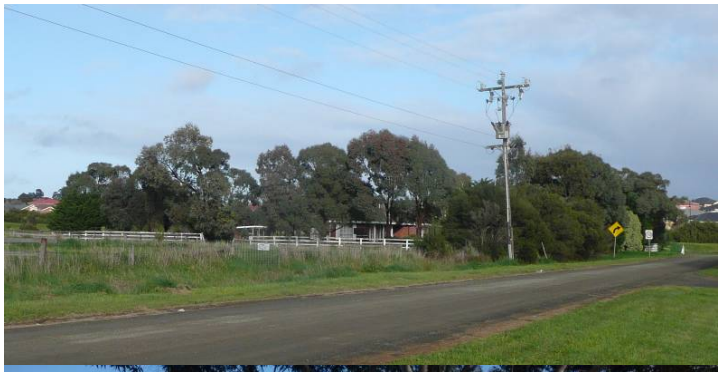

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Arboricultural Assessment

Berwick Waterways Precinct – PSP 9

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1. Background

1.1. PSP 9 (refer figure 1) is located within Casey City Council and covers an approximate area of 85 hectares. The land is currently used for rural purposes ad is zoned Rural Living Zone 2. Previously divided into allotments varying in size from 2-10 hectares, the Berwick Waterways precinct is intended to eventually yield approximately 1000-1500 dwellings dependant on the available developable land and lot size mix.

1.2. Tree Logic was commissioned with undertaking the survey for the purpose of providing information on the arboricultural merit of larger trees on site to inform the design process.

Figure 1: Berwick Waterways PSP Area Context Map

2. Scope

2.1.1. Identify, and map all trees, defined as a woody perennial with one or few main stems having a height of 6m or more. Groupings are to be collected based primarily on vegetation spatial arrangement, also considering size, type and quality.

2.1.2. Where individual arboriculturally significant trees are identified (defined as trees attracting a High arboricultural rating), and where site access allows, map these trees and undertake a detailed arboricultural assessment to include species, age, type, dimensions, trunk diameter, health and structural condition, indicative photograph.

2.1.3. For each mapped group provide summary assessments thereof to include unique identification number, species mix, number of trees in group (counted where possible, otherwise estimated), average health and structural condition average size, arboricultural merit of dominant trees, Indicative photograph (the latter will depend on site access).

2.1.4. Preparation of an arboricultural assessment report which tables the collected data and includes discussion and general recommendations regarding suitability for retention in an urban environment.

3. Method

3.1. **Field Survey**

3.1.1. Site inspections were undertaken between September 15th and 16th 2010. Assessed trees were inspected from the ground; no samples of vegetation or soil were taken, no investigation of the root plate below ground was undertaken.

3.1.2. Trees less than 10m in height were included in the assessment where such tree(s) were felt to be noteworthy because of their potential for being a long-term landscape component or constituted a prominent landscape feature.

1.1.1. Trees in private property were recorded as “Private Trees” or “Private Groups”. Trees on public land were recorded as “Public Trees” or “Public Groups”.

3.1.3. Spatial data relating to tree locations was recorded using a combination of measuring tool equipped GIS surveying software (ArcPad) orthorectified site aerial imagery and LiDAR survey data of existing vegetation supplied by the GAA.

3.1.4. Individually assessed trees and tree group features were attributed with unique identifying numbers. Trees numbers used in this report and appearing in column 1 of the tree assessment table in Appendix 1 correspond with unique identifying labels provided in the GIS data sets compiled for the site.

3.1.5. Where sufficient identifying characteristics were present trees were identified to species level. Trees were assessed to determine their age class, structure and condition. Tree height was measured using a height meter. Where groups of close spaced trees were assessed, sample heights within the stand were taken and the height of remaining trees estimated against the sample heights. Crown spread was estimated by pacing the crown widths on the widest axis.

3.1.6. Trunk diameter was measured using linear tape measures and diametric tape measures in 5cm increments. The default height for measurement was 1.4m above grade. Where short trunked trees forking at or below 1.3m above grade were assessed, trunk diameter was measured at the

narrowest point of the single stem below the fork. Where multiple stems arising at or near ground level were encountered trunk diameter were calibrated from multiple stem measurements.

3.2. **Field Survey Limitations**

3.2.1. Not all properties were accessible for the purpose of this survey. Where access restrictions occurred, limited assessments of trees in such properties were made from external vantage points.

3.3. **Arboricultural Rating Rationale**

3.3.1. The arboricultural rating assigned to individual trees or tree groups is a summary of the interpretation of a combination of objective criteria assessed and used to interpret a tree's structural condition and vitality (arboricultural merit). This rating also conveys an amenity value relating to biological, functional and aesthetic characteristics within the built environment.

3.3.2. Specifically, the following four ranked arboricultural rating system was used to categorise trees:

Rating	Definition
High	Tree generally of sound structure and displaying a high-level of vigour and vitality. May be a prominent landscape feature. Potential to be a medium- to long-term landscape component.
Moderate	Tree generally of reasonable quality; may display minor remediable health and structural defects. Potential to be medium- to long-term landscape component.
Low	Trees of poor quality and/or little amenity value, and /or functionally inappropriate. Tree is small in stature and insignificant to landscape.
None	Tree has severe and irremediable structural or health defect; loss of tree would be expected in the short term if retained as an individual specimen. Tree s an environmental weed in the locale.

3.3.3. Trees that are generally desirable for retention typically display the following attributes:

- Are of a healthy condition that would allow it to tolerate development-associated modifications to its growing environment and,
- Have a structure that was not predisposed to potential failure that could cause damage or injury and,
- Are of an age and/ or size that provide an immediate and ongoing obvious contribution to the landscape.

3.4. Conversely trees in poor health, with suspect or deficient structure, or subject to pest or disease infestation that was having an observable impact on tree condition are generally not considered suitable for retention in an urban environment. Trees recognised as environmental weeds and known to be potentially invasive in the locale of the subject site are generally not considered suitable for retention. Small specimens that provide negligible contribution to the landscape , irrespective of condition should not impede reasonable land use

4. Results

4.1. One hundred and fifty one individual tree features were assessed accounting for an estimated four thousand two hundred and fifty-two trees. Ninety individual trees tree features were surveyed, comprising eighty-nine individual trees on private land, one individual tree located in one of the road reserves transecting the site, and fifty-seven groups of trees on private land and four groups of trees located in road reserves.

4.2. The tree population was unremarkable overall both across the site and within individual properties. Individual trees and tree groups were assigned arboricultural ratings; the spread of Arboricultural ratings is summarised in Table 1 below. Only seven tree features attracted a High arboricultural rating, seventy-two attracted Moderate arboricultural ratings, sixty-two tree features attracted a Low rating and ten tree features attracted a rating of None.

Table 1: Summary of Arboricultural Ratings Berwick Waterways Development Precinct

Arboricultural Rating	Private Group Count	Private Tree Count	Council Group Count	Council Tree Count	TOTAL
High	1	6	0	0	7
Moderate	22	49	0	1	72
Low	33	26	3	0	62
None	1	8	1	0	10
TOTAL	57	89	4	1	**151**

4.3. The study area was mostly grassed paddocks and largely devoid of trees. An overwhelming majority of assessed trees were planted specimens, predominantly installed for functional purposes as screens, windrows and shelterbelts and occurring along internal and boundary fence lines; few tree installations occurred along natural contour lines. Relatively few trees were installed as ornamental specimens, and occurrences of such trees were typically restricted to the area immediately surrounding property dwellings and entrance driveways.

