wounds with good wound wood development)<br>2. Medium – defects are present and obvious (e.g. cavity encompassing 10-25% of the circumference of the trunk)<br>3. High – numerous and or significant defects present (e.g. cavity encompassing 30-50% of the circumference of the trunk, major bark inclusions)<br>4. Severe – defects are very severe (e.g. heart rot fruiting bodies, cavity encompassing more than 50% of the trunk) | This requires specialist knowledge. |
| **Size of defective part** | Rates the size of the part most likely to fail. The larger the part that fails, the greater the potential for damage.<br>1. Most likely failure less than 150mm in diameter<br>2. Most likely failure 150-450mm in diameter<br>3. Most likely failure 450-750mm in diameter<br>4. Most likely failure more than 750mm in diameter | |
| **Target Rating*** | Rates the use and occupancy of the area that would be struck by the defective part.<br>1. Occasional use (e.g. jogging/cycle track)<br>2. Intermittent use (e.g. picnic area, day use parking)<br>3. Frequent use, secondary structure (e.g. seasonal camping area, storage facilities)<br>4. Constant use, structures (e.g. year-round use for a number of hours each day, residences) | |
| **Hazard rating*** | Failure potential + size of part + target rating<br>Add each of the above sections for a number out of 12 | The final number identifies the degree of risk. The next step is to determine a management strategy. A rating in this column does not condemn a tree but may indicate the need for more investigation and a risk management strategy. |

# *Appendix 4: Significance of a Tree, Assessment Rating System (STARS) (IACA)*

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is, therefore, necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the Tree Significance - Assessment Criteria and Tree Retention Value - Priority Matrix, are taken from the IACA 'Dictionary for Managing Trees in Urban Environments' (Draper, et al., 2009).

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of High, Medium and Low significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

**TREE SIGNIFICANCE - ASSESSMENT CRITERIA**

1. **High Significance in landscape**
   - The tree is in good condition, or normal vigour and form typical of the species,
   - The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of grand age.
   - The tree is listed as a Heritage Item, Threatened Species or part of a Threatened Community or listed on council's significant tree register.
   - The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape by bulk and scale and makes a positive contribution to the local amenity.
   - The tree has been influenced by historic figures, events or part of the heritage development of the place.
   - The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values. (ICOMOS)
   - The growing environment supports the tree to its full dimensions above and below ground without conflict or constraint.

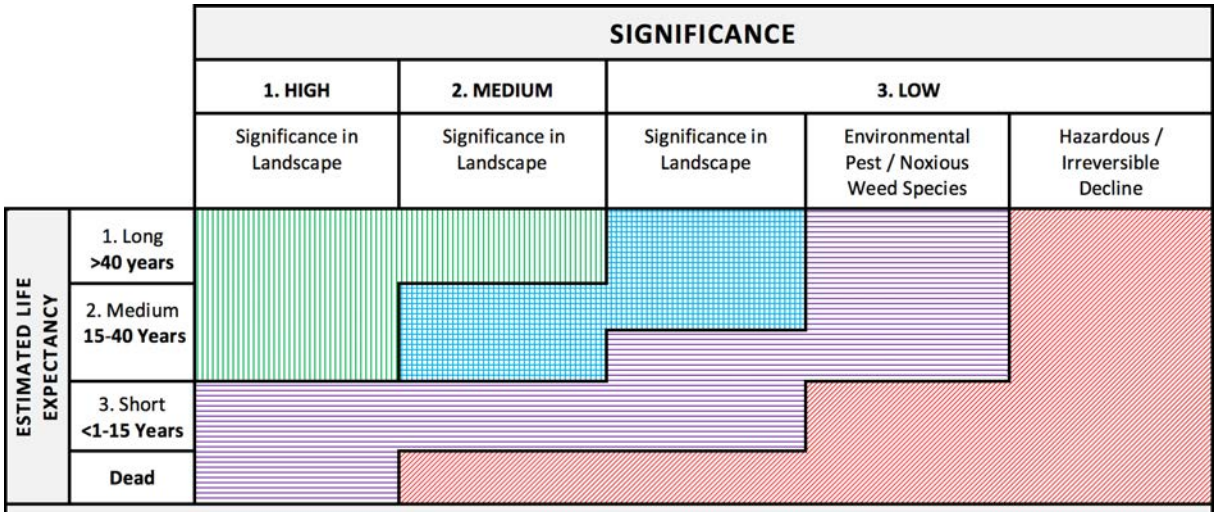
2. **Medium Significance in landscape**
   - The tree is in fair-good condition, or normal or low vigour and form typical or atypical of the species.
   - The tree is a planted locally indigenous or a common species with its taxa readily planted in the local area.
   - The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street.
   - The tree provides a fair contribution to the visual character and amenity of the area.
   - The tree is moderately constrained by above or below ground influences of the built environment to reach full dimensions.

