Maroondah City Council

Minimum Standards for Canopy Tree Provision
Deep Soil Area and Species Tables

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Client

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1 Deep Soil Area Requirements for Canopy Trees

The extent to which a tree will grow large and robust depends on a variety of factors including species, soil quality, site hydrology, and more. There is clear evidence that shows that the amount of available soil influences the size and health of the tree. In urban situations the amount of soil trees can access is critical to their long-term success. Therefore minimum deep soil volumes and areas for a canopy tree species are requirements to be met as part of provision of a canopy tree.
Newly planted canopy trees should be sited such that the necessary above and below ground space is available to them to enable full growth and reach a healthy mature canopy size.

Deep soil area (DSA) – is a soft landscape area on lot with no impeding building structure or feature above or below, which supports growth of canopy trees and meets a stated minimum dimension.

Rootable Soil Zone (RSZ) – is made up of engineered, load bearing soils under paved areas adjacent to the DSA that supports tree root penetration.

Table 1 Deep Soil Area of Canopy Trees provides the areas and volumes of deep soil required to provide sufficient below ground growing space for canopy trees. These calculations are based upon the Crown Projection Methodolgy.

The table provides minimum dimensions for the DSA to ensure healthy root distribution. The minimum dimension is equal to 50 per cent of the average canopy spread at maturity.The table provides minimum dimension reductions where additional RSZ is contiguous and adjacent to the DSA. In this instance the RSZ may contribute up to a maximum of 33 per cent of the minimal DSA dimension when it is demonstrated that it is not possible to achieve the required minimal DSA dimension.

Table 1 Deep Soil Area of Canopy Trees

Canopy spread at maturity categories	Average canopy spread dimension at maturity	Canopy Area (m2)	DSA (m2)	DSV (m3)	DSA (min dimension) (m)	DSA + RSZ (min width)
Narrow 2-<6 m	2	3	3	1.9	1	0.7m + 0.3m
	3	7	7	4.2	1.5	1.0m + 0.5m
	4	13	13	7.5	2.0	1.5m + 0.5m
	5	20	20	11.8	2.5	2.0m + 0.5m
Average 6–<12 m	6	28	28	17.0	3.0	2.5m + 0.5m
	7	38	38	22.1	3.5	3.0m + 0.5m
	8	50	50	30.0.2	4.0	3.5m + 0.5m
	9	64	64	38.2	4.5	3.5m + 1.0m
	10	79	79	47.1	5.0	4.0m + 1.0m
	11	95	95	57.0	5.5	4.5m + 1.0m
Wide 12 m+	12	113	113	67.9	6.0	5.0m + 1.0m
	13	133	133	79.6	6.5	5.0m + 1.5m
	14	154	154	92.4	7.0	5.5m + 1.5m
	15	177	177	106.0	7.5	6.0m + 1.5m
	16	201	201	120.6	8.0	6.5m + 1.5m
	17	227	227	136.2	8.5	6.5m + 2.0m
	18	254	254	152.7	9.0	7.0m + 2.0m
	19	284	284	170.1	9.5	7.5m + 2.0m
	20	314	314	188.5	10.0	8.0m + 2.0m

DSV calculated using the Crown Projection methodology.

2. Maroondah Canopy Tree Species

For the purposes of this document, the following categories of tree species origin apply:

- **Indigenous**: indigenous to Maroondah and have been naturally occurring since the recording of flora commenced;
- **Victorian native**: indigenous to Victoria, including trees, shrubs, herbs, and grasses (equates to the definition of 'Native vegetation' in the Victorian Planning Provisions - Operational provision 73.01 - General Terms) and have been naturally occurring since the recording of flora commenced;
- **Australian native**: indigenous to Australia and have been naturally occurring since the recording of flora commenced; or
- **Exotic**: not indigenous to any part of Australia.

Decisions on which species of canopy tree to plant are dependent upon the desired outcomes to be achieved in any given location and their suitability to local and future conditions. In Maroondah the primary factors will include:

- contribution to neighbourhood and landscape characteristics
- contribution to indigenous flora and fauna habitat and wildlife movement
- suitability of a species to local soil and topographic conditions
- suitability of a species for the predicted climate over its expected lifespan

Ecological Vegetation Classes (EVCs) are a method of systematic organisation of plant communities into common types that occur in similar environmental conditions throughout Victoria. Each vegetation type is identified on the basis of its floristic composition (the plant species present), vegetation structure (woodland, grassland, saltmarsh), landform (gully, foothill, plain) and environmental characteristics (soil type, climate).