4.4. As illustrated in Diagram 1 overleaf a majority of the assessed tree stock, including six of the seven High rated Tree features were centrally located in allotments on the northern side of the east –west oriented portion of Homestead Road.

4.5. Fifty-three species were noted among the ninety individual trees and single species groups, species were represented across twenty-four of which were native to Australia, of which were native to Australia. The genus Eucalyptus was most prevalent generally with fifteen different species / variates recorded. Assessed Iindigenous species, occurring as a mix of both planted and naturally occurring specimens included. Blackwood (Acacia melanoxylon)

- Late Black Wattle (*Acacia mearnsii*)
- River Red Gum (*Eucalyptus camaldulensis*)
- Swamp Gum (*Eucalyptus ovata*)
- Swamp paperbark (*Melaleuca ericifolia*)

4.6. Naturally occurring indigenous trees included all specimens of Swamp Paperbark, Blackwood and Late Black Wattle; remaining indigenous trees were planted ornamentals or functional installations.

[I] Department of Sustainability and Environment Biodiversity Interactive Map [accessed from] http://mapshare2.dse.vic.gov.au/, [access date] 21.09.2010.

Diagram 2: Location of High rated tree features within Berwick Waterways Development Precinct

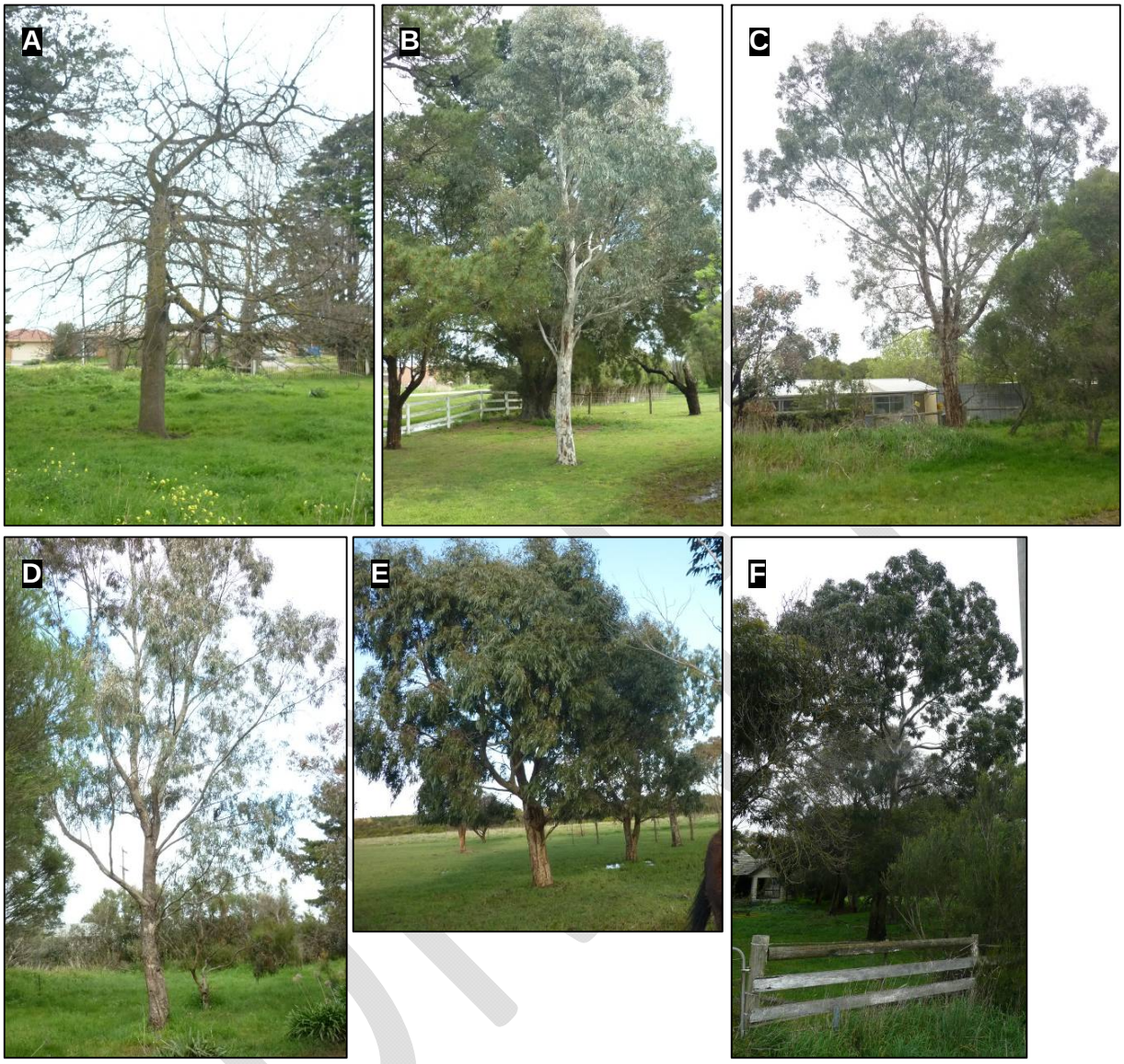
4.7. Relatively few [2]weed species were recorded and included Crack Willow (*Salix fragilis*), Desert Ash (*Fraxinus angustifolia*), Narrow-leaved Ash (*Fraxinus angustifolia* subsp. *Angustifolia)* and Monterey Pine (*Pinus radiata*).

4.8. Although tree heights ranged up to 24m, the average tree height was less than 10m. The small average height was largely a result of the relatively young age of the tree population; one hundred and eight trees/groups (72%) were semi-mature in age and still to attain mature dimensions. Despite their overall small stature, by virtue of the lack of trees across the study area, even small trees provided a positive visual impact to the landscape.

4.9. A majority of tree features, 81%, displayed unremarkable or better health, which could be largely attributed to the relative young age and predominant species within the population. Structural deficiencies were more prevalent throughout the population irrespective of tree age. 56% of tree features entries recorded fair or better structure. The primary influencing factors were plant spacing having negative influence on stem and limb architecture, and to a lesser extent inherent species tendencies to develop inferior structure, and the effect of pest and disease.

[2] City of Casey City of Casey, City of Greater Dandenong, Cardinia Shire Council (No date), Weed Identification Guide V13 Apr06.

5. Photographic Catalogue



A - F	High Rated trees 36, 48, 61, 65, 110 and 128, respectively; illustrating their relative size and habit (Image for High rated Tree 73 not provided). Comprising predominantly specimens of River Red Gum, the trees were all centrally located, occurring within properties on the east – west oriented section of Homestead Road.

G	Moderate rated tree (group) 1, comprising four Monterey Cypress in reasonable condition and located in property ID No. 6.
H	Low Rated tree (group) located to west of homestead Road. Comprising a dense thicket of Swamp Paperbark, several Blackwoods were growing amongst the stand.
I	Moderate rated tree (group) 122, located on the western boundary of property ID No. 7. The stand comprised planted native tees, semi-mature in age and with larger trees in reasonable condition.
J	Moderate rated tree (group) 122, located to the west of the derelict house in property ID No. 7. The stand comprised three close spaced planted Mexican Cypress.
K	Low rated tree (group) 132, surrounding the house in property ID No. 8. These trees, despite being in reasonable or better health displayed inherent structural defects in the limb architecture reducing the usefulness of these trees in a developed landscape.
L	View north-west into property ID No. 26, illustrating plant density, spacing. The majority of trees in this property were of inferior structure and or health and most feature attracted Low rating

6. Tree Management Considerations

6.1. The assessed tree features have been given an arboricultural rating to provide information to assist in decisions relating to the trees. Whether the trees are retained or not is often not solely dependent on arboricultural considerations, therefore arboricultural ratings provide a guide to assist in decisions relating to tree management.

