



Special Values Areas Field Monitoring Methodology





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1. DEFINITIONS/ACRONYMS

ITEM	DEFINITION
Company	Quintis (Australia) Pty Ltd and its subsidiaries.
DMS	Company Document Management System.
EDL	Ecological Dominant Layer
EPODs	Cord sets, cord extension sets and outlet devices outlet devices or power boards.
HSE	Health Safety and Environment
MYOSH	Company Inspection Database



2. METHODOLOGY

2.1 INSPECTION AREA

The assessment site constitutes a 100 m x 50 m nested plot design. The layout of the site and nested subplots are shown in Figure 1. Demarcation of the reference site is established by positioning a 100 m tape, which constitutes the centre line of the plot. In topographically diverse areas, the plot shall be oriented so that its long axis follows the contour, or topographic position (e.g., gully, mid-slope, ridge). Plot location is recorded at its centre point (the 50 m point along the 100 m transect). A global positioning system (GPS) is used to record the position of the centre and start points of the transect line in the field. The use of star pickets, metal tags attached to trees or pegged down tyres at the beginning and end of the 100 m transect will aid in relocating the site for future monitoring.

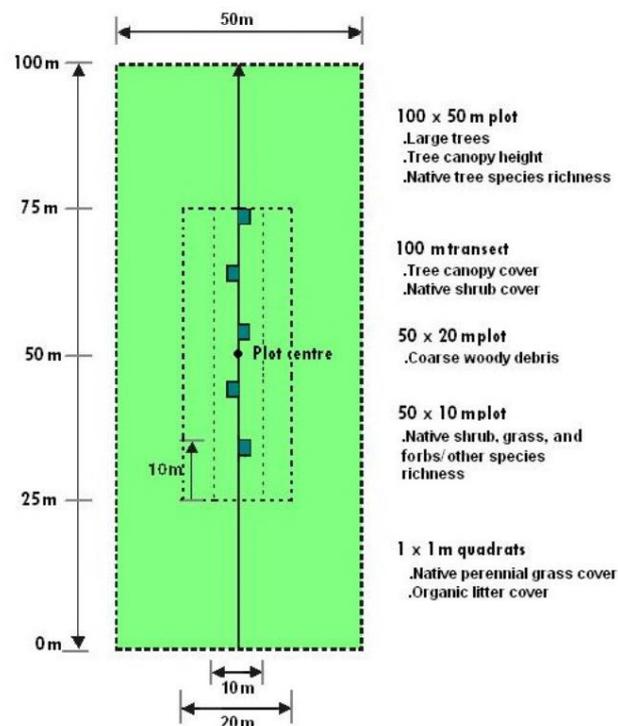


Figure 1. Transect layout and sub-plots

2.2 ECOSYSTEM

Five sampling areas form the basis for and approach for the inspection and data collection. A series of subplots are used to sample the floristic, habitat and disturbance components, and are summarised as follows;

- 100 x 50 m area: records all potential large trees >20 or >30 cm diameter at breast height (DBH); depending on the tree species. Site information and disturbance, tree species richness and tree canopy height are also assessed in the 100 x 50 m area.
- 100 m transect: records tree and shrub canopy cover.
- 50 x 20 m area: records the length of all coarse woody debris >10 cm diameter and >50 cm in length.
- 50 x 10 m area: records the number of floristic species by lifeform group (Native plant species richness) for Shrub, Grass, and 'Forbs and Other' species.



- 1 x 1 m subplots: records Native Perennial Grass cover and Organic Litter cover. A datasheet to aid the collection of reference site data is provided in Appendix 2.

To ensure that the plot remains within the regional ecosystem to be sampled it may be necessary to reduce the width of the plot for narrow ecosystems, e.g., riparian ecosystems. In these situations, the length of the plot may be increased to enable the sampling of an adequate area.

If the Special Values Area does not meet the 100 x 50m plot size, the entire identified Special Values Area shall be subject to the same criteria as the 100 x 50m plot size.