3. **Low Significance in landscape**
   - The tree is in fair-poor condition, or normal or low vigour and form typical or atypical of the species,
   - The tree is not visible or is partly from surrounding properties as obstructed by other vegetation or buildings.
   - The tree provides a minor contribution or has a negative impact on the visual character and amenity of the area.
   - The tree is severely constrained by above or below ground by influences of the built environment and therefore will not reach full dimensions; the tree is inappropriate to the site conditions.
   - The tree is listed as exempt under the provisions of the local Council Tree Preservation Order.
   - The tree has a wound or defect that has the potential to become structurally unsound.

**The tree is to have a minimum of three (3) criteria in a category to be classified in that group.**

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

## TABLE 1.0 TREE RETENTION VALUE - PRIORITY MATRIX.




**Legend for Matrix Assessment**

| | |
|---|---|
| | **Priority for Retention (High) -** These trees are considered important for retention and should be retained and protected. Design modification or relocation of building/s should be considered to accommodate the setbacks as detailed in Table 2. Special construction works must be implemented e.g. pier and beam, etc if works are to proceed within the Tree Protection Zone. |
| | **Consider for Retention (Medium) -** These trees may be retained and protected. These are considered less critical; however, their retention should remain a priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted. |
| | **Consider for Removal (Low) –** These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention. |
| | **Priority for Removal –** These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development. |

# *Appendix 4a: Levels of Visual Assessment*

The following Visual Assessment information is from 'Tree Risk Assessment Manual', published by International Society of Arboriculture (Dunster, et al., 2013).

The level of assessment used in this report is specified in '4.0 Method of Assessment' (Page 4).

**LEVEL I: LIMITED VISUAL ASSESSMENT PROCESS**

- Identify the location and/or selection criteria of trees to be assessed.
- Determine the most efficient route for assessing large populations of trees and documenting the route taken.
- Assess the tree(s) of concern from the defined perspective (for example, walk-by, drive-by).
- Record information about the tree as specified in the scope of work (for example, significant defects or other conditions of concern), and identify locations of trees that need a higher level of assessment and/or prompt action.
- Evaluate the risk of trees that meet the selection criteria (a risk rating is optional).
- Submit a report indicating risk level and mitigation options and/or recommendations.

**LEVEL 2: BASIC ASSESSMENT PROCESS**

- Locate and identify the tree or trees to be assessed.
- Determine the targets and target zone for the tree or branches of concern.
- Review site history, conditions, and species failure profile.
- Assess potential loads on the tree and its parts.
- Assess general tree health.
- Inspect the tree visually—using binoculars, mallet, probes, or shovels, as desired by the arborist or as specified in the scope of work.
- Record observations of site conditions, defects, and outward signs of possible internal defects and response growth.
- If necessary, recommend an advanced assessment.
- Analyse data to determine the likelihood and consequences of failure in order to evaluate the degree of risk.
- Develop mitigation options and estimate residual risk for each option.
- Develop and submit the report/documentation, including, when appropriate, advice on reinspection intervals.

**LEVEL 3: ADVANCED TECHNIQUES**

There are many techniques that can be considered for advanced risk assessment. *Some situations may be assessed with several techniques. Advanced assessment techniques include the following:

- Aerial inspection and evaluation of structural defects in branches
  - Visual inspection; Decay testing; Load testing.
- Detailed target analysis
- Detailed site evaluation
- Decay testing
  - Increment boring; Drilling with small-diameter bit; Resistance-recording drilling; Single-path sonic (stress) wave; Sonic tomography; Electrical impedance tomography; Radiation (radar, X-ray, and gamma ray)
- Health evaluation
  - Tree ring analysis (in temperate trees); Shoot length measurement; Detailed health/vigour analysis; Starch assessment
- Storm/wind load analysis
  - Detailed assessment of tree exposure and protection; Computer-based estimations according to engineering standards; Wind reaction monitoring over a defined interval
- Measuring and assessing the change in trunk lean
- Load testing
  - Hand pull; Measured static pull

*Inclusion of specific techniques in this list should not be considered an endorsement of the use of that technique.