6.2. This assessment also included a useful life expectancy component. The useful life expectancy estimation provides an indicative range of potential functional longevity before anticipated health, structural or age related attrition renders such trees inappropriate in the context of an urban setting. Given the scale of the development and potential settings for trees, the useful life expectancy rating has obvious limitations. In a natural or semi-natural situation and in the absence of people or property, the useful life expectancy of a tree ends when it collapses and completely decomposes. In an urban setting the useful life expectancy of an individual tree or group of trees is measured by its ability to provide ongoing amenity and is therefore highly dependent on context. Another obvious challenge with assigning useful life expectancies is that it presumes some consistency of environmental conditions. Development can irrevocably alters site conditions that have a deleterious effect on tree condition and natural lifespan. Therefore attributing a meaningful useful life expectancy in the absence of design plans that contextualizes the trees setting and environmental changes relies on many assumptions and may be misleading. The useful life expectancy attributed in this assessment, should not therefore be interpreted in isolation from other assessment criteria.

6.3. The study found that 52.3%of trees and tree groups were in fair or better condition and attracted Moderate (47.7%) or High (4.6%) arboricultural ratings. The majority of Moderate rated assessed trees occurred in linear groups or in clusters. With an average tree height across the site less than 10m and given the relative overall quality of tree stock, the landscape values conferred upon these groups and clusters is greater than the landscape value that would otherwise be conferred upon the individual. Retaining trees in groups or clusters would maximise their visual impact and assist in achieving useful lifespan.

6.4. Moreover, trees that develop in close spaced groups are interdependent on surrounding trees for mutual protection and as such require management as a group. The consequence of compromised structural development as a result of close spacing of trees is the limitation of maintaining viable landscape elements in an urban setting when fragmentation of such stands in undertaken. Fragmentation of such groups can expose structural deficiencies to altered environmental conditions resulting in increased failure rates among retained trees. Therefore, fragmentation should only occur where retained trees provide sufficient ongoing mutual protection to maintain stand integrity. If the latter is not achieved and the trees fail to acclimatise to the altered environmental conditions, namely increased wind loading of previously protected limbs, limb failure and premature decline may result.

6.5. ‘Low’ rated trees should not be automatically discounted as they can in certain landscape settings offer a potential established tree resource, providing a sense of maturity to newly developed landscapes, even if only as an interim measure until such time as new plantings are established. On the basis of tree quality, the retention of such trees however should not compromise design intent. Rather such trees, with the exception of environmental weeds, where they can be retained as low risk assets, are suitable for inclusion in developments as interim canopy until such time as new landscapes establish, or as permanent landscape elements where the site context allows.

6.6. Trees that attracted a ‘None’ arboricultural rating were the least suited to retention on arboricultural

grounds. With the exception of weed species, which on the basis of sound urban forest management should generally be removed during development, such trees can provide a useful resource insofar as providing established canopy in areas of public open space where risk levels associated with their retention area acceptable and useful life expectancy is therefore irrelevant. Such trees though should not constrain design intent.

7. Conclusion & Recommendations

7.1.1. Tree Logic, acting on behalf of The Growth Areas Authority, surveyed and assessed trees within the Berwick Waterways Development Precinct. The survey was commissioned primarily for the purpose of providing information on the arboricultural merit of larger trees onsite to inform the design process.

7.1.2. The tree population was unremarkable overall both across the site and within individual properties. Only seven tree features attracted a High arboricultural rating, seventy-two features attracted Moderate arboricultural ratings, sixty-two tree features attracted a Low rating and ten tree features attracted a rating of None.

7.2. Indigenous trees that appeared to be naturally occurring included all specimens of Swamp Paperbark, Blackwood and Late Black Wattle; remaining indigenous specimens were planted as ornamentals or functional installations.

7.3. In the absence of site design plans, it is not appropriate to speculate on which trees are most appropriate for retention, beyond the general guide provided by the arboricultural ratings attributed to each feature, as retention suitability correlates with the future landscape setting of retained trees, which will vary given the scale of the intended development. Therefore, on the basis of tree quality and potential amenity, preference should be given to retaining trees of High or Moderate or arboricultural rating in built areas, or areas of increases target potential. Design modification should only be altered where such trees have relatively long lifespan.

7.4. Conversely, areas of public open space are not only suited to the retention of quality stock, but may also provide opportunity to retain low quality trees either as interim canopy until such time as new landscapes establish or as longer term landscape elements in areas where risk associated with the retention of such trees is acceptable. Arboricultural ratings and useful life spans have been provided for all assessed trees/groups in the tree assessment table in Appendix 1 of this document.

Appendix 1: Tree Assessment Details. Stages 2 & 3 Botanic Ridge

DBH measurement suffixed by @... indicates a stem diameter measured at a point other than 1.4m above ground level. Diameter measurements prefixed by ~.....indicates the diameter was estimated or measured using a linear tape measure. **N/A** = Attribute not applicable or not assessed. Radial tree protection zone are capped at 2m minimum and 15m maximum. Palm TPZ's extend 1m beyond the canopy. Refer to Appendix 2 for explanation of descriptors

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
1	Private Group	4	352564.255	5787391.484	*Cupressus macrocarpa*	Monterey Cypress	Maturing	9	8	30-50	Fair	Fair	25-50 years	Moderate	1 suppressed specimen
2	Private Tree	1	352558.68	5787327.787	*Salix babylonica*	Weeping Willow	Semi-mature	8	8	30-50	Fair	Fair	15-25 years	Low	
3	Private Group	250	352572.237	5787427.877	*Melaleuca ericifolia*	Swamp Paperbark	Semi-mature	<6	3	10-30	Fair	Fair	15-25 years	Low	20 trees in 5m area
4	Private Tree	1	352800.638	5787443.294	*Eucalyptus viminalis*	Manna Gum	Semi-mature	13	11	30-50	Fair	Fair	25-50 years	Moderate	50cm dbh
5	Private Tree	1	352799.525	5787434.746	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	19	10	30-50	Fair	Fair	25-50 years	Moderate	60cm
6	Private Tree	1	352814.747	5787440.874	*Salix babylonica*	Weeping Willow	Over-mature	12	13	70-90	Fair	Very Poor	0 years	None	96cm Trunk wounds & decay
7	Private Tree	1	352829.045	5787435.865	*Eucalyptus sideroxylon*	Red Ironbark	Semi-mature	13	10	30-50	Fair	Fair to Poor	15-25 years	Moderate	Included bark fork
8	Private Tree	1	352835.972	5787421.318	*Eucalyptus sideroxylon*	Red Ironbark	Semi-mature	13	10	30-50	Fair	Fair to Poor	15-25 years	Moderate	Included bark fork
9	Private Tree	1	352805.281	5787427.877	*Casuarina glauca*	Swamp She-oak	Maturing	9	6	30-50	Fair	Fair	15-25 years	Moderate	30cm dbh
10	Private Tree	1	352799.154	5787412.28	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	10	9	30-50	Fair	Fair to Poor	15-25 years	Low	30cm dbh. Multi-stemmed
11	Private Group	2	352812.52	5787400.023	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	8	8	30-50	Fair	Fair to Poor	15-25 years	Moderate	30cm dbh.