The classification of EVCs is heavily influenced by the underlying topography, geology and soils, and provide a useful surrogate for interpreting these factors for a location. It is expected that landscaping requirements will avoid the use of tree species that are not suitably matched to the location's soils, climate or topography, and in the case of indigenous species, they will be matched to the modelled EVC(s) for the locations they are to be planted.

Table 2 Maroondah Canopy Tree Species

Small Trees 5–<9 metres

Indigenous to Maroondah

Botanical Name	Common Name	Approximate height x width at maturity	DSV calculation method	Requirements EVCs where applicable
Acacia pycnantha	Golden Wattle	5m x 4m	CP	Requires well drained soil **EVC** 55_61: Plains Grassy Woodland **EVC** 55_63: Higher Rainfall Plains Grassy Woodland **EVC** 803: Plains Woodland
Banksia marginata	Silver Banksia	6m x 5m	CP	Can tolerate soils that are wet in winter and dry in summer **EVC** 175: Grassy Woodland
Melaleuca ericifolia	Swamp Paperbark	6m x 3m	CP	Moist or wet soils, tolerates dryness once established. **EVC** 83: Swampy Riparian Woodland

Victorian Native

Botanical Name	Common Name	Approximate height x width at maturity	DSV calculation method	Requirements
Acacia leprosa	Cinnamon wattle	6m x 3m	CP	**EVC** 23: Herb-rich Foothill Forest
Banksia serrata	Saw-tooth Banksia	8m x 8m	CP	**EVC** 2: Coast Banksia Woodland
Callitris endlicheri	Black Cypress Pine	6m x 5m	CP	**EVC** 22: Grassy Dry Forest
Callitris rhomboidea	Oyster Bay Pine	8m x 5m	CP	**EVC** 3: Damp Sands Herb-rich Woodland

Autralian Native

Botanical Name	Common Name	Approximate height x width at maturity	DSV calculation method	Requirements
Allocasuarina torulosa	Forest She-oak	8m x 6m	CP	
Callistemon varieties	Bottle Brush	7m x 5m	CP	
Corymbia ficifolia dwarf cultivars	Red Flowering Gum	5m x 4m	CP	Prefers well drained sandy soils. High drought tolerance
Hymenosporum flavum	Native Frangipani	8m x 3m	CP	
Melaleuca bracteata 'Revolution Green'	Revolution Green Honey Myrtle	4m x 3m	CP	Adaptable to a wide range of soils, high drought tolerance

Exotic Species

Botanical Name	Common Name	Approximate height x width at maturity	DSV calculation method	Requirements
Acer palmatum	Japanese Maple	8m x 3m	CP	
Acer varieties	Ornamental Maple	8m x 3m	CP	
Cornus capitata	Evergreen Dogwood	8m x 5m	CP	
Cornus florida	Flowering Dogwood	6m x 4m	CP	
Gleditisa varieties	Honey Locust	6m x 3m	CP	
Lagerstroemia indica cultivars	Crepe Myrtle	6m x 4m	CP	Moderate drought tolerance, adapt-able to a range of conditions, best in well drained, slightly acidic soils
Magnolia dwarf varieties	Magnolia	8m x 5m	CP	
Pistacia chinensis	Chinese Pistachio	7m x 6m	CP	Prefers moist, well-drained soil, will tolerate dry sandy conditions
Prunus x blireana	Double-rose Cherry Plum	4m x 4m	CP	Prefers moist, well-drained soil, will tolerate a range of site conditions
Robinia pseudoacacia 'Frisia'	Golden Robinia	8m x 5m	CP	
Syzygium luehmannii	Riberry	8m x 5m	CP	

Medium Trees 9–<15 metres

indigenous to Maroondah

Botanical Name	Common Name	Approximate height x width at maturity	DSV calculation method	Requirements EVC where applicable
Acacia implexa	Lightwood	8m x 4m	CP	Adaptable, tolerates wet and dry, clay soils **EVC** 175: Grassy Woodland

Acacia melanoxylon	Blackwood	14m x 9m	CP	Prefers well drained soils, adaptable to a wide range of soils **EVC** 83 Swampy Riparian Woodland
Allocasuarina littoralis	Black She-oak	12m x 8m	CP	Can perform in poor, stony soils – requires good drainage **EVC** 48: Heathy Woodland

