


Arboricultural Assessment

Precinct Structure Plan - 1059 Beveridge North west.

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treelogic
Tree management for the urban forest

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Version control	Site	Date	Author	Version	File No
Version 1	PSP 1059 - Beveridge North west	19/09/2013	Bruce Callander	Draft	13_5161
Version 2	PSP 1059 - Beveridge North west	15/10/13	Bruce Callander	Final with amendments to plans and comments	13_5161

1 Executive summary

1.1 Tree Logic was commissioned to undertake an arboricultural assessment of trees in the Beveridge North West precinct on behalf Metropolitan Planning Authority (MPA).

1.2 The tree population was relatively sparse across the site with most trees being concentrated into grouped plantings for the purposes of windbreaks, woodlots, revegetation, creek bank stabilisation, shade and ornamental garden plantings.

1.3 Three hundred and thirty five (335) tree features were inspected within the study area including two hundred and thirty three (233) individual trees and one hundred and two (102) tree group features comprising approximately 6,700 additional trees.

1.4 The grouped trees includes countless small planted mixed natives in numerous windrows around creek-lines and paddock or property boundaries.

1.5 Due to the grouped nature of the plantings many trees have grown in the shelter of surrounding vegetation. If surrounding trees are to be removed there is the potential for the remaining trees to be damaged by becoming exposed to new wind forces.

1.6 Within the tree population there were forty one specimens which were classed as remnant, naturally occurring indigenous trees based on the species, large size, old age and deteriorating condition. In arboricultural terms many of these trees are in poor condition and would be considered unsuitable to retain but may have higher ecological value due to presence of decayed hollows and cavities.

1.7 Based on observations the majority of other trees were considered to be planted for purposes of windbreaks, creek bank stabilisation, revegetation, shade and garden purposes.

1.8 Each of the assessed tree features was attributed an 'Arboricultural Rating'. The arboricultural rating correlates the combination of tree condition factors (health, structure & form) with tree amenity value and reflects the retention value of the tree(s). Refer to Table 1.

Table 1: Arboricultural rating	**Total trees**	**Total tree groups**	***Trees in tree groups***
Very High	2	0	
High	30	3	*≈505*
Moderate	101	29	*≈1,759*
Low	93	67	*≈2,967*
None	7	1	*≈67*
Total	**233**	**102**	*≈2990*

1.9 Not all 'Moderate or Low' rated tree features should be dismissed as candidates poorly suited for retention, though overall, the retention of such trees should not compromise design intent.

1.9.1 In general Moderate rated trees were of semi-mature age and size and could be readily replaced during development of the site. In certain landscape settings, smaller specimens in otherwise reasonable condition have the potential to offer an established tree resource, even if only as an interim measure.

1.9.2 Low rated trees with health or structural deficiencies are generally not desirable candidates for retention. Windrows with health and structural defects should generally be removed.

1.10 Many trees nominated for retention including those of Very High, High or Moderate arboricultural rating could benefit from some level of tree crown maintenance or reduction pruning to ensure they can be retained for the long term. Pruning can reduce the potential for further limb shed and thereby minimise problems associated limb failure and infection with decay organisms.

1.11 Trees attributed an arboricultural value of None are the least suited to retention on arboricultural grounds, having significant health and / or structural defects.

2 Client Brief

The Metropolitan Planning Authority (MPA) commissioned Tree Logic to undertake an arboricultural survey of tree features within the area defined as Precinct 1059 – Beveridge North-west region to inform the future precinct design process.

The tree study area, Precinct Structure Plan 1059, comprised approximately 1,259 hectares and is defined by the Hume Freeway to the east, Camerons Lane to the south, Old Sydney Road to the west and by the urban Growth boundary and nominated property boundaries to the north. Refer to Plate 1.

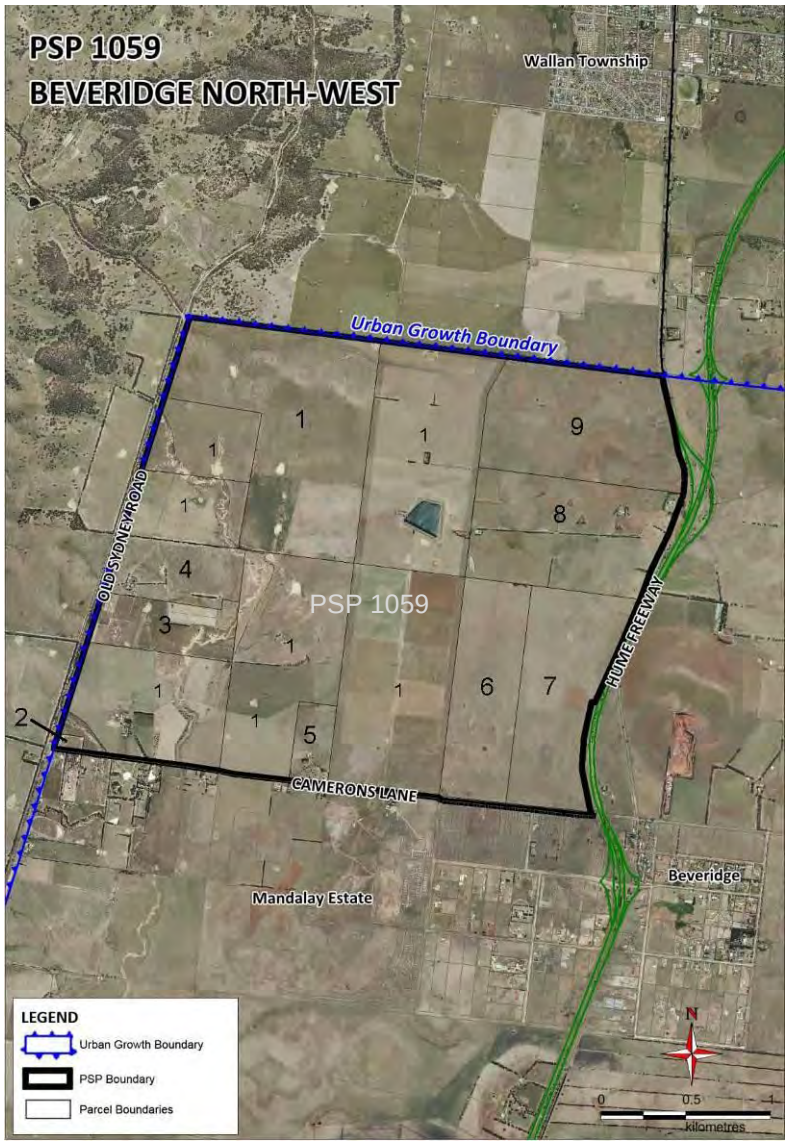

Plate 1: *Aerial image of tree study area PSP 1059 - Beveridge North-west Area.*

The land is currently used for a variety of rural purposes and is zoned Urban Growth Zone with a number of overlays affecting parcels within the site. It is divided into 9 allotments of varying size with the largest parcel being under the management of Yarra Valley Water indicated on the above plan by the number 1.

3 Key Objectives:

The scope of the assessment included determining the species, origin, health and structural integrity of the trees within the precinct as well as the arboricultural value, landscape value and the ability to survive in an urban environment.

Whilst the assessment included reviewing all trees in the precinct, the scope was confined to recording only large and very large tree features that are of High or Very High arboricultural value. The assessment also included trees in the road reserves.

Where access to private land was denied or unable to be obtained an assessment was undertaken from the boundary to obtain a basic understanding of the value of trees within the restricted site. Only Property 2 was not accessed.

The purpose of the report is to identify the retention values of trees within the precinct.

- The arboricultural report tables the collected data, illustrating the retention value of all surveyed trees on a plan of the PSP area, and includes discussion and recommendations regarding suitability for retention in an urban environment, required protection zones (AS4970-2009) and strategies to maximise longer term viability, where relevant.
- The assessment data supplied in Appendix 1 includes:
    - Survey of all trees with a trunk diameter greater than 15cm within the precinct and being of High or Very High retention value.
    - A unique identifying tree number
    - Number of trees (when assessed as a group)
    - Location (GPS/GIS co-ordinates in Latitude / Longitude)
    - Species (botanical and common name)
    - Tree origin (exotic, native, indigenous, planted)
    - Dimensions (Diameter Breast Height (DBH), tree height, canopy width)
    - Age class
    - Health rating
    - Structural rating
    - Useful life expectancy
    - Arboricultural retention value
    - Tree Protection Zone based on Australian Standards (AS 4970-2009).
    - Any relevant comments
- The report includes plans that locate the trees in conjunction with cadastral layers provided by the MPA as site plans attached as Appendix 2.

4 Method:

4.1. Site inspection methodology;

4.1.1 Site inspections were undertaken by Tree Logic staff over a two week period during August 2013. The trees were inspected from the ground and observations made of the growing environment and surrounding area. The trees were not climbed, no samples of the trees or site soil were taken and no investigation of the root plate below ground was undertaken.

4.1.2 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 tables in Appendix 1 correspond with unique identifying labels provided in the GIS data sets and plans compiled for the site.

4.1.3 Observations were made of the trees to determine age and condition, with measurements taken to establish tree height (measured with a height meter), crown width (paced) and trunk diameter (measured at 1.4m above grade unless otherwise stated). Definitions of arboricultural descriptors can be seen in Appendix 3.

4.1.4 Trees on public road reserves were recorded as “Roadside tree” and trees in adjoining properties beyond the PSP area were recorded as “Neighbour’s tree”.