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
12	Private Tree	1	352799.154	5787403.552	*Eucalyptus sideroxylon*	Red Ironbark	Semi-mature	8	6	10-30	Fair	Fair to Poor	15-25 years	Low	20cm dbh. Multi-stemmed
13	Private Tree	1	352832.203	5787400.393	*Eucalyptus nicholii*	Narrow-leaved Peppermint	Semi-mature	9	7	30-50	Fair	Fair	25-50 years	Moderate	30cm dbh.
14	Private Tree	1	352833.877	5787405.222	*Eucalyptus nicholii*	Narrow-leaved Peppermint	Semi-mature	9	6	30-50	Fair	Fair	25-50 years	Moderate	30cm dbh.
15	Private Tree	1	352837.126	5787429.037	*Eucalyptus nicholii*	Narrow-leaved Peppermint	Semi-mature	10	6	30-50	Poor	Fair to Poor	<5 years	Low	35cm dbh.
16	Private Tree	1	352837.514	5787431.476	*Eucalyptus sideroxylon*	Red Ironbark	Semi-mature	11	5	10-30	Fair	Fair	25-50 years	Moderate	25cm dbh.
17	Private Group	15	352839.814	5787440.504	Mixed species	Mixed	Maturing	<6	6	30-50	Fair to Poor	Fair to Poor	5-15 years	Low	Melaleuca armillaris, Salix sp., Prunus sp
18	Private Group	7	352810.418	5787624.447	*Cupressus macrocarpa*	Monterey Cypress	Maturing	11	10	50-70	Poor	Poor	<5 years	Low	6 specimens iIn severe decline
19	Private Tree	1	352941.098	5787425.057	*Eucalyptus robusta*	Swamp Mahogany	Maturing	10	9	50-70	Fair to Poor	Poor	<5 years	Low	60cm dbh. Branch failures, Dieback
20	Private Tree	1	352948.791	5787424.228	*Eucalyptus robusta*	Swamp Mahogany	Maturing	13	9	50-70	Fair	Fair to Poor	5-15 years	Low	55cm dbh. Over-extended limbs
21	Private Tree	1	352927.369	5787372.028	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	15	11	70-90	Fair to Poor	Fair to Poor	15-25 years	Low	70cm dbh. Dieback, Trunk wounds
22	Private Tree	1	353040.922	5787449.852	*Eucalyptus cladocalyx*	Sugar Gum	Maturing	12	10	30-50	Fair	Fair	15-25 years	Low	50cm dbh. Trunk wounds
23	Private Group	2	353091.453	5787446.653	*Quercus sp.*	Oak	Semi-mature	9	9	10-30	Fair	Fair	>50 years	Moderate	30cm dbh.
24	Private Group	2	353095.716	5787460.04	*Grevillea robusta*	Silky Oak	Semi-mature	8	7	10-30	Fair	Fair	15-25 years	Moderate	30cm dbh.
25	Private Group	4	353104.061	5787437.925	*Eucalyptus leucoxylon* 'Rosea'	Pink-flowered Yellow Gum	Semi-mature	8	8	10-30	Fair	Fair to Poor	15-25 years	Moderate	35cm dbh. Multi-stemmed

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
26	Private Tree	1	353070.112	5787434.826	*Araucaria bidwillii*	Bunya-Bunya Pine	Semi-mature	4	5	10-30	Fair	Fair	>50 years	Moderate	17cm dbh.
27	Private Tree	1	353135.477	5787476.137	*Eucalyptus melliodora*	Yellow Box	Semi-mature	14	12	10-30	Fair	Fair	>50 years	Moderate	55cm dbh. Dieback
28	Private Group	2	353112.207	5787470.898	*Eucalyptus leucoxylon* 'Rosea'	Pink-flowered Yellow Gum	Semi-mature	9	8	10-30	Fair	Fair to Poor	15-25 years	Moderate	25cm dbh. Multi-stemmed
29	Private Group	2	353124.42	5787398.353	*Quercus canariensis*	Algerian Oak	Semi-mature	8	8	10-30	Fair	Fair	>50 years	Moderate	
30	Private Group	8	353108.711	5787364.41	*Cupressus macrocarpa*	Monterey Cypress	Semi-mature	10	8	10-30	Fair to Poor	Fair to Poor	5-15 years	Low	Dieback
31	Private Tree	1	353153.519	5787354.332	*Cupressus macrocarpa*	Monterey Cypress	Over-mature	15	19	>90	Fair to Poor	Poor	<5 years	None	Major limb failures
32	Private Group	17	353149.833	5787370.819	*XCupressocyparis leylandii* 'Castlewellan'	Leyland Cypress	Semi-mature	<6	4	10-30	Fair	Fair	15-25 years	Low	
33	Private Group	450	353285.436	5787194.384	*XCupressocyparis leylandii* 'Castlewellan'	Leyland Cypress	Semi-mature	<6	4	10-30	Fair	Fair	15-25 years	Low	1.5m spacing. Hedged
34	Private Tree	1	353268.252	5787359.641	*Cupressus macrocarpa* 'Aurea'	Weeping Golden Monterey Cypress	Maturing	8	16	50-70	Fair	Fair	15-25 years	Moderate	Low spreading form
35	Private Group	9	353264.467	5787379.067	*Cupressus macrocarpa*	Monterey Cypress	Maturing	14	14	70-90	Fair	Fair to Poor	5-15 years	Low	Hedged
36	Private Tree	1	353202.293	5787357.901	*Quercus robur*	English Oak	Maturing	14	15	53	Fair	Good	>50 years	High	53cm dbh
37	Private Group	5	353191.656	5787358.001	*Cupressus macrocarpa*	Monterey Cypress	Maturing	18	14	50-70	Fair to Poor	Fair to Poor	5-15 years	Low	In decline
38	Private Tree	1	353184.293	5787308.001	*Populus sp.*	Poplar Box	Over-mature	15	10	50-70	Poor	Poor	0 years	None	In severe decline

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
39	Private Group	5	353203.522	5787390.834	*Populus nigra* 'Italica'	Lombardy Poplar	Maturing	14	4	50-70	Fair to Poor	Fair to Poor	<5 years	Low	In decline. Trunk wounds
40	Private Group	10	353301.384	5787371.298	*Mixed garden species*	Mixed	Semi-mature	<6	6	10-30	Fair	Fair	15-25 years	Moderate	
41	Private Group	6	353233.586	5787358.821	*XCupressocyparis leylandii*	Leyland Cypress	Semi-mature	11	6	10-30	Poor	Poor	<5 years	None	In severe decline
42	Private Tree	1	353253.401	5786920.92	*Fraxinus angustifolia subsp. angustifolia*	Desert Ash	Maturing	12	12	30-50	Fair	Fair	15-25 years	Low	Woody weed
43	Private Tree	1	353252.939	5786911.422	*Cupressus macrocarpa*	Monterey Cypress	Maturing	12	12	30-50	Fair	Fair	15-25 years	Moderate	
44	Private Group	4	353271.476	5786921.23	*Cupressus macrocarpa*	Monterey Cypress	Maturing	14	12	50-70	Fair	Fair to Poor	15-25 years	Moderate	Includes 1 Populus sp
45	Private Group	6	353276.217	5786877.419	*Populus nigra* 'Italica'	Lombardy Poplar	Semi-mature	16	4	30-50	Fair to Poor	Fair	5-15 years	Low	Dieback apparent
46	Private Tree	1	353260.748	5786864.862	*Eucalyptus robusta*	Swamp Mahogany	Semi-mature	11	8	30-50	Fair	Fair to Poor	5-15 years	Low	Included bark fork
47	Private Group	2	353266.57	5786862.712	*Pinus radiata*	Monterey Pine	Maturing	18	16	70-90	Fair	Fair to Poor	5-15 years	Low	fungal decay on east tree. Weed sp.
48	Private Tree	1	353261.82	5786868.691	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	12	7	32	Good	Fair	>50 years	High	32cm dbh
49	Private Tree	1	353259.066	5786883.398	*Melaleuca styphelioides*	Prickly-leaved Paperbark	Semi-mature	11	9	30-50	Fair	Fair	15-25 years	Moderate	Multi-stemmed
50	Private Tree	1	353248.19	5786880.638	*Eucalyptus nicholii*	Narrow-leaved Peppermint	Over-mature	10	9	50-70	Fair to Poor	Poor	<5 years	Low	Lost main leaders. 56cm dbh
51	Private Tree	1	353263.964	5786877.579	*Fraxinus angustifolia subsp. angustifolia*	Desert Ash	Maturing	9	12	30-50	Fair	Fair	15-25 years	Low	Woody weed