Victorian Native

Botanical Name	**Common Name**	**Approximate height** x **width at maturity**	**DSV calculation method**	**Requirements**
Acmena smithii	Lilly Pilly	12m x 8m	CP	**EVC** 32: Warm Temperate Rainforest
Banksia integrifolia	Coast Banksia	10m x 5m	CP	**EVC** 2: Coast Banksia Woodland
Brachychiton populneus	Kurrajong	12m x 7m	CP	Adaptable to a wide range of soils, can tolerate periods of drought once established **EVC** 187 Rainshadow Grassy Woodland
Eucalyptus pauciflora cultivars	Snow Gum	10m x 6m	CP	Well drained sites on sandy or rocky soils
Eucalyptus leucoxylon 'Nana'	Yellow Gum (dwarf)	12m x 8m	CP	Tolerant of most soils and conditions.
Eucalyptus mannifera 'Little Spotty'	Brittle Gum	8m x 6m	CP	Prefers well drained soils, adaptable to soil types
Eucalyptus mannifera subsp. *maculosa*	Red Spotted Gum	12m x 8m	CP	Adaptable to various soils if well drained, mildly drought tolerant **EVC** 7: Clay Heathland
Melaleuca lanceolata	Moonah	10m x 7m	CP	**EVC** 858 Coastal Alkaline Scrub
Tristaniopsis laurina	Water Gum	13m x 6m	CP	Prefers moist soils, can tolerate periods of inundation **EVC** 135: Gallery Rainforest

Autralian Native

Botanical Name	**Common Name**	**Approximate height** x **width at maturity**	**DSV calculation method**	**Requirements**
Agonis flexuosa	Willow Myrtle	12m x 8m	CP	
Callistemon salignus	Willow Bottlebrush	8m x 5m	CP	Moderate drought tolerance, can tolerate inundation, young trees can be defoliated by butterfly larvae
Corymbia ficifolia	Red Flowering Gum	10m x 8m	CP	Prefers well drained sandy soils. High drought tolerance
Corymbia eximia	Yellow Bloodwood	14m x 10m	CP	High drought tolerance, new growth sensitive to frost
Elaeocarpus reticulatus	Bluberry Ash	10m x 6m	CP	
Eucalyptus scoparia	Wallangara White Gum	13m x 8m	CP	Prefers well drained soils, grows best with reliable rainfall or irrigation. Moderately drought tender.-
Melaleuca linariifolia	Narrow-leaved Paperbark	10m x 6m	CP	High drought tolerance, can tolerate inundation and compaction
Melia azedarach	White Cedar	10m x 8m	CP	Tolerates a range of soils, heavy pruning and moderate drought
Syzygium ssp.	Lilly Pilly	12m x 9m	CP	

Exotic Species

Botanical Name	Common Name	Approximate height x width at maturity	DSV calculation method	Requirements
Celtis australis	European Nettle Tree	10m x 10m	**CP**	
Cuppressus sempervirens 'Aurea	Golden Pencil Pine	14m x 6m	CP	
Cupressus sempervirens 'Stricta'	Italian Cypress	14m x 2m	FI	
Fraxinus varieties	Ash	10m x 9m	CP	
Magnolia x soulangeana	Magnolia	12m x 8m	CP	
Malus domestica varieties	Ornamental Apple	10m x 6m	CP	
Metrosideros excelsa	New Zealand Christmas Tree	12m x 12m	FI	
Pyrus ussuriensis	Manchurian Pear	9m x 7m	CP	Moderate drought tolerance
Ulmus parvifolia	Chinese Elm	10m x 11m	FI	Adaptable to a range of soils, tolerates periods of inundation
Zelkova serrata 'Green Vase'	Green Vase Zelcova	12 m x 8m	CP	Highly adaptable to different soils, requires watering during establishment