4.1.5 Photographs of some trees and site conditions were taken for further reference and inclusion in the report.

4.1.6 Spatial data relating to tree locations was recorded measuring tool equipped ruggedised tablet computers using a combination of GIS surveying software (ArcPad), orthorectified site aerial imagery and property boundary cadastre data supplied by the MPA.

4.1.7 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.

4.1.8 Trunk diameter was measured using linear tape measures and diametric tape measures in one cm increments. The default height for measurement was 1.4m above grade. Where short trunked trees forking at or below 1.4m above grade were assessed, trunk diameter was measured at the narrowest point of the single stem below the fork and the height duly recorded.

4.2. Field Survey Limitations

4.2.1. The study area comprised 9 separate titles. All properties but one were accessible for the purpose of this survey.

4.2.2. Access was denied to Property No 2 in the south west corner of the study area. Tree records for this property were recorded from the property boundaries and the assessments of trees and tree groups are limited to observations from available vantage points external to the site.

4.2.3. Accurate assessment of dimensions, health and structure of these trees must be verified by closer arboricultural inspection prior to enacting any recommendations arising from this report.

4.3. Arboricultural assessment method;

4.3.1. The health and structural characteristics of each tree was assessed and each tree was attributed an 'Arboricultural Rating'. The arboricultural rating correlates the combination of tree condition factors (health, structure & form) with tree amenity value. Amenity relates to the trees biological, functional and aesthetic characteristics within a built environment. The arboricultural rating in combination with other factors can assist the project team and planners in nominating trees suitable for retention. The five arboricultural ratings used by Tree Logic include:

- **Very High:** Tree of very high quality in good condition. Generally a prominent arboricultural feature. Tree is capable of tolerating changes in its environment if managed appropriately.
- **High:** Tree of high quality with generally sound structural condition and good health. Generally is or has the potential to become a prominent landscape feature.

Trees that were considered to have less than High retention value were not required to be surveyed.

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.

Conversely trees in poor health, with suspect or deficient structure, or subject to pest or disease infestation that was having a discernible negative impact on tree condition are generally not considered suitable for retention in an urban environment.

Small specimens that provide negligible contribution to the landscape, irrespective of condition should not impede reasonable land use.

Trees recognised as environmental weeds and known to be potentially invasive in the locale of the subject site are unsuitable for retention and should be removed for environmental reasons.

Full and further tree descriptors are attached as Appendix 3.

4.4. Establishing Tree Protection Zones (TPZ);

4.4.1. To successfully retain suitable trees within or around a development site, consideration must be given to protecting the trunk, crown and roots of each specimen. Tree protection zones (TPZ's) are used to provide adequate space for the preservation of sufficient roots to maintain tree health (particularly important for mature trees) whilst providing a buffer zone between construction activity and the tree trunk and crown.

4.4.2. The method for determining tree protection zones adopted in this report is the Australian Standard for protection of trees on development sites (AS4970-2009). It provides a method for establishing a TPZ area that is based on the trunk diameter measurement measured at 1.4m and multiplied by 12. The trunk of the tree is used as the centre point for the measurement.

4.4.3. TPZ measurements are included in the tree assessment data in Appendix 1.

4.4.4. The method employed in this document for assigning tree protection zones is a guide for planning purposes. Additional guidelines are outlined in Appendix 4 for establishment and maintenance of the tree protection

4.5. Documents reviewed include;

- Planning property reports and Mitchell council planning zones / overlays including:
  - Rural Conservation Zone
  - Urban Growth Zone (UGZ).
  - Urban Floodway Zone (UFZ)
  - Salinity Management Overlay (SMO)
  - Erosion Management Overlay (EMO)
  - Vegetation Protection Overlay Schedules 1 and 2 (VPO1 & VPO2)
  - The study area is classed as a Bushfire Prone area.

4.6. The arboricultural report and data supplied as Excel spreadsheet is provided to support ongoing planning of future development of the region. The project survey plans are delivered in the following formats to support this.

4.6.1. ESRI Shp files.

4.6.2. MapInfo TAB files.

4.6.3. CAD dwg files.

In each format a separate layer has been created to allow the tree features attributed an arboricultural rating of High or Very High to be displayed independently of the wider assessed tree population.

5 Observations

5.1 Site description.

The tree study area comprised undulating land on the edge of the volcanic plains north of Melbourne. The study area is highly disturbed and has a long history of previous land uses including farming for grazing and crop raising.

The southern half of the study area is relatively flat and flanked by undulating land rising to the east and west and a steady incline upwards to the northern half.

5.2 Kalkallo Creek and its tributaries flow along the western side of the study area. The lowest point is approximately 260m above sea level and located on Kalkallo Creek where it crosses Camerons Lane

east of Property 5, and the highest point is an old volcanic cone on Property 9 and the northern extents of Property 1 being approximately 350 metres.

The creek was not flowing during the time of the site inspections.

In general the properties comprised pasture for grazing and crop raising with trees generally confined to windrow plantings surrounding the paddocks and house lots.

Numerous windrows comprising countless planted indigenous and Australian native species of relatively small size exist along the banks and flood plains of the Kalkallo Creek and its associated drainage tributaries. The numbers of trees within these groups was estimated only.

The existing individual tree cover was relatively sparse with the entire tree cover estimated to occupy less than 10% of the PSP area and generally in grouped tree features.

5.3 Forty one (41) trees of naturally occurring indigenous species were identified as scattered trees across the study area. They include 18 Swamp Gum (*Eucalyptus ovata*), 16 Candlebark (*Eucalyptus rubida*), 4 Messmate Stringybark (*Eucalyptus obliqua*) and one each of Long-leaved Box (*Eucalyptus goniocalyx*), Broad-leaved Peppermint (*Eucalyptus dives*) and Drooping She-oak (*Allocasuarina verticillata*). These trees may have ecological values and may trigger permit and offset requirement.

Many of the indigenous trees were becoming over-mature and senescent and would be expected to fail or collapse within the next 5 to 15 years. There was no natural recruitment of young indigenous species associated with any of these trees due to cultivation and grazing practices continuing around them.

5.4 Based on observations of species diversity, spatial arrangement and even aged stands it is concluded that all other trees comprised native and introduced species planted for wind-breaks, revegetation, creek bank stabilisation and garden or ornamental purposes.

Much of the native roadside vegetation in the northern section of Old Sydney Road is protected under VPO1, namely Tree 136 and Group 7, located in the Vic Roads road easement (outside Parcel 1).

Group 22, located in the Hume Freeway easement, are protected under VPO2 comprising a patch of approximately 36 planted Blue Gums (*Eucalyptus globulus spp*.)

5.5 Tree population.

It is estimated there are approximately 6,900 trees across the site many of which were juvenile and of relatively small size. The trees were collected as 355 tree features comprising 233 individual trees and 102 tree groups comprising approximately 6,700 additional trees.

5.6 The species and origin of each tree was identified to determine whether any trees were locally indigenous or native to Victoria and this is recorded in the tree data as tree origin.

5.7 Forty five (45) different species were identified during the site inspection. The most prevalent species of individual tree inspected are indicated in Table 2.

Table 2. Most prevalent species	Number of individual Trees	Origin
River Red Gum (*Eucalyptus camaldulensis*)	29	Planted Victorian native
Sugar Gum (*Eucalyptus cladocalyx*)	28	Australian native
Swamp Gum (*Eucalyptus ovata*)	19	Indigenous
Candlebark (*Eucalyptus rubida*)	16	Indigenous
Monterey Pine (*Pinus radiata*)	14	Exotic conifer
Spotted Gum (*Corymbia maculata*)	11	Victorian native
Dwarf Sugar Gum (*Eucalyptus cladocalyx* 'Nana')	11	Australian native

Table 2. Most prevalent species	Number of individual Trees	Origin
Victorian Blue Gum (*Eucalyptus bicostata*)	10	Victorian native
Wallangarra White Gum (*Eucalyptus scoparia*)	10	Australian native
Southern Mahogany (*Eucalyptus botryoides*)	9	Victorian native

5.7.1 The origin of the trees is indicated in Table 3.

Table 3: Origin	Total	Tree groups
Indigenous	41	7 (Planted)
Victorian Native	84	16
Australian Native	67	45 (mixed natives)
Exotic Conifer	30	25
Exotic Deciduous	5	3
Exotic Evergreen	5	1
Other	1 (Palm)	4 (Garden shrubs/trees) 1 Weed species
Total	233	102

5.8 Tree health was assessed based on foliage colour, size and density as well as shoot initiation and elongation.

Table 4: Health	Individual trees	Tree groups	%
Good	27	5	9.5%
Fair	129	30	47.5%
Fair - Poor	66	64	38.8%
Poor	10	3	3.8%
Dead	1		0.3%
Total	233	102	335

5.8.1 The majority of trees (95% of trees and 97% of tree groups) displayed health characteristics considered to be typical of the species growing in the current conditions allowing for minor deficiencies and dieback within acceptable tolerance.

5.8.2 The most profound health deficiencies are identified as symptoms of dieback that can be attributed to high levels of exposure to the elements including hot and strong winds, lack of natural mulch cover and increased soil moisture evaporation, cultivation or stock grazing over the root zone, previous decade of drought conditions, shading and competition for resources due to close planting.