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
52	Council Group	2	353192.431	5786863.632	*Pinus radiata*	Monterey Pine	Semi-mature	12	7	30-50	Fair	Fair to Poor	25-50 years	Low	Woody weed
53	Private Tree	1	353207.29	5786927.359	*Corymbia maculata*	Spotted Gum	Semi-mature	11	7	30-50	Fair	Fair	25-50 years	Moderate	44cm dbh. Branch crowding
54	Private Tree	1	353227.361	5786912.502	*Eucalyptus leucoxylon*	Yellow Gum	Maturing	11	9	30-50	Fair	Fair to Poor	5-15 years	Low	55cm dbh. Previously lopped
55	Private Group	2	353172.064	5786985.107	*Eucalyptus bicostata*	Victorian Blue Gum	Semi-mature	13	9	50-70	Fair	Fair to Poor	15-25 years	Moderate	55cm dbh
56	Private Group	6	353137.135	5786990.466	*Salix spp.*	Willow Leaf Wattle	Maturing	12	10	30-50	Fair	Fair to Poor	5-15 years	Low	Trunk wounds. Includes Melaleuca armillaris
57	Private Tree	1	353176.352	5786957.223	*Eucalyptus cladocalyx*	Sugar Gum	Semi-mature	10	6	10-30	Fair	Fair to Poor	5-15 years	Low	Structurally defective (Decayed) Co-dominant stems
58	Private Tree	1	353172.979	5786943.745	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	11	7	30-50	Good	Fair	>50 years	Moderate	35cm dbh
59	Private Group	2	353173.441	5786934.097	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	14	7	50-70	Fair	Fair	25-50 years	Moderate	
60	Private Tree	1	353178.034	5786930.728	*Eucalyptus viminalis*	Manna Gum	Semi-mature	13	8	50-70	Fair	Fair to Poor	15-25 years	Low	45cm dbh branch crowd/failures
61	Private Tree	1	353176.352	5786923.68	*Eucalyptus camaldulensis*	River Red Gum	Maturing	15	14	69	Fair	Fair	>50 years	High	69cm dbh
62	Private Group	6	353168.84	5786896.265	*Eucalyptus botryoides*	Southern Mahogany	Maturing	14	11	50-70	Fair to Poor	Fair to Poor	5-15 years	Low	Includes Eucalyptus robusta. Overextended limbs
63	Private Group	2	353188.605	5786888.147	*Eucalyptus melliodora*	Yellow Box	Maturing	14	7	30-50	Fair to Poor	Fair to Poor	5-15 years	Low	Structurally defective primary limb union
64	Private Tree	1	353201.625	5786892.126	*Pinus radiata*	Monterey Pine	Semi-mature	15	12	30-50	Fair	Fair	25-50 years	Low	Woody weed
65	Private Tree	1	353209.591	5786886.157	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	12	7	36	Fair	Fair	>50 years	High	36cm dbh

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
66	Private Group	1	353220.31	5786887.067	Mixed species	Mixed	Maturing	7	7	30-50	Fair	Fair to Poor	15-25 years	Low	M armillaris, Melaleuca linariifolia
67	Private Tree	1	353201.774	5786878.189	*Corymbia maculata*	Spotted Gum	Semi-mature	8	4	10-30	Fair	Fair	>50 years	Moderate	
68	Private Tree	1	353164.404	5786962.432	*Eucalyptus viminalis*	Manna Gum	Maturing	11	8	50-70	Fair to Poor	Poor	<5 years	Low	55cm dbh. Decay in main leader
69	Private Tree	1	353158.582	5786966.111	*Eucalyptus robusta*	Swamp Mahogany	Maturing	11	9	50-70	Fair	Fair to Poor	15-25 years	Moderate	55cm dbh. Crossing branches
70	Private Group	4	353138.058	5786959.062	*Fraxinus angustifolia*	Narrow-leaved Ash	Maturing	10	9	30-50	Fair	Fair	15-25 years	Moderate	
71	Private Tree	1	353106.806	5786986.787	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	11	7	30-50	Fair	Fair to Poor	15-25 years	Moderate	45cm dbh.
72	Private Group	40	353103.129	5786963.811	*Melaleuca armillaris*	Bracelet Honey-myrtle	Maturing	9	7	10-30	Fair	Fair to Poor	5-15 years	Low	1m spaced, Subsiding limbs
73	Private Tree	1	353101.141	5786949.874	*Corymbia maculata*	Spotted Gum	Semi-mature	14	7	36	Good	Fair	>50 years	High	36cm dbh
74	Private Group	6	353099.303	5786940.226	*Populus sp.*	Poplar Box	Semi-mature	13	6	10-30	Fair	Fair to Poor	5-15 years	Low	1m spaced,
75	Private Tree	1	353136.524	5786897.025	*Populus sp.*	Poplar Box	Over-mature	13	15	70-90	Fair to Poor	Fair to Poor	5-15 years	Low	Overextended limbs & dieback
76	Private Tree	1	353126.11	5786896.875	*Salix babylonica*	Weeping Willow	Over-mature	3	15	70-90	Fair to Poor	Failed	0 years	None	
77	Private Tree	1	353137.135	5786886.307	*Grevillea robusta*	Silky Oak	Semi-mature	11	7	10-30	Fair	Fair	15-25 years	Moderate	
78	Private Tree	1	353161.641	5786877.579	*Populus nigra* 'Italica'	Lombardy Poplar	Semi-mature	15	4	30-50	Fair	Fair	15-25 years	Moderate	
79	Private Tree	1	353167.925	5786903.614	*Eucalyptus leucoxylon*	Yellow Gum	Maturing	11	16	50-70	Fair	Fair	15-25 years	Moderate	55cm dbh. Overextended limbs
80	Private Tree	1	353148.778	5786884.468	*Ulmus glabra* 'Lutescens'	Golden Wych Elm	Semi-mature	7	9	30-50	Fair	Fair	25-50 years	Moderate	