Large Trees 15+ metre

indigenous to Maroondah

Botanical Name	Common Name	Approximate height x width at maturity	DSV calculation method	Requirements EVC where applicable
Eucalyptus cephalocarpa	Silver Stringybark	16m x 12m	CP	**EVC** 127 Valley Heathy Forest
Eucalyptus goniocalyx	Long-leaved Box	20m x 14m	CP	Can tolerate dry and poor soils **EVC** 127 Valley Heathy Forest
Eucalyptus globoidea	White Stringybark	20m x 14m	CP	Will perform in a wide range of moist soils **EVC** 169: Dry Valley Forest
Eucalyptus macrorhyncha	Red Stringybark	20m x 15m	CP	Does not tolerate wet soils – requires well drained clay loam soils **EVC** 22 Grassy Dry Forest
Eucalyptus melliodora	Yellow Box	20m x 9m	CP	Well drained loams and alluvial soils **EVC** 127 Valley Heathy Forest; **EVC** 22 Grassy Dry Forest
Eucalyptus obliqua	Messmate	20m x 14m	CP	Moist, well drained soils – can tolerate short dry periods **EVC** 127 Valley Heathy Forest
Eucalyptus ovata	Swamp Gum	15m x 10m	CP	Moist soils – can tolerate inundation in winter and dry summers **EVC** 83 Swampy Riparian Woodland
Eucalyptus polyanthemos	Red Box	16m x 10m	CP	Adaptable, can tolerate dryness once established **EVC** 22 Grassy Dry Forest
Eucalyptus radiata	Narrow-leaved Peppermint	16m x 10m	CP	Prefers well drained soils, adaptable to a wide range of soils **EVC** 83 Swampy Riparian Woodland
Eucalytpus rubida	Candlebark	16 x 10m	CP	Well drained, dryer soils **EVC** 16: Lowland Forest.

Eucalyptus viminalis	Manna Gum	25m x 15m	CP	Adaptable, performs best in moist, deep loam soils **EVC** 16: Lowland Forest.

Victorian Native

Botanical Name	**Common Name**	**Approximate height** x **width at maturity**	**DSV calculation method**	**Requirements**
Corymbia maculata	Spotted Gum	20m x 14	CP	
Eucalyptus botrioydes	Mahogany Gum	18m x 12m	CP	EVC 2: Coast Banksia Woodland Tolerates periodic waterlogging
Eucalyptus cinerea	Argyle Apple	15m x 10m	CP	Suited to most soils rovided they are well drained
Eucalyptus siderloxylon	Red Iron Bark	16m x 10m	CP	EVC 61: Box Ironbark Forest Tolerant of most soils, moderately drought tolerant
Eucalyptus tricarpa	Ironbark	20m x 10m	CP	EVC 20: Heathy Dry Forest Tolerant of most soils, drought sensitive.

Australian Native

Botanical Name	**Common Name**	**Approximate height** x **width at maturity**	**DSV calculation method**	**Requirements**
Agathus robusta	Queensland Kauri	24m x 12m	FI	
Angophora costata	Smooth-barked Apple	18m x 12m	CP	
Araucaria bidwillii	Bunya Bunya Pine	24m x 12m	FI	
Araucaria heterophylla	Norfolk Island Pine	24m x 12m	FI	
Brachychiton acerifolius	Illawarra Flame Tree	20m x 10m	CP	
Corymbia citriodora	Lemon-scented Gum	25m x 14	CP	
Corymbia ficifolia	Red Flowering Gum	17m x 9m	CP	Prefers well drained sandy soils. High drought tolerance
Lophstemon confertus	Brush Box	17m x 9m	CP	Can adapt to a wide range of soils and tolerate heavy pruning

Exotic Species

Botanical Name	**Common Name**	**Approximate height** x **width at maturity**	**DSV calculation method**	**Requirements**
Cinnamomum camphora	Camphor Laurel	16m x 12m	**FI**	
Fagus sylvatica	European Beech	20m x 12m	CP	
Fraxinus excelsior 'Aurea'	Golden Ash	19m x 15m	CP	
*Gleditsia triacanthos**	Honey Locust	16m x 12m	CP	
Liriodendron tulipifera	Tulip Tree	18m x 11m	CP	
Liquidambar styraciflua	Liquidambar/Sweet Gum	18m x 10m	FI	
Metasequoia glyptostroboides	Dawn Redwood	16m x 8m	FI	
Picea glauca	White Spruce	16m x 7m	FI	Can adapt to a wide range of soils and moderate drought
Quercus canariensis	Algerian Oak	20m x 20m	FI	Can adapt to a wide range of soils and moderate drought

Quercus palustris	Pin Oak	18m x 8m	FI	Can adapt to a wide range of soils and moderate drought
Quercus robur	English Oak	15m x 11m	CP	Can adapt to a wide range of soils and moderate drought
Sequoia sempervirens	Californian Redwood	25m x 14m	FI	
Sequoiadendron giganteum	Giant Sequoia	25m x 14m	FI	
Taxodium distichum	Swamp Cypress	20m x 8m	FI	
Thuja plicata	Western Red Cedar	16m x 8m	FI	
Tilia cordata	Linden Tree	20m x 10m	CP	Adaptable, chlorosis occurs at high pH levels, saplings need water
Ulmus procera	English Elm	20m x 16m	CP	