5.9 Tree structure was assessed for defects and deficiencies, likelihood of failures and presence of targets.

Table 5: Structure	Individual trees	Tree groups	%
Good	2	5	0.6%
Fair	102	29	39.1%
Fair - Poor	75	70	43.3%
Poor	50	3	15.8%
Very Poor	4		1.2%
Total	233	102	335

44.5% of the trees and 33.3% of tree groups were attributed a rating for structure of Fair or better.

32% of trees and 68% of tree groups were attributed a rating of Fair-poor due to minor structural deficiencies or evidence of limb failures considered to be within an acceptable range were they to be retained. Arboricultural input would assist in extending the longevity of such trees if retained.

5.9.1 23% of individual trees were found to have Poor or Very Poor structure the majority of which comprise the over-mature indigenous trees.

5.9.2 Due to their old age, large size and exposed locations, the large indigenous trees had sustained limb failures resulting in trunk wounds that act as infection courts for decay organisms and fungal brackets.

5.9.3 Wood decay is frequently exploited by insects, mammal and birds that hollow out degraded wood tissue. Large decayed wounds also limit health by interrupting paths of water and nutrient uptake.

5.9.4 Many of the maturing trees, even those attributed a fair arboricultural rating for structure, would benefit from some level of tree crown maintenance or reduction pruning to ensure they can be retained for the long term. Pruning can reduce the potential for further limb shed.

5.10 The stage of life of each tree was recorded.

5.10.1 Many of the trees within the land managed by Yarra Valley Water (Parcel 1) have been planted in patches along creek lines and for revegetation within the last 10 to 20 years and are classed as Young to semi-mature.

5.10.2 Many of the windrows and garden plantings in the privately owned parcels are considered as semi-mature and mature and are likely to have been planted within the last 50 years by landowners.

5.10.3 The naturally occurring indigenous trees were likely to be remnants from previous clearing activities and are classed as mature to over-mature tending to senescence.

5.10.4 The longevity of semi-mature specimens of eucalypt species such as Swamp Gum, Candlebark, River Red Gum, Messmate Stringybark and Sugar Gum could still span many decades but the longevity of mature and over-mature specimens will be reduced by the effects of structural failures and subsequent decay and degradation.

5.10.5 Many of the species of trees will have a short useful life due to the poor structural characteristics, inferior timber quality and susceptibility to decay. An estimate of the useful life expectancy is included for each tree.

5.11 Each of the assessed trees was attributed an Arboricultural Rating. The arboricultural rating correlates the combination of tree condition factors (health, structure and form) with tree amenity value. Amenity relates to the trees biological, functional and aesthetic characteristics within an urban landscape context and its ability to continue to provide these qualities into the medium to long term future. The arboricultural rating in combination with other factors can assist the project team and planners in nominating trees suitable for retention.
It should be noted that the arboricultural rating is different to the conservation/ecological values placed on trees by other professions.

Refer to Table 6a for arboricultural rating and tree numbers for individual trees and Table 6b for arboricultural rating and tree numbers for tree groups.

Table 6a: Individual tree Arboricultural Rating	Total	Trees number
Very High	2	79, 86
High	30	11, 16, 21, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 64, 68, 80, 81, 82, 90, 91, 99, 100, 102, 103, 106, 128

Table 6a: Individual tree Arboricultural Rating	Total	Trees number
Moderate	101	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 17, 18, 19, 20, 22, 23, 24, 25, 26, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 61, 62, 63, 65, 66, 67, 69, 70, 95, 97, 98, 101, 104, 105, 107, 111, 112, 113, 114, 116, 117, 118, 119, 120, 121, 122, 123, 129, 131, 134, 136, 142, 143, 144, 145, 147, 151, 152, 158, 160, 161, 162, 163, 164, 165, 166, 168, 170, 171, 172, 173, 177, 185, 186, 188, 189, 190, 226, 227, 233
Low	93	55, 60, 71, 72, 73, 74, 75, 76, 77, 78, 83, 84, 85, 87, 88, 89, 92, 93, 94, 108, 109, 110, 115, 124, 125, 126, 127, 130, 132, 133, 135, 137, 138, 139, 140, 141, 146, 148, 149, 150, 153, 154, 155, 156, 159, 167, 169, 174, 175, 176, 178, 179, 180, 181, 182, 183, 184, 187, 191, 192, 193, 194, 195, 196, 198, 199, 201, 202, 203, 204, 205, 207, 208, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 222, 223, 224, 225, 228, 229, 230, 231, 232
None	7	96, 157, 197, 200, 206, 209, 221
Total	233	

Table 6b indicates arboricultural rating and tree numbers for tree groups.

Table 6b: Tree Group Arboricultural rating	Total	Group Numbers
High	4	Gp 7, Gp 14, Gp 29, Gp 30
Moderate	28	Gp 1, Gp 2, Gp 3, Gp 4, Gp 5, Gp 6, Gp 8, Gp 9, Gp 10, Gp 13, Gp 18, Gp 20, Gp 21, Gp 22, Gp 26, Gp 27, Gp 28, Gp 31, Gp 62, Gp 63, Gp 66, Gp 67, Gp 74, Gp 79, Gp 88, Gp 90, Gp 91, Gp 92
Low	67	Gp 11, Gp 12, Gp 15, Gp 16, Gp 17, Gp 19, Gp 23, Gp 24, Gp 32, Gp 33, Gp 34, Gp 35, Gp 36, Gp 37, Gp 38, Gp 39, Gp 40, Gp 41, Gp 42, Gp 43, Gp 44, Gp 45, Gp 46, Gp 47, Gp 48, Gp 49, Gp 50, Gp 51, Gp 52, Gp 53, Gp 54, Gp 55, Gp 56, Gp 57, Gp 58, Gp 59, Gp 60, Gp 61, Gp 64, Gp 65, Gp 68, Gp 69, Gp 70, Gp 71, Gp 72, Gp 73, Gp 75, Gp 76, Gp 77, Gp 78, Gp 80, Gp 81, Gp 82, Gp 83, Gp 84, Gp 85, Gp 86, Gp 87, Gp 89, Gp 93, Gp 95, Gp 96, Gp 97, Gp 98, Gp 99, Gp 100, Gp 102
None	3	Gp 25, Gp 94, Gp 101
Grand Total	102	94 (≈6,700 trees)

Very high, High and Moderate rated trees are suitable and desirable to retain but may require arboricultural management and input now and into the future to sustain good health and structural condition.

Low rated trees are not worthy of being a constraint on reasonable design intent.

Not all Low rated trees should be disregarded as many could be retained as an established tree resource with appropriate management in situations where they do not present a risk to occupants of the site or are not an impediment to reasonable design outcomes.

Trees rated None displayed health or structural defects that are beyond arboricultural amendment or are virulent weed species that are considered unsuitable to retain. Definitions of arboricultural ratings can be seen in Appendix 3.

6 Discussion:

6.1 Very High rated trees

6.1.1 Tree 79 is a mature Canary Island Pine (*Pinus canariensis*) located at the crest of the first hill in Parcel 1. It is associated with 3 High rated Canary Island Pines set to the south (Trees 80, 81 and 82) in an informal line which in turn is at the eastern end of a mixed group of over-mature exotic conifers in various states of decline.

- Based on observations both on site and at other historic locations around Melbourne (eg. Willsmere, Dargon Homestead, Fairfield Park) the Canary Island Pine performs exceptionally well in comparison to other Pine species and has survived prolonged

drought conditions better than many other species whilst maintaining high landscape amenity.

- The tree should be considered for retention and incorporated into public open space in conjunction with the associated High rated Canary Island Pine trees 80, 81 and 82.
- Landscape treatments including mulching and garden beds that restrict human access to the area beneath the canopy and enhance long term health should be implemented.

6.1.2 Tree 86 is a mature indigenous Candlebark (*Eucalyptus rubida*) located at the base of the first hill in Parcel 1. It is currently displaying good health and fair and intact structure.

- The tree should be considered for retention and incorporated into public open space along with the landscape treatments that will enhance long term health and restrict human access to the area beneath the canopy.

6.2 High rated trees.

6.2.1 Trees 80, 81 and 82 are maturing Canary Island Pine associated with Very High rated Tree 79 in Parcel 1. They display slightly reduced foliage density and tree size in comparison with tree 79 but as a group they provide high landscape amenity.

- The trees should be considered for retention and incorporated into public open space along with the landscape treatments and garden planting to enhance long term health and to restrict human access to the area beneath the canopy.

6.2.2 Trees 90 and 91 are mature indigenous Candlebark (*Eucalyptus rubida*) located in the valley over the first hill in Parcel 1. They currently display fair health but evidence of some previous limb failures.

- The trees could be considered for retention and incorporated into public open space along with maintenance pruning to enhance long term sustainability and health. Landscape treatments that restrict human access to the area beneath the canopy should be implemented. Recruitment of new seedlings from the tree should be encouraged and understorey planting with other indigenous trees and shrubs would improve the sustainability of the trees.

6.2.3 Tree 99 Algerian Oak (*Quercus canariensis)*, Tree 100 Cape Chestnut (*Calodendrum capense*), Trees 102 and 103 Silky Oak (*Grevillea robusta*), Tree 106 River Red Gum (*Eucalyptus camaldulensis*) and Tree 128 English Oak (*Quercus robur*) are high rated trees located within the grounds of the farm house in parcel 1. They are all specimens planted for ornamental and amenity purposes within the garden and flanking the driveway entrance and tennis court.

- These trees should be retained as a feature group in public open space and further enhanced with the retention of other Moderate rated trees or additional plantings of native and exotic ornamental species.