Four photos shall be taken at the 50 m centre point of the plot, north, south, east and west, in addition, spot photos maybe taken to capture the variability in ground cover within the five 1 x 1 m quadrats.

Transects, photo locations and orientation shall be captured on included on the Company GIS maps for each Special Values Areas.

2.2.1 TREE CANPOY HEIGHT

Tree canopy height refers to the median canopy height in metres estimated for trees in the ecologically dominant layer (EDL) (canopy layer).

If there are emergent and/or subcanopy layers present, then median height of these layers shall also be assessed. The median canopy height is the height that has 50 per cent of canopy trees larger and smaller than it (*Figure 2*). The height of woody vegetation is measured from the ground to the tallest live part of the tree. The maximum heights of the crown of at least three trees that are estimated to represent the median canopy height are measured for height, using a hypsometer or clinometer and tape measure (measured to the top of the highest leaves).

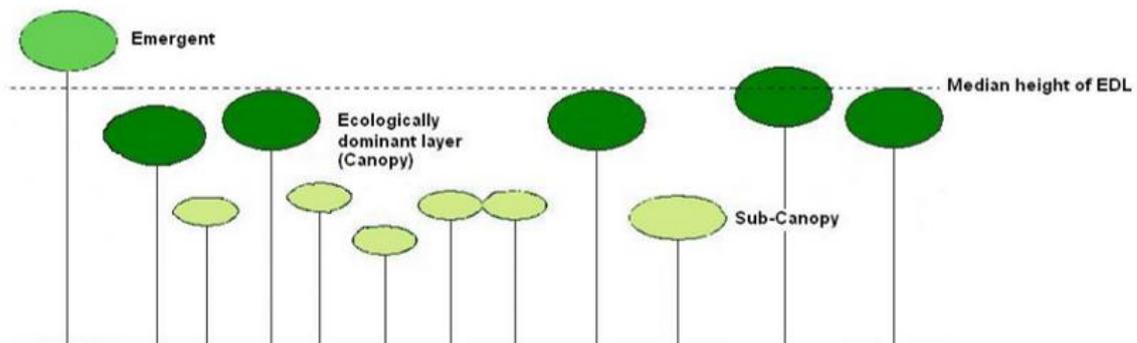


Figure 2. Median height of Ecologically Dominant Layer (EDL)

2.2.2 TREE CANOPY COVER

Tree canopy cover refers to the estimation of the percentage canopy cover of the living, native tree layer along the 100 m transect. The vertical projection of the tree canopy over the 100 m transect is recorded (*Figure 3 and 4*). The total length of the projected canopy of each layer is then divided by the total length of the tape to give an estimate of percentage canopy cover on the site. Individual species can be recorded, but it is not required for the derivation of tree canopy cover benchmarks.