# *Appendix 4b: Visual Tree Assessment*

The Visual Tree Assessment (VTA) methods as described in 'The Body Language of Trees. A Handbook for Failure Analysis. Research for Amenity Trees' by Mattheck and Breloer (Mattheck, et al., 1994) is used in association with the International Society of Arboriculture's guidelines in this report.

196 THE BODY LANGUAGE OF TREES

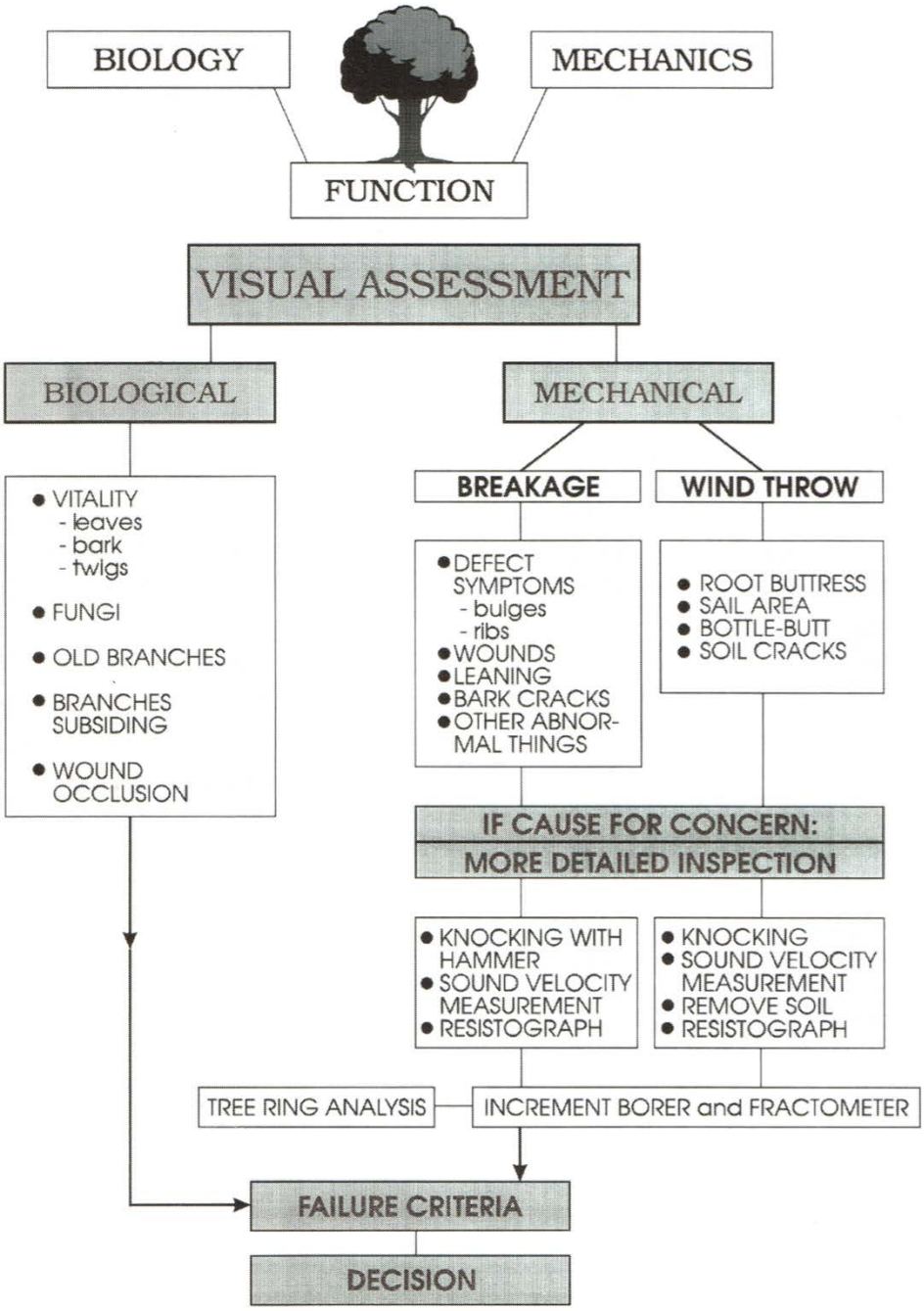



*Fig 120. The Visual Tree Assessment (VTA) procedure for assessing trees. As the suspicion increases that defects are present, the examination becomes more thorough and searching.*