6.2.4 Tree 11 Spotted Gum (*Corymbia maculata*) and Tree 16 Red Ironbark (*Eucalyptus sideroxylon*) are located in the house lot garden of Parcel 5.

- These trees should be retained in public open space and further enhanced with the retention of other Moderate rated trees or additional plantings of native and exotic ornamental species.

6.2.5 Tree 21 Forest Red Gum (*Eucalyptus tereticornis*) and Tree 64 Yellow Gum (*Eucalyptus leucoxylon*) are in Parcel 8 adjacent to the main driveway that extends from the east to the west of the site.

6.2.6 Trees 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 68 are planted River Red Gum (*Eucalyptus camaldulensis*) that exist on the southern side of the main driveway in Parcel 8 set at 25 to 30 metre spaces between other semi-mature Sugar Gums and over-mature Bracelet Honey Myrtles (*Melaleuca armillaris*).

- Each of the River Red Gum displayed good health and fair structure and were developing a dominant crown amid the surrounding trees. The trees would be expected

to be long lived and offer good potential for ongoing management, pruning opportunities and are likely to be tolerant of changes to the growing environment.

- These trees could be retained as a linear tree avenue in conjunction with an entrance road median. It is recommended that some of the adjacent moderate rated Dwarf Sugar Gums (group 12) to assist in dampening the increased wind loading on the River Red Gum trees were they to become suddenly exposed by removal of surrounding trees.

6.3 Groups 7 was attributed a High arboricultural rating. It comprised naturally occurring indigenous vegetation growing along the eastern road verge of Old Sydney Road, north of the Kalkallo Creek crossing. The group displayed typically Fair health and structure has high arboricultural value with some dieback and branch failures apparent. The group has conservation and ecological values that have been acknowledged and is protected by Vegetation Protection Overlay Schedule 1 (VPO1).

6.4 Group 22 located in the Hume Freeway easement are protected under VPO2 comprising a patch of approximately 36 planted Blue Gums (*Eucalyptus globulus spp*.)

6.5 Group 14 was a group of semi-mature Victorian and Australian natives in Parcel 8 surrounding a pile of accumulated rocks from the surrounding pastures.

6.6 Groups 29 and 30 comprises semi-mature indigenous trees located along the creek banks of Kalkallo Creek in Parcel 1 and planted for bank stabilisation and revegetation purposes. The trees were generally well established and recruitment of new trees from the seed bank was evident.

6.6.1 The conservation of these groups along with some of the moderate rated groups of planted natives elsewhere along the creek line is highly desirable to ensure the health of the creek line and to enhance the declining indigenous population elsewhere in the study area.

6.7 Indigenous Trees

Indigenous trees were distributed across the study area as individual specimens likely to be naturally occurring remnants. The species and distribution of the indigenous trees is closely associated with the various elevations across the site.

6.7.1 The Swamp Gums were generally restricted to the lower areas that are subject to periodic inundation.

6.7.2 The Candlebark, Messmate Stringybark (*Eucalyptus obliqua*) and Long-leaved Box (*Eucalyptus goniocalyx*) were generally confined to the upper slopes in the north of the site.

6.7.3 The majority of indigenous trees were scattered across parcel 1 with 21 specimens recorded comprising 12 Candlebark, 7 Swamp Gum, 1 Long-leaved Box (*Eucalyptus goniocalyx*) and 1 Messmate Stringybark. The trees displayed various levels of decline, limb and stem failure, decay and cavities.

6.7.4 Parcel 3 contained 3 over-mature Swamp Gum in various states of decline with decay and cavities.

6.7.5 Parcel 4 contained 1 over-mature Candlebark and 1 maturing Drooping She-oak (*Allocasuarina verticillata*). The Drooping she-oak was in god health and of Moderate retention value.

6.7.6 Parcel 5 contained maturing Swamp Gum which may be planted specimens.

6.7.7 Parcel 6 contained 3 mature to over-mature Swamp Gums in various states of decline with hollows and cavities.

6.7.8 Parcel 7 contained 2 over-mature Swamp Gums with hollows and cavities.

6.7.9 Parcel 8 contained 1 over-mature Candlebark and 1 mature Swamp Gum each with limb failures and cavities.

6.7.10 Parcel 9 contained 2 over-mature Candlebarks in various states of decline with hollows, cavities and evidence of major limb failure.

6.7.11 Three Messmate Stringybark were identified within 3 metres of the northern boundary of the tree study area and were included in the assessment as the nominated TPZ would extend into the site.

6.7.12 One Broad-leaved Peppermint (*Eucalyptus dives*) was identified in the roadside vegetation abutting the Kalkallo Creek crossing.

6.7.13 North of the creek was a high rated group of naturally occurring, diverse indigenous roadside vegetation extending to the northern extent of the study area.

6.8 Naturally occurring indigenous trees may have ecological values that may trigger permit and offset requirement.

6.8.1 The generally decrepit condition of the trees is a result of old age in combination with land clearing which has left the trees exposed and vulnerable to damaging winds and subsequent onset of degradation and decay.

6.8.2 As such the trees have an elevated risk of further limb and potentially whole tree failure and would be considered inappropriate to retain in conjunction with any subdivision of the site for residential development.

6.8.3 If such trees are required or proposed to be retained it must be in areas of open space with landscape treatments that functionally exclude people from congregating beneath the potential fall zone of the tree. This would include placement of fencing rocks, logs mulch and new plantings of indigenous trees, shrubs and groundcovers within 1.5 times the height of the tree and excluding any paths, park furniture or play equipment from the fall zone.
Natural recruitment of juvenile trees from the parent trees should be encouraged within the exclusion zones.

6.9 Within Parcel 8 there was a group of 10 semi-mature Wallangara White Gums (*Eucalyptus scoparia*) that are growing a north south linear group amid collapsing Bracelet Honey-Myrtle. Each of the trees was attributed a Moderate rating and warrant particular mention. The trees are considered worthy of retention as an established though irregularly spaced avenue of trees with a moderately long useful life expectancy. They are Trees 41 to 51. Additional infill planting could soon enhance the group of trees once the failing Bracelet Honey Myrtle are removed.

6.10 All other trees were assessed as introduced specimens planted for purposes of windrows, creek bank stabilisation, shade, woodlots and amenity purposes and were attributed arboricultural ratings of Moderate, Low or None and are not necessarily pertinent to the scope of this report.

6.11 Not all 'Moderate' rated tree features should be dismissed as candidates poorly suited for retention, though overall, the retention of such trees should not compromise design intent. In certain landscape settings, smaller specimens in otherwise reasonable condition have the potential to offer an established tree resource, even if only as an interim measure.

6.12 Principles of water sensitive urban design should be adopted when designing around retained trees, especially large old trees, to ensure the prevailing surface water runoff and infiltration rates that currently sustain ongoing tree health are not altered dramatically by bulk earthworks and new drainage systems in the new landscape.

6.13 Low rated trees with health or structural deficiencies are generally not desirable candidates for retention.

6.14 Trees attributed an arboricultural value of None were the least suited to retention on arboricultural grounds, having significant health and / or structural defects. Such trees are unlikely to provide a useful tree resource insofar as providing established canopy in future development even where risk levels associated with their retention can be managed to an acceptable level.

6.15 Many linear windbreak groups displayed health and structural deficiencies as a response to the close grown planting and competition for available light resources. Many of the trees in these groups have developed congested form, bifurcations of the trunk with included bark, internal dieback or over-extended limbs seeking restricted available light. Trees with included bark forks and over-extended limbs have the potential to split or fail as the trees mature or if they become exposed to new wind forces were adjacent trees to be removed.

6.15.1 Fragmentation of groups of close grown trees can expose individual trees with structural deficiencies to altered environmental conditions and wind loading 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

group is overly fragmented it is unlikely the trees will acclimatise to the increased wind loading of previously protected limbs and limb failure and premature decline will result.

6.16 The assessment 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 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 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.

6.17 All trees nominated for retention will require periodic inspection and appropriate arboricultural maintenance and pruning. All pruning must be undertaken by suitably trained and experienced arborists and comply with Australian Standard 4373-2007 - Pruning of Amenity trees.

6.18 No form of excavation for footings or trenching for installation of underground services is permitted within the nominated Tree Protection Zone (TPZ) areas due the risk of severing roots vital to the stability and continued health of the trees. Smothering of tree roots by raising soil levels by more than 150mm within the TPZ area can also cause trees to decline.

6.19 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 tree feature. Retention suitability correlates with the future landscape setting of retained trees, which will vary given the scale of the intended development. The following recommendations are provided for consideration in the design process.

6.19.1 On the basis of tree quality and potential amenity, preference should be given to retaining trees of Very High, High and Moderate arboricultural rating in built areas, or areas of increased target potential.

6.19.2 Trees of Low arboricultural value should not compromise reasonable design intent.

6.19.3 Small trees of Moderate or Low arboricultural value that are otherwise in reasonable condition may offer a potential established tree resource, even if only as an interim measure.

6.19.4 Low rated trees with health or structural deficiencies could generally be considered for removal.

6.19.5 Principles of risk management should be adopted to appropriately locate large over-mature Swamp Gum and Candlebark trees that are to be retained in any future development.

6.19.6 Avoid fragmenting retained windrows. Fragmentation should only be considered when the fragments retain sufficient trees to largely negate the change in the trees' environment that may otherwise result in deterioration of retained specimens.

6.19.7 Position retained windrows in large areas of open space, where the target potential is low and the trees can continue to grow in relatively undisturbed conditions.