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
81	Private Tree	1	353154.294	5786879.109	*Salix babylonica var. pekinensis* 'Tortuosa'	Tortured Willow	Over-mature	9	10	50-70	Poor	Poor	<5 years	None	
82	Private Tree	1	353056.49	5786928.149	*Populus simonii*	Simon's Poplar	Maturing	18	9	30-50	Fair	Fair	15-25 years	Moderate	
83	Private Group	20	353053.736	5786912.082	*Populus simonii*	Simon's Poplar	Semi-mature	14	5	10-30	Fair	Fair	15-25 years	Moderate	
84	Private Group	19	353060.465	5786970.24	*Betula pendula* 'Dalecarlica'	Cut Leaf Birch	Semi-mature	8	5	10-30	Fair	Fair	15-25 years	Moderate	Includes Acer palmatum
85	Private Group	34	353044.088	5786847.495	*Eucalyptus globulus*	Tasmanian Blue Gum	Semi-mature	11	5	10-30	Fair	Fair to Poor	15-25 years	Low	
86	Private Group	50	353034.532	5786696.766	Mixed native planted species	Mixed	Semi-mature	<6	5	10-30	Fair	Fair	25-50 years	Low	<6m
87	Private Group	34	353016.284	5786811.322	Mixed native planted species	Mixed	Semi-mature	10	6	10-30	Fair	Fair	25-50 years	Low	2 dead, 8<10m
88	Private Group	25	353086.571	5786772.49	Mixed native planted species	Mixed	Semi-mature	<6	5	10-30	Fair	Fair	25-50 years	Low	<6m. linear screen planting
89	Private Tree	1	352948.775	5786944.335	*Eucalyptus conferruminata*	Bald Island Marlock	Semi-mature	7	10	30-50	Fair	Fair	15-25 years	Moderate	
90	Private Tree	1	352953.945	5786966.421	*Eucalyptus conferruminata*	Bald Island Marlock	Semi-mature	7	10	30-50	Fair to Poor	Fair	5-15 years	Low	
91	Private Tree	1	352956.732	5786989.696	*Eucalyptus leucoxylon*	Yellow Gum	Semi-mature	11	6	30-50	Good	Fair	15-25 years	Moderate	
92	Private Tree	1	352962.702	5786917.071	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	13	8	30-50	Fair	Fair	>50 years	Moderate	
93	Private Tree	1	352945.74	5786925.539	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	11	8	30-50	Fair	Fair	>50 years	Moderate	
94	Private Tree	1	352921.869	5786867.431	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	11	8	30-50	Fair	Fair	25-50 years	Moderate	
95	Private Group	2	353232.745	5786772.25	*Eucalyptus ovata*	Swamp Gum	Semi-mature	10	7	30-50	Fair	Fair	15-25 years	Moderate	

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96	Private Tree	1	353218.942	5786762.532	*Eucalyptus bicostata*	Victorian Blue Gum	Semi-mature	12	9	30-50	Fair	Fair	25-50 years	Moderate	
97	Private Tree	1	353244.281	5786836.577	*Salix babylonica*	Weeping Willow	Semi-mature	9	10	30-50	Fair	Fair	15-25 years	Moderate	
98	Private Tree	1	352946.796	5786935.277	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	9	5	10-30	Fair	Fair	>50 years	Moderate	
99	Private Tree	1	352952.906	5786917.621	*Eucalyptus nicholii*	Narrow-leaved Peppermint	Semi-mature	8	6	10-30	Fair	Fair	25-50 years	Moderate	
100	Private Tree	1	352961.383	5786906.643	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	11	7	30-50	Fair	Fair	25-50 years	Moderate	Strucurally defective limb unions developing. Prune
101	Private Tree	1	352977.99	5786901.154	*Eucalyptus sideroxylon*	Red Ironbark	Semi-mature	11	7	30-50	Fair	Fair	25-50 years	Moderate	
102	Private Tree	1	352981.329	5786915.891	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	13	8	30-50	Fair	Fair	>50 years	Moderate	
103	Private Tree	1	352977.017	5786908.523	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	10	4	30-50	Fair	Fair	>50 years	Moderate	
104	Private Tree	1	352963.955	5786903.524	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	10	7	30-50	Fair	Fair	25-50 years	Moderate	
105	Private Group	12	353011.204	5786921.59	*Cupressus macrocarpa*	Monterey Cypress	Semi-mature	8	7	30-50	Fair	Fair	25-50 years	Moderate	
106	Private Group	2	353019.821	5786988.426	*Eucalyptus cladocalyx* 'Nana'	Bushy Sugar Gum	Semi-mature	8		10-30	Fair	Fair to Poor	15-25 years	Low	1 stump sprout
107	Private Tree	1	352956.311	5786998.714	*Corymbia maculata*	Spotted Gum	Semi-mature	9	5	10-30	Fair	Fair	25-50 years	Moderate	Strucurally defective limb unions developing. Prune
108	Private Tree	1	352961.869	5787008.302	*Eucalyptus cladocalyx* 'Nana'	Bushy Sugar Gum	Semi-mature	7	9	30-50	Fair	Fair to Poor	15-25 years	Low	branch failure

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
109	Private Tree	1	352989.526	5787126.418	*Eucalyptus bicostata*	Victorian Blue Gum	Semi-mature	9	6	30-50	Fair to Poor	Poor	<5 years	None	Trunk wounds & decay
110	Private Group	3	352992.857	5787141.435	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	11	10	30-50	Good	Fair	>50 years	High	Strucurally defective limb unions developing.
111	Private Group	4	353011.064	5787149.634	Mixed native species	Mixed	Semi-mature	9	9	30-50	Fair	Fair	25-50 years	Moderate	2 Eucalyptus caldocalyx 'Nana', 1 Eucalyptus botryoies, 1 Eucalyptus leucoxylon
112	Private Group	9	353035.661	5787103.913	Mixed native species	Mixed	Semi-mature	7	6	30-50	Fair	Fair	25-50 years	Moderate	3 Melaleuca stypheliodes , 2 Eucalyptus botryoides, 1 E. cosmophylla, 2 E. punctata,1 E. bicostata
113	Private Tree	1	353249.707	5786473.321	*Liquidambar styraciflua*	Liquidamber	Semi-mature	11	10	30-50	Fair	Fair	25-50 years	Moderate	32cm dbh
114	Private Tree	1	353235.103	5786486.579	*Cupressus sempervirens*	Italian Cypress	Semi-mature	11	5	30-50	Fair to Poor	Fair to Poor	5-15 years	Low	Multi-stemmed, Dieback
115	Private Tree	1	353226.561	5786476.691	*Acer negundo*	Box Elder	Maturing	10	11	10-30	Fair to Poor	Fair to Poor	15-25 years	Low	Partly suppressed
116	Private Tree	1	353193.198	5786452.096	*Eucalyptus botryoides*	Southern Mahogany	Over-mature	12	14	70-90	Fair to Poor	Poor	5-15 years	Low	Dead main leader
117	Council Tree	1	353177.251	5786450.516	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	11	10	30-50	Fair	Fair	25-50 years	Moderate	Dead main leader
118	Council Group	400	353001.078	5786776.729	*Melaleuca ericifolia*	Swamp Paperbark	Semi-mature	<6	3	<10	Fair	Fair	15-25 years	Low	4 x >6m, 15 cm dbh
119	Council Group	1000	352476.057	5787349.003	*Melaleuca ericifolia*	Swamp Paperbark	Semi-mature	6	2	10-30	Fair	Fair to Poor	15-25 years	Low	Contains seveal Acacia melanoxylon
120	Council Group	2	352573.779	5787208.632	*Acacia melanoxylon*	Blackwood	Semi-mature	7	5	10-30	Very Poor	Poor	0 years	None	Advanced decline
121	Private Tree	1	352681.906	5787053.893	*Acacia melanoxylon*	Blackwood	Semi-mature	7	6	30-50	Very Poor	Very Poor	0 years	None	Advanced decline