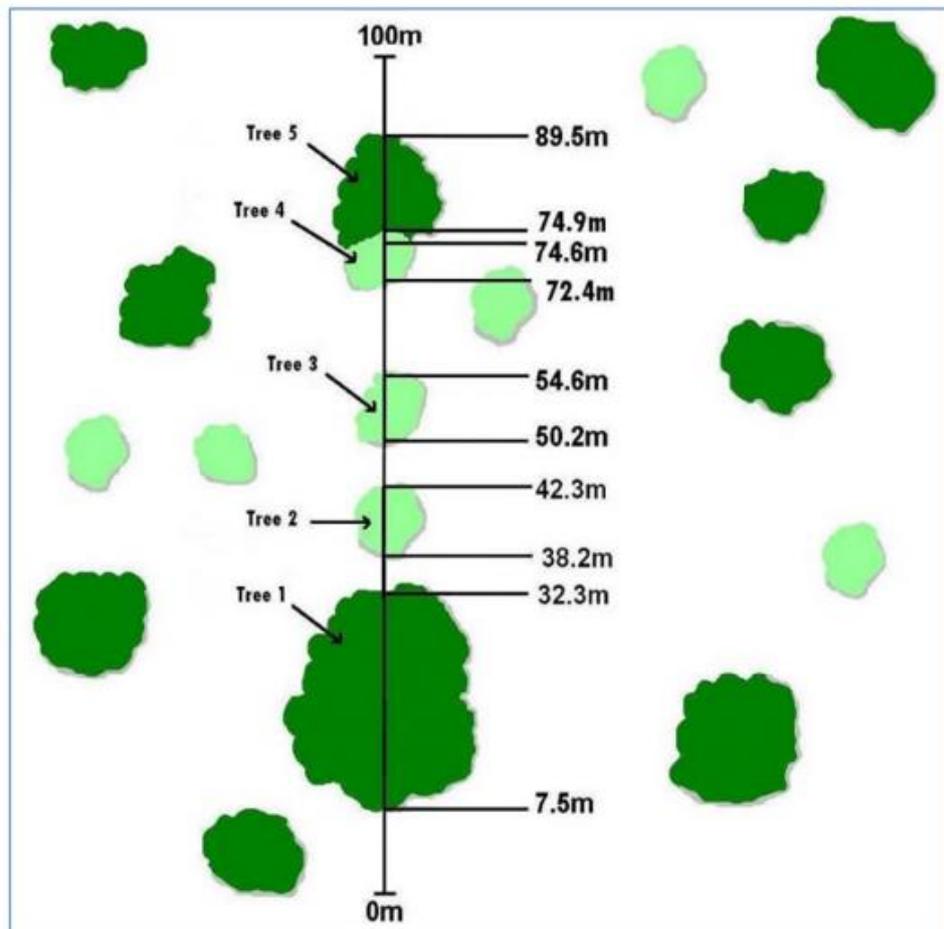


Figure 3. Assessing tree canopy cover %.

2.2.3 SHRUB CANOPY COVER

Shrub canopy cover refers to the estimate of the percentage cover of native shrubs recorded along the 100 m transect (similar to the estimation of tree canopy cover using a vertical projection of shrub crowns downwards and above the centre line transect). Shrub cover can be identified to species level, but species is not required for the derivation of shrub canopy cover benchmarks.

In this regional ecosystem there is a canopy (EDL) (dark green) and a subcanopy (light green).
The canopy cover (EDL) is 39.7%, calculated as:
= (canopy cover Tree 1) + (canopy cover Tree 5)
= (32.3–7.5) + (89.5–74.6) = 24.8 + 14.9 = 39.7%.
The subcanopy cover is 11%, calculated as:
= (cover Tree 2) + (cover Tree 3) + (cover Tree 4)
= (42.3 – 38.2) + (54.6 - 50.2) + (74.9 –72.4) = 4.1 + 4.4 + 2.5 = 11%

Figure 4. Calculation of tree canopy cover.



2.2.4 NATIVE PLANT SPECIES RICHNESS

Native plant species richness for shrubs, grass and forbs/other species are recorded within the 50 x 100 m plot. The number of native plant species are assessed into one of four life-form groups, to assist assessment and benchmarking; trees, shrubs, grass, and forbs/other. Native plant species richness is assessed by slowly walking along each side of the centreline and tallying the number of species in each of three life-forms: shrubs, grasses and forbs/other. Note: Tree species richness is assessed in the 50 x 100 m plot.

2.2.5 INVASIVE WEED SPECIES

Invasive weed species numbers are assessed by slowly walking and tallying the number of invasive weed species along the 100m transect. Individual species can be recorded along with the number of each species.

2.2.6 GROUND COVER

Ground cover data are recorded from each of the five 1 x 1 m subplots centred along the central transect. All components of the ground cover are recorded, including invasive weed species, to ensure 100 % of the ground cover is estimated.

2.2.7 NATIVE PERENIAL GRASS COVER

Perennial grass cover refers to the average percentage cover of native perennial grasses, assessed within each of the five 1 x 1 m quadrat. The ground cover is measured by a vertical projection downwards of the living and attached plant material. A stylised guide is provided in *Figure 5* to help estimate cover percent.