6.19.8 Windrows of Low arboricultural value with health and structural defects should be removed.

7 Photographic catalogue:

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1 Shows the relative size, condition and location of Very High (79) and High rated (80 & 81) Canary Island Pine trees in Parcel 1.

2 Shows the relative size, condition and location of Very High rated indigenous Candlebark tree in Parcel 1.

3 Shows the relative location, size and condition of indigenous Messmate Stringybark tree 135 growing in the neighbouring property within 3 metres of the northern boundary of parcel 1.

4 Shows the relative location, size and condition of indigenous Candlebark tree 114 in Parcel 9 at the north of the site. The extent of trunk wounding and incipient decay and limb failure is evident.

5 Shows the relative location, size and condition of Dwarf Sugar Gums in Group 6.

6 Shows the relative location, size and condition of indigenous Drooping She-oak tree in Parcel 4.

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7 Shows an example of 1 of 15 High rated River Red Gum within Group 12 in Parcel 8.

8 Shows an example of High rated River Red Gum at the eastern end of driveway in Parcel 8 (Tree 68).

9 Shows an example of over-mature and decrepit Candlebark trees in Parcel 1 (Tree 71).

10 Shows examples of the relative size and condition of indigenous trees within the creek line Groups 29 and 30.

11 Shows examples of the relative size and condition of indigenous trees within Group 28 on the west side of Parcel 1.

12 Shows examples of the relative size and condition of indigenous trees within roadside Group 7 located north west of the site outside Parcel 1.

13 Shows a view looking across the south west of Parcel 1 towards tree groups 8, 27, 28 and 102.

8 Conclusion and Recommendations:

8.1 Tree Logic, acting on behalf of the Metropolitan Planning Authority (MPA), surveyed and assessed trees within the Beveridge North West Precinct identified as PSP1059. The survey was commissioned primarily for the purpose of providing information on the arboricultural merit of larger trees onsite to inform the design process.

8.2 The tree population contained predominantly planted introduced specimens with only forty one (41) remnant indigenous trees scattered across the tree study area.

8.3 Three hundred and thirty five (335) tree features were inspected within the study area including two hundred and thirty three (233) individual trees and one hundred and two (102) tree group features comprising approximately 6,700 additional trees.

8.4 Each of the assessed tree features was attributed an 'Arboricultural Rating'. The arboricultural rating correlates the combination of tree condition factors (health, structure & form) with tree amenity value and reflects the retention value of the tree(s). Refer to Table 1.

8.4.1 Two individual trees were attributed an arboricultural rating of Very High, being Trees 79 and 86.

8.4.2 30 trees and 4 groups of trees were attributed an arboricultural rating of High.

8.4.3 101 trees and 28 groups were attributed an arboricultural rating of Moderate.

8.4.4 The remainder were attributed arboricultural rating of Low or None and do not meet the scope of the project brief nor are they considered worthy of being a constraint on any reasonable future development.

8.5 Forty one indigenous trees that appeared to be naturally occurring were identified in all parcels with the exception of Parcel 2 with the majority (21 trees) located in Parcel 1. These naturally occurring indigenous trees were associated with the natural topography and elevation of the site with Swamp Gum dominant in the low lying areas in the southern half of the site that are subject to inundation. The other indigenous species were found at higher elevations.

8.5.1 The arboricultural value of these trees is generally reduced by old age and numerous structural failures.
However the trees provide other values including visual, amenity, hydrological and ecological benefits to the site and are expected to have ecological value that may trigger permit and offset requirements were they to be removed.

8.5.2 Due to the over-mature age, species characteristics and poor structure these trees have an elevated risk of further limb and potentially whole tree failure and would be considered inappropriate to retain in conjunction with any subdivision of the site for residential development.

8.5.3 If such trees are required or proposed to be retained it must be in areas of open space with landscape treatments that functionally exclude people from congregating beneath the potential fall zone of the tree.
This would include placement of fencing, rocks, logs, mulch and new plantings of indigenous trees, shrubs and groundcovers within 1.5 times the height of the tree and excluding any paths, park furniture or play equipment from the fall zone.
Natural recruitment of juvenile trees from the parent trees should be encouraged within the exclusion zones.

8.6 All other trees were specimens that have been planted for revegetation, ornamental or functional purposes such as wind breaks and screens. Tree protection zones that comply with AS4970-2009 must be applied.

8.7 Retention suitability correlates with the future landscape setting around retained trees, which will vary given the scale of the intended development.
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.
Therefore, on the basis of tree quality and potential amenity, preference should be given to retaining

trees of Very High or High arboricultural rating that have relatively long lifespan in built areas, or areas of increased target potential.

8.8 Areas of public open space are best suited for the retention of High and Very high rated quality trees, but also provides an opportunity to retain trees of Moderate or Low arboricultural quality either as interim canopy until such time as new landscape is established or as longer term landscape elements in areas where risk associated with the retention of such trees is acceptable.

8.9 Where any existing trees are to be retained in private subdivisions the size of the allotment must be large enough to adequately protect the full tree protection zone as well as permit reasonable development of the land by the owner.

8.10 Dimensions of tree protection zones for all trees are included in the tree assessment table attached as Appendix 1. Tree protection zone guidelines are attached in Appendix 4.

I am available to answer any questions arising from this report.

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Australian Standard (4970-2009) Protection of Trees on development sites.
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Standards Australia (2007), Australian Standard (4373-2007) - Pruning of Amenity trees, Standards Australia, Homebush, NSW.

Appendix 1A: Individual Tree assessment details: PSP 1059 - Beveridge North west

Refer to following 9 pages.

DBH = Diameter at Breast Height (measured in centimetres at 1.3m above ground unless otherwise stated).

H x W = Height x Width of crown (measured in metres).

TPZ = Tree Protection Zone (metre radius). Radius distances measured in metres from the centre of the trunk.
ULE = Useful Life Expectancy (Estimated)

For tree location and numbering refer to plans at Appendix 2. See Appendix 3 for tree descriptors.

Tree No	GAA Property No	Species	**Common Name**	Origin	DBH (cm)	DBH Height (m)	Height (m)	Crown Width (m)	Life Stage	Health	Structure	Retention Value	ULE	Comments	TPZ (m radius)	Site Accessed	Recommended Work
1	5	Eucalyptus ovata	Swamp Gum	Indigenous	54	1.4m	12	12	Maturing	Good	Fair	Moderate	15_25 Yrs		6.5	Yes	
2	5	Eucalyptus ovata	Swamp Gum	Indigenous	44	1.4m	9	10	Maturing	Fair	Fair	Moderate	15_25 Yrs		5.3	Yes	
3	5	Eucalyptus camaldulensis	River Red Gum	Victorian Native	39	1.4m	12	7	Semi-mature	Fair	Fair	Moderate	>50 Yrs		4.7	Yes	
4	5	Eucalyptus camaldulensis	River Red Gum	Victorian Native	33	1.4m	13	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		4.0	Yes	
5	5	Eucalyptus viminalis	Manna Gum	Victorian Native	49	1.4m	12	10	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Acute Branch union.	5.9	Yes	
6	5	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	56	1.4m	13	12	Semi-mature	Good	Fair	Moderate	25_50 Yrs		6.7	Yes	
7	5	Eucalyptus globulus	Tasmanian Blue Gum	Victorian Native	50	1.4m	13	11	Semi-mature	Good	Fair	Moderate	25_50 Yrs	Acute Branch union.	6.0	Yes	
8	5	Eucalyptus leucoxylon	Yellow Gum	Victorian Native	35,25	1.4m	12	14	Semi-mature	Good	Fair - Poor	Moderate	25_50 Yrs	Acute Branch union.	5.2	Yes	
9	5	Eucalyptus viminalis	Manna Gum	Victorian Native	33	1.4m	9	8	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Acute Branch union.	4.0	Yes	
10	5	Eucalyptus camaldulensis	River Red Gum	Victorian Native	37	1.4m	13	10	Semi-mature	Fair	Fair - Poor	Moderate	25_50 Yrs	Past branch failure.	4.4	Yes	
11	5	Corymbia maculata	Spotted Gum	Victorian Native	38	1.4m	13	10	Semi-mature	Good	Fair	High	25_50 Yrs	In raised garden bed.	4.6	Yes	
12	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	25	1.4m	13	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.0	Yes	
13	5	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	49	1.4m	13	11	Semi-mature	Good	Fair	Moderate	15_25 Yrs		5.9	Yes	
14	5	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	63	1.4m	14	14	Maturing	Fair	Fair	Moderate	15_25 Yrs		7.6	Yes	
15	5	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	28	1.4m	11	8	Semi-mature	Good	Fair	Moderate	25_50 Yrs		3.4	Yes	
16	5	Eucalyptus sideroxylon	Red Ironbark	Victorian Native	51	1.4m	13	13	Semi-mature	Good	Fair	High	25_50 Yrs	Over-extended Limbs.	6.1	Yes	Weight Reduce
17	5	Eucalyptus leucoxylon	Yellow Gum	Victorian Native	22,16	1.4m	9	8	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Acute Branch union.	3.3	Yes	
18	5	Eucalyptus nicholii	Narrow-leaved Peppermint	Australian Native	50	1.4m	12	12	Maturing	Fair	Fair - Poor	Moderate	15_25 Yrs	Acute Branch union.	6.0	Yes	
19	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	20	1.4m	9	6	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		2.4	Yes	
20	5	Eucalyptus botryoides	Southern Mahogany	Victorian Native	60	1.4m	14	14	Maturing	Good	Fair	Moderate	25_50 Yrs		7.2	Yes	
21	8	Eucalyptus tereticornis	Forest Red Gum	Victorian Native	40	1.4m	11	10	Semi-mature	Good	Fair	High	25_50 Yrs	Euc tereticornis	4.8	Yes	
22	8	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	48	1.4m	15	11	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		5.8	Yes	
23	8	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	56	1.4m	15	1	Maturing	Fair	Fair	Moderate	25_50 Yrs		6.7	Yes	
24	8	Eucalyptus polyanthemos	Red Box	Victorian Native	30	1.4m	10	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.6	Yes	
25	8	Eucalyptus cladocalyx	Sugar Gum	Australian Native	39	1.4m	14	11	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		4.7	Yes	
26	8	Eucalyptus cladocalyx	Sugar Gum	Australian Native	36	1.4m	13	9	Semi-mature	Good	Fair	Moderate	25_50 Yrs		4.3	Yes	
27	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	70	@0.75m	16	15	Maturing	Good	Fair	High	25_50 Yrs		8.4	Yes	
28	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	50,38	1.4m	14	15	Maturing	Fair	Fair	High	25_50 Yrs		7.5	Yes	
29	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	65,38,33	1.4m	15	14	Maturing	Good	Fair	High	25_50 Yrs		9.9	Yes	