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122	Private Group	27	352696.782	5787023.609	Mixed native species	Mixed	Semi-mature	11	7	10-30	Fair	Fair	25-50 years	Moderate	Eucalyptus cladocalyx, E. botryoides, E. saligna Melaleuca armillaris
123	Private Group	60	352846.37	5787168.26	*Eucalyptus leucoxylon*	Yellow Gum	Semi-mature	8	3	10-30	Good	Good	25-50 years	Moderate	Includes 3 Populus nigra 'litalica', and 1 Acacia sp.
124	Private Group	15	352772.083	5786974.759	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	8	7	30-50	Fair	Fair to Poor	15-25 years	Low	Includes 1 Eucalyptus caldocalyx 'Nana'
125	Private Group	3	352738.712	5786933.208	*Eucalyptus cladocalyx* 'Nana'	Bushy Sugar Gum	Semi-mature	11	14	30-50	Fair	Fair	25-50 years	Moderate	
126	Private Group	13	352711.847	5786943.276	Mixed native species	Mixed	Semi-mature	11	5	30-50	Fair	Fair to Poor	5-15 years	Low	Eucalyptus globulus (dominant trees), Melaleuca stypheliodes, M. linariifolia, Hakea salicifolia
127	Private Group	27	352719.615	5786980.428	Mixed native species	Mixed	Semi-mature	12	9	30-50	Fair	Fair to Poor	5-15 years	Low	Eucalyptus spp, Grevillea robusta, Melaleuca armillaris
128	Private Tree	1	352713.554	5786972.69	*Eucalyptus camaldulensis*	River Red Gum	Semi-mature	14	14	52	Good	Good	>50 years	High	
129	Private Tree	1	352733.154	5786983.567	*Cupressus lusitanica*	Mexican Cypress	Semi-mature	10	5	10-30	Fair	Fair	25-50 years	Moderate	
130	Private Tree	1	352737.038	5786996.055	*Cupressus lusitanica*	Mexican Cypress	Semi-mature	10	5	10-30	Fair	Fair	25-50 years	Moderate	
131	Private Group	500	352790.85	5786963.261	*Cupressus macrocarpa*	Monterey Cypress	Semi-mature	8	5	10-30	Fair	Fair to Poor	25-50 years	Moderate	
132	Private Group	40	352734.086	5786852.264	Mixed native species	Mixed	Semi-mature	10	9	30-50	Good	Fair to Poor	15-25 years	Low	Eucalyptus sideroxylon, E. nicholii, Cupressus macrocarpa

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
133	Private Tree	1	352739.528	5786884.967	*Betula pendula*	Silver Birch	Semi-mature	9	8	30-50	Good	Fair to Poor	5-15 years	Low	
134	Private Tree	1	352838.355	5786919.08	*Quercus robur*	English Oak	Semi-mature	7	8	10-30	Good	Fair	>50 years	Moderate	
135	Private Tree	1	352857.304	5786916.731	*Quercus robur*	English Oak	Semi-mature	7	8	10-30	Good	Fair	>50 years	Moderate	
136	Private Tree	1	352859.423	5786936.267	*Quercus robur*	English Oak	Semi-mature	7	6	10-30	Good	Fair	>50 years	Moderate	
137	Private Tree	1	352862.251	5786955.813	*Quercus robur*	English Oak	Semi-mature	6	7	10-30	Good	Fair	>50 years	Moderate	
138	Private Tree	1	352864.247	5786973.699	*Quercus robur*	English Oak	Semi-mature	8	7	10-30	Good	Fair	>50 years	Moderate	
139	Private Group	2	352851.655	5786988.066	*Salix fragilis*	Crack Willow	Semi-mature	7	7	30-50	Good	Fair to Poor	5-15 years	Low	
140	Private Group	1000	352872.418	5787001.444	*Melaleuca ericifolia*	Swamp Paperbark	Semi-mature	6	1	10-30	Fair	Fair to Poor	15-25 years	Low	
141	Private Tree	1	352876.385	5787055.913	*Acacia mearnsii*	Late Black Wattle	Semi-mature	8	6	10-30	Good	Fair	5-15 years	Low	
142	Private Group	9	353231.855	5786445.147	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	20	6	50-70	Fair to Poor	Fair to Poor	5-15 years	Low	
143	Private Group	50	353223.774	5786506.964	*Cupressus macrocarpa*	Monterey Cypress	Over-mature	20	15	70-90	Fair to Poor	Fair to Poor	5-15 years	Low	3 subordinate Eucalyptus botryoides
144	Private Tree	1	353247.596	5786561.333	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	12	15	70-90	Fair	Fair	15-25 years	Moderate	
145	Private Tree	1	353239.482	5786546.906	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	11	7	10-30	Good	Good	25-50 years	Moderate	
146	Private Tree	1	353252.593	5786561.063	*Pinus radiata*	Monterey Pine	Over-mature	7	10	70-90	Fair	Poor	<5 years	None	Head failure
147	Private Group	2	353264.896	5786540.698	*Eucalyptus botryoides*	Southern Mahogany	Semi-mature	24	9	70-90	Fair	Poor	<5 years	Low	Multiple limb failures, trunk decay

UNIQUE_ID	TREE_TYPE	NO_TREES	X COORDINATE	Y COORDINATE	SPECIES	COMMON_NAME	AGE CLASS	HEIGHT (M)	WIDTH (M)	DBH (CM)	HEALTH	STRUCTURE	USEFUL LIFE EXPECTANCY (ULE)	ARB_RATING	COMMENT
148	Private Group	3	353256.79	5786441.288	*Pinus radiata*	Monterey Pine	Maturing	19	9	50-70	Fair	Fair to Poor	5-15 years	Low	Easternmost tree with signifincat trunk decay
149	Private Group	2	353244.339	5786452.355	*Cupressus torulosa*	Bhutan Cypress	Maturing	9	4	10-30	Fair	Fair to Poor	15-25 years	Low	
150	Private Tree	1	353245.073	5786463.153	*Cupressus torulosa*	Bhutan Cypress	Maturing	9	4	30-50	Fair	Fair to Poor	15-25 years	Low	
151	Private Tree	1	353240.884	5786452.555	*Quercus robur*	English Oak	Semi-mature	13	12	50-70	Good	Fair	>50 years	Moderate	

Appendix 2: Tree Descriptors

Tree Logic Pty. Ltd. Tree Descriptors, Version 4 (August 2006)

Tree Condition: The assessment of tree condition evaluates factors of health, structure and form. The descriptors of health and structure attributed to a tree evaluate the individual specimen to what could be considered typical for that species growing in its location. For example, some species can display inherently poor branching architecture, such as multiple acute branch attachments with included bark. Whilst these structural defects may technically be considered arboriculturally poor, they are typical for the species and may not constitute an increased risk of failure. These trees may be assigned a structural rating of fair-poor (rather than poor) at the discretion of the author.

The normal distribution curve is a statistical model which shows that for a large number of observations of a particular population, the frequency of the observations creates a bell-shaped curve. This pattern is commonly found in the natural and behavioural sciences. Within a normal tree population the majority of specimens are centrally located within the condition range. Those individual trees with an assessed condition approaching the outer ends of the spectrum occur less often.

Tree name: Provides botanical name, (genus, species, variety and cultivar) according to accepted international code of taxonomic classification, and common name.

DBH: Indicates the trunk diameter (expressed in centimetres) of an individual tree measured at 1.4m above the existing ground level (Diagram 1) or where otherwise indicated (Diagram 2), multiple leaders are measured individually (Diagram 3). Plants with multiple leader habit, e.g. *Cotoneaster* sp., may be measured at the base. Measurements undertaken with diameter∅ tape or builders tape.