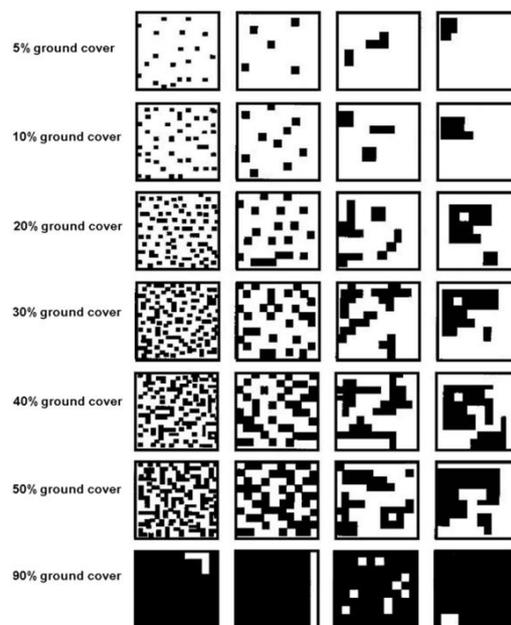


Figure 5. Calculation of ground cover %.



2.2.8 ORGANIC LITTER COVER

Litter is defined to include both fine and coarse organic material such as fallen leaves, twigs and branches <10cm diameter. Organic litter cover refers to the average percentage cover assessed within each of the five 1 x 1m quadrats (Figure 6). In quadrat plots with high cover of living plant material, it is only the organic litter cover observed through the living plant material that is included.



Figure 6. Litter cover %.

2.3 FAUNA

2.3.1 NATIVE SPECIES

Native species observations, sightings, tracks and/or scats within the 50 x 100m plot shall be recorded including any identified hollows or burrows in use.

Identified hollows, burrows, habitats or trails may be further investigated utilising trail cameras and the results recorded over a designated period on the Special Values Area Field Monitoring Form (Appendix A).

2.3.2 FERAL SPECIES

Feral species observations, sightings, tracks and/or scats within the 50 x 100m plot shall be recorded including any identified habitats in use.

Identified hollows, burrows, habitats or trails may be further investigated utilising trail cameras and the results recorded over a designated period on the Special Values Area Field Monitoring Form (Appendix A).

2.4 CULTURAL HERITAGE

Heritage Special Values Heritage Areas have been identified and mapped in the region-specific Special Values Management Plans.



Monitoring of identified Heritage Special Values areas in Company controlled property locations shall be conducted in consultation with identified key indigenous stakeholders as agreed and recorded utilising the Special Values Monitoring Form (Appendix A).

The heritage special values area monitoring process provides a measure of how well the management strategies identified in the region-specific Special Values Management Plans are functioning for the ongoing maintenance of the identified Heritage Special Values areas.

2.5 INFRASTRUCTURE

Infrastructure such as signage identifying Special Values Areas and fencing (where required) shall be assessed and any rectification required shall be capture in the Company action and reporting data base MYOSH.

2.6 FIRE PROTECTION

Fire breaks around the designated Special Values Areas shall be assessed as part of the Special Values Area Field Monitoring process in addition to the scheduled inspections that form part of the Plantation specific Fire Management Plans.

Controlled burning operations shall be assessed utilising the Fire Burn Category (*Table 1*). The Plantation specific Fire Management Plans identify the scheduled controlled burning operations to be undertaken including identified areas for dry and wet season controlled burning.

Burn Category:	Burn Description – A Fire Where:
1 - Extreme	All ground, mid-storey and upper canopy is completely affected by the fire; Most Canopy leaf material is removed or charred.
2 - High	All ground material is affected by the fire; All mid-storey canopy is scorched; Upper canopy is scorched.
3 - Moderate	All ground material is affected by the fire; Leaf scorch height > 2m but is < 5m; All or most mid-storey canopy is scorched; Upper canopy may be partially scorched.
4 – Low	All ground material is affected by the fire; Height of scorched leaves is > 2m.
5 - Patchy	Ground material is partially affected by the fire; Height of scorched leaves is < 2m.
6 - None	No evidence of fire

Table 1. Fire Burn Category

NOTE: Where controlled burning operations are to be undertaken within a Special Values Area the area shall be assessed prior to and post the controlled burning operation.