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Tree No	GAA Property No	Species	**Common Name**	Origin	DBH (cm)	DBH Height (m)	Height (m)	Crown Width (m)	Life Stage	Health	Structure	Retention Value	ULE	Comments	TPZ (m radius)	Site Accessed	Recommended Work
30	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	44	1.4m	15	12	Semi-mature	Fair	Fair	High	25_50 Yrs		5.3	Yes	
31	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	32	1.4m	14	11	Semi-mature	Fair	Fair	High	25_50 Yrs		3.8	Yes	
32	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	27	1.4m	14	7	Semi-mature	Fair	Fair	High	25_50 Yrs		3.2	Yes	
33	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	40,33	1.4m	15	11	Semi-mature	Fair	Fair	High	25_50 Yrs		6.2	Yes	
34	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	54	1.4m	15	14	Semi-mature	Fair	Fair	High	25_50 Yrs		6.5	Yes	
35	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	34,20	1.4m	13	7	Semi-mature	Fair	Fair	High	25_50 Yrs		4.7	Yes	
36	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	54	1.4m	13	11	Semi-mature	Good	Fair	High	25_50 Yrs		6.5	Yes	
37	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	40	1.4m	12	7	Semi-mature	Fair	Fair	High	25_50 Yrs		4.8	Yes	
38	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	49	1.4m	13	9	Semi-mature	Fair	Fair	High	25_50 Yrs		5.9	Yes	
39	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	30,38	1.4m	14	9	Semi-mature	Fair	Fair	High	25_50 Yrs		5.8	Yes	
40	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	40,38,30	1.4m	15	9	Semi-mature	Fair	Fair	High	25_50 Yrs		7.5	Yes	
41	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	36	1.4m	10	7	Semi-mature	Good	Fair	Moderate	25_50 Yrs		4.3	Yes	
42	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	29	1.4m	10	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.5	Yes	
43	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	29	1.4m	11	5	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.5	Yes	
44	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	28	1.4m	11	6	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.4	Yes	
45	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	35	1.4m	11	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		4.2	Yes	
46	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	29	1.4m	11	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs	Collapsed melaleuca leaning into tree.	3.5	Yes	
47	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	37	1.4m	12	10	Semi-mature	Good	Fair	Moderate	25_50 Yrs		4.4	Yes	
48	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	28	1.4m	11	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.4	Yes	
49	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	30	1.4m	9	11	Maturing	Fair	Fair	Moderate	15_25 Yrs		3.6	Yes	
50	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	31,33	1.4m	11	7	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Included Bark Fork.	5.4	Yes	
51	8	Eucalyptus scoparia	Wallangarra White Gum	Australian Native	31	1.4m	11	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.7	Yes	
52	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	34	1.4m	12	10	Maturing	Fair	Fair	Moderate	25_50 Yrs		4.1	Yes	
53	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	38	1.4m	12	10	Maturing	Fair	Fair	Moderate	25_50 Yrs		4.6	Yes	
54	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	28	1.4m	9	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.4	Yes	
55	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	28	1.4m	10	8	Semi-mature	Fair	Poor	Low	15_25 Yrs	Lost main leader.	3.4	Yes	
56	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	27	1.4m	8	7	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs		3.2	Yes	
57	8	Eucalyptus rubida	Candlebark	Indigenous	139	1.4m	14	18	Over Mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Trunk Decay. Past limb failure.	15.0	Yes	
58	8	Eucalyptus leucoxylon	Yellow Gum	Victorian Native	27	1.4m	10	8	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		3.2	Yes	

Tree No	GAA Property No	Species	**Common Name**	Origin	DBH (cm)	DBH Height (m)	Height (m)	Crown Width (m)	Life Stage	Health	Structure	Retention Value	ULE	Comments	TPZ (m radius)	Site Accessed	Recommended Work
59	8	Eucalyptus polyanthemos	Red Box	Victorian Native	34	1.4m	13	9	Semi-mature	Good	Fair - Poor	Moderate	25_50 Yrs	Included Bark Fork.	4.1	Yes	Reduce Lesser Co-dominant Stem
60	8	Eucalyptus ovata	Swamp Gum	Indigenous	75	1.4m	15	17	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs	Dieback Crown. Limb failure.	9.0	Yes	Crown Maintenance
61	8	Corymbia maculata	Spotted Gum	Victorian Native	33	1.4m	9	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		4.0	Yes	
62	8	Eucalyptus leucoxylon	Yellow Gum	Victorian Native	32	1.4m	9	9	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.8	Yes	
63	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	30	1.4m	9	5	Semi-mature	Fair	Fair	Moderate	>50 Yrs		3.6	Yes	
64	8	Eucalyptus leucoxylon	Yellow Gum	Victorian Native	48	1.4m	16	14	Maturing	Good	Fair	High	25_50 Yrs		5.8	Yes	Crown Maintenance
65	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	25	1.4m	7	5	Semi-mature	Good	Fair - Poor	Moderate	25_50 Yrs	Acute Branch union.	3.0	Yes	Reduce Lesser Co-dominant Stem
66	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	34	1.4m	9	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		4.1	Yes	
67	8	Corymbia citriodora	Lemon-scented Gum	Australian Native	22	1.4m	8	7	Semi-mature	Fair	Good	Moderate	25_50 Yrs		2.6	Yes	
68	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	54	1.4m	16	10	Maturing	Fair	Fair	High	25_50 Yrs		6.5	Yes	
69	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	54,31,35	1.4m	15	15	Maturing	Fair	Fair - Poor	Moderate	25_50 Yrs	3 stems at base with leans.	8.6	Yes	
70	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	46,31,36	1.4m	15	11	Semi-mature	Good	Fair	Moderate	25_50 Yrs	Acute Branch union.	7.9	Yes	
71	1	Eucalyptus rubida	Candlebark	Indigenous	94	1.4m	16	10	Over Mature	Fair - Poor	Very Poor	Low	5_15 Yrs	Basal Wound.	11.3	Yes	
72	1	Eucalyptus ovata	Swamp Gum	Indigenous	119	1.4m	14	12	Over Mature	Fair	Very Poor	Low	5_15 Yrs	Basal Decay. Crack on back of leaning trunk.	14.3	Yes	
73	1	Cupressus macrocarpa	Monterey Cypress	Exotic Conifer	75	1.4m	10	11	Over Mature	Fair	Poor	Low	15_25 Yrs	Trunk Decay.	9.0	Yes	
74	1	Cupressus macrocarpa	Monterey Cypress	Exotic Conifer	110	1.4m	14	18	Over Mature	Fair	Fair - Poor	Low	15_25 Yrs	Limb failures.	13.2	Yes	
75	1	Eucalyptus rubida	Candlebark	Indigenous	123	@0.75m	17	20	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Basal Decay.	14.8	Yes	Crown Reduce
76	1	Eucalyptus rubida	Candlebark	Indigenous	104	1.4m	14	13	Over Mature	Fair	Poor	Low	15_25 Yrs	Basal Decay.	12.5	Yes	
77	1	Eucalyptus rubida	Candlebark	Indigenous	132	1.4m	14	17	Over Mature	Fair	Poor	Low	15_25 Yrs	Basal Decay. and torsional cracks. Ph 362	15.0	Yes	Crown Reduce
78	1	Eucalyptus ovata	Swamp Gum	Indigenous	153	1.4m	11	21	Over Mature	Fair	Poor	Low	15_25 Yrs	Trunk Decay.	15.0	Yes	Crown Reduce
79	1	Pinus canariensis	Canary Island Pine	Exotic Conifer	60	1.4m	15	17	Maturing	Good	Good	Very High	25_50 Yrs		7.2	Yes	
80	1	Pinus canariensis	Canary Island Pine	Exotic Conifer	46	1.4m	17	10	Maturing	Fair	Fair	High	25_50 Yrs		5.5	Yes	
81	1	Pinus canariensis	Canary Island Pine	Exotic Conifer	36	1.4m	13	10	Maturing	Fair	Fair	High	25_50 Yrs	Partly Suppressed. Crown Bias-Sth.	4.3	Yes	
82	1	Pinus canariensis	Canary Island Pine	Exotic Conifer	44	1.4m	12	10	Maturing	Fair	Fair	High	25_50 Yrs		5.3	Yes	
83	1	Cupressus macrocarpa	Monterey Cypress	Exotic Conifer	125	1.4m	15	17	Over Mature	Fair	Fair - Poor	Low	15_25 Yrs	Over-extended Limbs.	15.0	Yes	
84	1	Eucalyptus rubida	Candlebark	Indigenous	127	@0.75m	15	23	Over Mature	Fair - Poor	Poor	Low	5_15 Yrs	Dieback Crown. Limb failures. 1/2 tree dead.	15.0	Yes	
85	1	Eucalyptus ovata	Swamp Gum	Indigenous	156	@1.0m	14	15	Over Mature	Fair	Poor	Low	15_25 Yrs	Trunk Decay. Hollows	15.0	Yes	
86	1	Eucalyptus rubida	Candlebark	Indigenous	83	1.4m	14	18	Maturing	Good	Fair	Very High	25_50 Yrs	Asymmetric. Crown bias to Nth.	10.0	Yes	