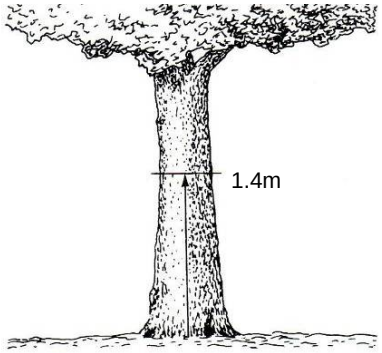


Diagram 1: Measurement of DBH on tree with single trunk

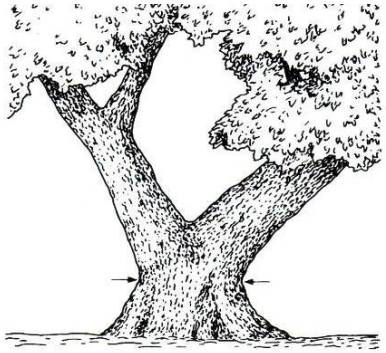


Diagram 2: Measurement of basal diameter at narrowest point above the basal flare

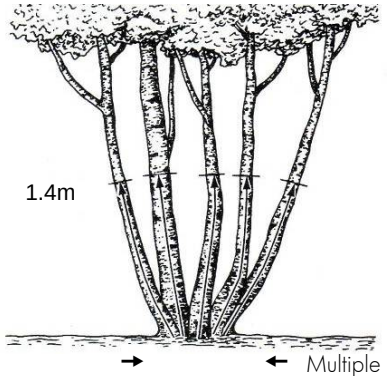


Diagram 3: Measurement of DBH on tree with multiple trunks, measured individually or at the base

Diagrams 1-3 adapted from Gooding *et al.* (2000)

H x W: Indicates height and width of the individual tree; dimensions are expressed in metres. Crown heights are measured with a heightmeter where possible. Due to the topography of some sites and/or the density of vegetation it may not be possible to do this for every tree. Tree heights may be estimated in line with previous heightmeter readings in conjunction with author's experience. Crown widths are generally paced (estimated) at the widest axis or can be measured on two axes and averaged.

Age: Relates to the physiological stage of the tree's life cycle.

Category	Description
Young	Sapling tree and/or recently planted
Semi-mature	Tree rapidly increasing in size and yet to achieve expected size in situation
Maturing	Specimen approaching expected size in situation, with reduced incremental growth
Over-mature	Tree is senescent and in decline

Health: Assesses various attributes to describe the overall health and vigour of the tree.

Category	Vigour/Extension growth	Decline symptoms/Deadwood	Foliage density, colour, size, intactness	Pests and or disease
Good	Above typical	None or minimal	Better than typical	None or minimal
Fair	Typical	Typical or expected	Typical	Typical, within damage thresholds
Fair to Poor	Below typical	More than typical	Exhibiting deficiencies	Exceeds damage thresholds
Poor	Minimal	Excessive and large amount/size	Exhibiting severe deficiencies	Extreme and contributing to decline
Dead	N/A	N/A	N/A	N/A

Structure: Assesses principal components of tree structure (Diagram 5).

	Zone 1	Zone 2	Zone 3	Zone 4		
Descriptor	**Root plate & lower stem**	**Trunk**	**Primary branch support**	**Outer crown and roots**	**Lean from vertical**	**Risk potential if targets present**
Good	No damage, disease or decay; obvious basal flare / stable in ground	No damage, disease or decay; well tapered	Well formed, attached, spaced and tapered	No damage, disease, decay or structural defect	Low or none	Low or none
Fair	Minor damage or decay	Minor damage or decay	Typically formed, attached, spaced and tapered	Minor damage, disease or decay; minor branch end-weight or over-extension	Minor / natural	Minor
Fair to Poor	Moderate damage or decay; minimal basal flare	Moderate damage or decay; approaching recognised thresholds	Weak, decayed or with acute branch attachments; previous branch failure evidence	Moderate damage, disease or decay; moderate branch end-weight or over-extension	Moderate	Moderate
Poor	Major damage, disease or decay; fungal fruiting bodies present	Major damage, disease or decay; exceeds recognised thresholds; fungal fruiting bodies present	Decayed, cavities or has acute branch attachments with included bark; excessive compression flaring; failure likely	Major damage, disease or decay; fungal fruiting bodies present; major branch end-weight or over-extension	Acute	High
Very Poor	Excessive damage, disease or decay; unstable / loose in ground; failure probable	Excessive damage, disease or decay; cavities	Decayed, cavities or branch attachments with active split; failure imminent	Excessive damage, disease or decay; excessive branch end-weight or over-extension	Excessive – root plate failure or stem failure probable	Severe/imminent

The lowest or worst descriptor assigned to the tree in any column could generally be the overall rating assigned to the tree.

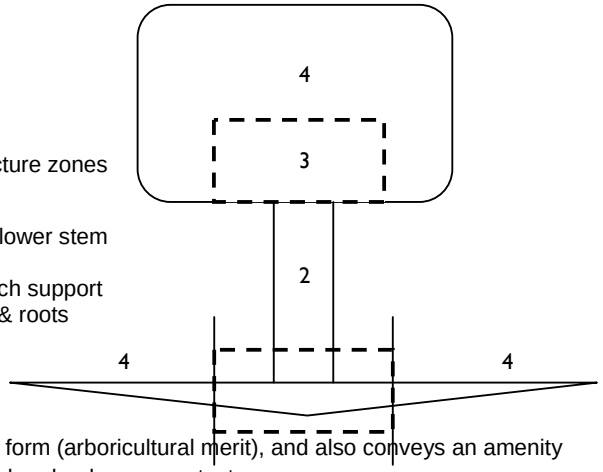
The assessment for structure is limited to observations of external and above ground tree parts. It does not include any exploratory assessment of underground or internal tree parts unless this is requested as part of the investigation.

Trees are assessed and the given a rating for a point in time. Generally, trees with a poor or very poor structure are beyond the benefit of practical arboricultural treatments.

The management of trees in the urban environment requires appropriate arboricultural input and consideration of risk.

Diagram 5: Tree structure zones

1. Root plate & lower stem
2. Trunk
3. Primary branch support
4. Outer crown & roots



Arboricultural Rating: Relates to the combination of previous tree condition factors, including health, structure and form (arboricultural merit), and also conveys an amenity value. Amenity relates to the trees biological, functional and aesthetic characteristics (Hitchmough 1994) within an urban landscape context.

Adapted from Coder (1996)

Category	Description
High	Tree of high quality in good to fair condition. Generally a prominent arboricultural feature. Tree is capable of tolerating changes in its environment. These trees have the potential to be a medium- to long-term component of the landscape if managed appropriately..
Moderate	Tree of moderate quality, in fair or better condition. Tree may have a condition, and or structural problem that will respond to arboricultural treatment. Tree is capable of tolerating changes in its environment. These trees have the potential to be a medium- to long-term component of the landscape if managed appropriately.
Low	Tree of low quality and/or little amenity value. Tree in poor health and/or with poor structure. Tree unlikely to respond positively to changes in its environment and does not warrant design modification to preserve it. Tree is not significant for its size and/or young. These trees are easily replaceable. Tree (species) is functionally inappropriate to specific location and would be expected to be problematic if retained. Retention of such trees may be considered if not requiring a disproportionate expenditure of resources for a tree in its condition and location.
None	Tree has a severe structural defect and/or health problem that cannot be sustained with practical arboricultural techniques and the loss of tree would be expected in the short term. Tree whose retention would be unviable after the removal of adjacent trees (includes trees that have developed in close spaced groups and would not be expected to acclimatise to severe alterations to surrounding environment – removal of adjacent shelter trees) Tree has a detrimental effect on the environment, for example, the tree is a woody weed. These trees should be removed on the basis of sound arboricultural management.

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- Coder, K D. (1996) Construction damage assessments: trees and sites, University of Georgia, USA
- Hitchmough, J.D. (1994) *Urban landscape management*, Inkata Press, Australia
- Gooding, R.F., Ingram, J.B., Urban, J.R., Bloch, L.B., Steigerwaldt, W.M, Harris, R.W. and Allen, E.N. (2000) Guide for plant appraisal, 9th edition, International society of Arboriculture, USA

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