Tree No	GAA Property No	Species	**Common Name**	Origin	DBH (cm)	DBH Height (m)	Height (m)	Crown Width (m)	Life Stage	Health	Structure	Retention Value	ULE	Comments	TPZ (m radius)	Site Accessed	Recommended Work
87	1	Eucalyptus rubida	Candlebark	Indigenous	70	1.4m	3	13	Over Mature	Fair - Poor	Poor	Low	5_15 Yrs	Collapsed. Trunk forms horseshoe shape flat on ground with live branches. Curiosity value.	8.4	Yes	
88	1	Cupressus macrocarpa	Monterey Cypress	Exotic Conifer	77,62	1.4m	17	15	Maturing	Fair	Fair - Poor	Low	15_25 Yrs	Branch failure	11.9	Yes	Crown Maintenance
89	1	Pinus pinaster	Maritime Pine	Exotic Conifer	43	1.4m	13	10	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs		5.2	Yes	
90	1	Eucalyptus rubida	Candlebark	Indigenous	106	1.4m	16	17	Over Mature	Fair	Fair - Poor	High	25_50 Yrs	Hollows. Limb failure.	12.7	Yes	Crown Maintenance
91	1	Eucalyptus rubida	Candlebark	Indigenous	114	1.4m	10	16	Over Mature	Fair	Fair - Poor	High	25_50 Yrs	Hollows & limb failures.	13.7	Yes	Crown Maintenance
92	1	Eucalyptus rubida	Candlebark	Indigenous	116	1.4m	18	17	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay. Extending into main fork.	13.9	Yes	Crown Reduce
93	1	Eucalyptus rubida	Candlebark	Indigenous	120	1.4m	17	18	Over Mature	Poor	Poor	Low	15_25 Yrs	Dieback Crown. 1/2 tree dead. Hollows in east live spar.	14.4	Yes	Crown Reduce
94	1	Eucalyptus ovata	Swamp Gum	Indigenous	116	1.4m	12	17	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay. Dieback. Water pools at base.	13.9	Yes	
95	1	Eucalyptus camaldulensis	River Red Gum	Victorian Native	34,33	1.4m	10	12	Semi-mature	Good	Fair - Poor	Moderate	25_50 Yrs	Included Bark Fork.	5.7	Yes	Reduce Lesser Co-dominant Stem
96	1	Eucalyptus camaldulensis	River Red Gum	Victorian Native	69	1.4m	12	14	Maturing	Poor	Poor	None	< 5 Yrs	Dieback Crown.	8.3	Yes	
97	1	Eucalyptus elata	River Peppermint	Victorian Native	76	1.4m	15	18	Maturing	Fair - Poor	Fair	Moderate	15_25 Yrs		9.1	Yes	
98	1	Eucalyptus camaldulensis	River Red Gum	Victorian Native	44	1.4m	12	9	Semi-mature	Fair	Fair	Moderate	25_50 Yrs	Partly Suppressed. Crown Bias-Sth.	5.3	Yes	
99	1	Quercus canariensis	Algerian Oak	Exotic Evergreen	83	1.4m	13	13	Maturing	Fair	Fair	High	25_50 Yrs	In raised bed against tennis court fence.	10.0	Yes	
100	1	Calodendrum capense	Cape Chestnut	Exotic Evergreen	28	1.4m	9	7	Semi-mature	Fair	Fair	High	25_50 Yrs	Partly Suppressed. Crown Bias-East	3.4	Yes	
101	1	Malus ioensis	Iowa Crabapple	Exotic Deciduous	18,18,17, 15	1.4m	6	9	Maturing	Fair - Poor	Fair	Moderate	15_25 Yrs	Tip dieback	4.1	Yes	
102	1	Grevillea robusta	Silky Oak	Australian Native	38	1.4m	15	7	Maturing	Fair	Fair	High	25_50 Yrs		4.6	Yes	
103	1	Grevillea robusta	Silky Oak	Australian Native	48	1.4m	14	11	Maturing	Good	Fair	High	25_50 Yrs		5.8	Yes	
104	1	Eucalyptus globulus 'Compacta'	Dwarf Blue Gum	Australian Native	65	1.4m	13	10	Maturing	Fair	Fair - Poor	Moderate	15_25 Yrs	Eucalyptus globulus 'Compacta'	7.8	Yes	
105	1	Eucalyptus camaldulensis	River Red Gum	Victorian Native	34,34	1.4m	11	12	Semi-mature	Good	Fair - Poor	Moderate	25_50 Yrs	Included Bark Fork.	5.8	Yes	Reduce Lesser Co-dominant Stem
106	1	Eucalyptus camaldulensis	River Red Gum	Victorian Native	56	1.4m	15	15	Maturing	Good	Fair	High	25_50 Yrs		6.7	Yes	
107	1	Eucalyptus rubida	Candlebark	Indigenous	106	1.4m	10	15	Over Mature	Fair - Poor	Fair - Poor	Moderate	25_50 Yrs	Trunk Decay.	12.7	Yes	
108	1	Eucalyptus ovata	Swamp Gum	Indigenous	102	1.4	5_10	10	Over Mature	Poor	Very Poor	Low	5_15 Yrs	Major trunk decay	12.2	Yes	
109	1	Eucalyptus ovata	Swamp Gum	Indigenous	164	1.4	10_15	10	Over Mature	Fair - Poor	Very Poor	Low	5_15 Yrs	Decayed, splitting trunk	15.0	Yes	
110	1	Eucalyptus ovata	Swamp Gum	Indigenous	103	1.4m	14	16	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay. Limb failures	12.4	Yes	
111	4	Eucalyptus globulus	Tasmanian Blue Gum	Victorian Native	46	1.4m	15	8	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		5.5	Yes	
112	4	Allocasuarina verticillata	Drooping She-oak	Indigenous	52	@1.0m	7	11	Maturing	Good	Fair - Poor	Moderate	25_50 Yrs		6.2	Yes	
113	4	Eucalyptus melliodora	Yellow Box	Victorian Native	48	1.4m	10	8	Semi-mature	Fair	Fair - Poor	Moderate	25_50 Yrs	Planted	5.8	Yes	

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114	9	Eucalyptus rubida	Candlebark	Indigenous	167	1.4m	17	17	Over Mature	Fair	Poor	Moderate	25_50 Yrs	Trunk Decay. Limb failures. Exclusion zone required.	15.0	Yes	
115	9	Eucalyptus rubida	Candlebark	Indigenous	117	1.4m	15	12	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay. Primary failures. Epicormic growth	14.0	Yes	
116	5	Corymbia maculata	Spotted Gum	Victorian Native	30	1.4m	12	5	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.6	Yes	
117	5	Corymbia maculata	Spotted Gum	Victorian Native	30	1.4m	10	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.6	Yes	
118	5	Corymbia maculata	Spotted Gum	Victorian Native	60	1.4m	14	11	Semi-mature	Fair	Fair - Poor	Moderate	25_50 Yrs		7.2	Yes	
119	5	Corymbia maculata	Spotted Gum	Victorian Native	45	1.4m	11	9	Semi-mature	Fair	Fair - Poor	Moderate	25_50 Yrs		5.4	Yes	
120	5	Corymbia maculata	Spotted Gum	Victorian Native	27	1.4m	10	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.2	Yes	
121	5	Corymbia maculata	Spotted Gum	Victorian Native	30	1.4m	9	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		3.6	Yes	
122	4	Eucalyptus leucoxylon	Yellow Gum	Australian Native	50	@0.5m	9	10	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		6.0	Yes	
123	4	Eucalyptus leucoxylon	Yellow Gum	Australian Native	40	1.4m	10	8	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.8	Yes	
124	4	Eucalyptus rubida	Candlebark	Indigenous	104	1.4m	16	14	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay.	12.5	Yes	
125	3	Eucalyptus ovata	Swamp Gum	Indigenous	106	1.4m	11	16	Over Mature	Fair	Poor	Low	15_25 Yrs	Trunk Decay.	12.7	Yes	
126	3	Eucalyptus ovata	Swamp Gum	Indigenous	138	1.4m	12	17	Over Mature	Fair	Poor	Low	5_15 Yrs	Trunk Decay.	15.0	Yes	
127	3	Eucalyptus ovata	Swamp Gum	Indigenous	103	1.4m	12	15	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay.	12.4	Yes	
128	1	Quercus robur	English Oak	Exotic Deciduous	54	1.4m	10	15	Semi-mature	Fair	Fair	High	>50 Yrs		6.5	Yes	
129	1	Quercus canariensis	Algerian Oak	Exotic Evergreen	46	1.4m	10	7	Semi-mature	Fair	Fair - Poor	Moderate	25_50 Yrs		5.5	Yes	
130	1	Quercus palustris	Pin Oak	Exotic Deciduous	44	1.4m	12	9	Semi-mature	Fair	Fair - Poor	Low	5_15 Yrs	Included Bark Fork.	5.3	Yes	
131	1	Eucalyptus goniocalyx	Long-leaved Box	Indigenous	68	1.4m	10	14	Maturing	Fair	Fair - Poor	Moderate	15_25 Yrs	Trunk Decay. Hollows.	8.2	Yes	
132	1	Eucalyptus obliqua	Messmate Stringybark	Indigenous	90	1.4m	9	9	Over Mature	Poor	Poor	Low	5_15 Yrs	Trunk Decay.	10.8	Yes	
133	Neighbour 's tree.	Eucalyptus obliqua	Messmate Stringybark	Indigenous	70	1.4m	9	15	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs	Dieback Crown. Neighbour's tree. 2/3 tree dead.	8.4	Yes	
134	Neighbour 's tree.	Eucalyptus obliqua	Messmate Stringybark	Indigenous	90	1.4m	15	20	Maturing	Fair	Fair - Poor	Moderate	15_25 Yrs	Neighbour's tree. Branch failures.	10.8	Yes	
135	Neighbour 's tree.	Eucalyptus obliqua	Messmate Stringybark	Indigenous	91	1.4m	9	14	Maturing	Fair	Poor	Low	5_15 Yrs	Trunk Decay. Neighbour's tree. Leaning burnt, decayed trunk.	10.9	Yes	
136	Roadside	Eucalyptus dives	Broad-leaved Peppermint	Indigenous	41,30,26, 32,30	1.4m	14	17	Maturing	Fair	Fair - Poor	Moderate	15_25 Yrs	Multi stemmed @ 0.5m. Erosion site.	8.6	Yes	
137	6	Eucalyptus ovata	Swamp Gum	Indigenous	172	@0.75m	13	20	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay. 2m Hollow cavity at base.	15.0	Yes	
138	6	Eucalyptus ovata	Swamp Gum	Indigenous	93	@1.0m	11	11	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Trunk Decay. Dieback. Lost main leader.	11.2	Yes	
139	6	Eucalyptus ovata	Swamp Gum	Indigenous	64	1.4m	10	13	Maturing	Fair	Poor	Low	15_25 Yrs	Trunk Decay. Hollow below main fork.	7.7	Yes	
140	7	Eucalyptus ovata	Swamp Gum	Indigenous	93	1.4m	12	15	Over Mature	Fair	Poor	Low	15_25 Yrs	Trunk Decay. Hollow cavity at main fork & limbs.	11.2	Yes	
141	7	Eucalyptus ovata	Swamp Gum	Indigenous	91	1.4m	11	13	Over Mature	Fair - Poor	Poor	Low	15_25 Yrs	Lost main leader. At 2 metres. Hollow trunk into base. .	10.9	Yes	

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142	5	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	30	1.4m	5_10	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		3.6	Yes	
143	5	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	39	1.4m	5_10	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.7	Yes	
144	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	45	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		5.4	Yes	
145	5	Corymbia maculata	Spotted Gum	Victorian Native	19	1.4m	5_10	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		2.3	Yes	
146	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	33	1.4m	10_15	10_15	Maturing	Fair - Poor	Poor	Low	5_15 Yrs	Trunk wounds	4	Yes	
147	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	33	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4	Yes	
148	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	52	1.4m	5_10	5_10	Maturing	Fair - Poor	Poor	Low	5_15 Yrs	Included bark fork	6.2	Yes	
149	5	Eucalyptus botryoides	Southern Mahogany	Victorian Native	47	1.4m	5_10	5_10	Maturing	Fair - Poor	Poor	Low	5_15 Yrs	Borer damage.	5.6	Yes	
150	5	Eucalyptus botryoides	Southern Mahogany	Victorian Native	55	1.4m	10_15	10_15	Maturing	Fair - Poor	Poor	Low	5_15 Yrs	Trunk wounds.	6.6	Yes	
151	5	Corymbia maculata	Spotted Gum	Victorian Native	18	1.4m	5_10	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		2.2	Yes	
152	5	Eucalyptus botryoides	Southern Mahogany	Victorian Native	57	1.4m	5_10	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		6.8	Yes	
153	5	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	25	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Poor	Low	5_15 Yrs	Congested unions.	3	Yes	
154	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	34	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Poor	Low	5_15 Yrs	Trunk wound at fork.	4.1	Yes	
155	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	33	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4	Yes	
156	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	30	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Fair - Poor	Low	5_15 Yrs		3.6	Yes	
157	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	43	1.4m	10_15	10_15	Maturing	Poor	Poor	None	< 5 Yrs	Split	5.2	Yes	
158	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	34	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.1	Yes	
159	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	33	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4	Yes	
160	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	46	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		5.5	Yes	
161	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	39	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.7	Yes	
162	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	48	1.4m	10_15	5_10	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Borer present.	5.8	Yes	
163	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	38	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.6	Yes	
164	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	44	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		5.3	Yes	
165	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	32	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		3.8	Yes	
166	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	48	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		5.8	Yes	
167	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	48	1.4m	10_15	10_15	Maturing	Fair - Poor	Poor	Low	5_15 Yrs	Lost main leader.	5.8	Yes	
168	5	Eucalyptus cladocalyx	Sugar Gum	Australian Native	33	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4	Yes	
169	5	Eucalyptus ovata	Swamp Gum	Victorian Native	40	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Poor	Low	5_15 Yrs	Lost main leader.	4.8	Yes	
170	5	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	60	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		7.2	Yes	

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171	5	Eucalyptus viminalis	Manna Gum	Victorian Native	60	1.4m	10_15	5_10	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Acute forks.	7.2	Yes	
172	5	Eucalyptus viminalis	Manna Gum	Victorian Native	59	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		7.1	Yes	
173	5	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	40	1.4m	5_10	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.8	Yes	
174	5	Eucalyptus botryoides	Southern Mahogany	Victorian Native	50	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		6	Yes	
175	5	Cupressus sempervirens	Italian Cypress	Exotic Conifer	25	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Fair - Poor	Low	15_25 Yrs	3 trees in area.	3	Yes	
176	5	Eucalyptus viminalis	Manna Gum	Victorian Native	48	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs	Dieback	5.8	Yes	
177	5	Corymbia maculata	Spotted Gum	Victorian Native	25	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		3	Yes	
178	5	Eucalyptus nicholii	Narrow-leaved Peppermint	Australian Native	35	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4.2	Yes	
179	5	Euc globules 'Compacta'	Dwarf Blue Gum	Australian Native	45	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs	Euc globules 'Compacta'	5.4	Yes	
180	5	Euc globules 'Compacta'	Dwarf Blue Gum	Australian Native	40	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs	Euc globules 'Compacta'.	4.8	Yes	
181	5	Eucalyptus gomphocephala	Tuart	Australian Native	39	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs		4.7	Yes	
182	5	Eucalyptus botryoides	Southern Mahogany	Victorian Native	22	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Fair - Poor	Low	15_25 Yrs		2.6	Yes	
183	5	Eucalyptus viminalis	Manna Gum	Victorian Native	45	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs		5.4	Yes	
184	5	Eucalyptus botryoides	Southern Mahogany	Victorian Native	34	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Fair - Poor	Low	15_25 Yrs		4.1	Yes	
185	8	Casuarina cunninghamiana	River She-oak	Australian Native	34	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.1	Yes	
186	8	Casuarina cunninghamiana	River She-oak	Australian Native	26	1.4m	5_10	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		3.1	Yes	
187	8	Eucalyptus nicholii	Narrow-leaved Peppermint	Australian Native	48	1.4m	5_10	5_10	Maturing	Fair - Poor	Poor	Low	5_15 Yrs	Included bark fork.	5.8	Yes	
188	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	34	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.1	Yes	
189	8	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	35	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		4.2	Yes	
190	8	Pinus radiata	Monterey Pine	Exotic Conifer	55	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		6.6	Yes	
191	8	Eucalyptus pulchella	White Peppermint	Australian Native	80	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs	Declining.	9.6	Yes	
192	1	Eucalyptus cladocalyx	Sugar Gum	Australian Native	40	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs		4.8	Yes	
193	1	Eucalyptus cladocalyx 'Nana'	Bushy Sugar Gum	Australian Native	33	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs		4	Yes	
194	1	Eucalyptus cladocalyx	Sugar Gum	Australian Native	33	1.4m	5_10	5_10	Semi-mature	Fair - Poor	Fair - Poor	Low	15_25 Yrs		4	Yes	
195	1	Eucalyptus cladocalyx	Sugar Gum	Australian Native	40	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs		4.8	Yes	
196	1	Eucalyptus cladocalyx	Sugar Gum	Australian Native	60	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs		7.2	Yes	
197	1	Pinus radiata	Monterey Pine	Exotic Conifer	55	1.4m	10_15	10_15	Maturing	Poor	Poor	None	< 5 Yrs		6.6	Yes	
198	1	Pinus radiata	Monterey Pine	Exotic Conifer	57	1.4m	10_15	10_15	Maturing	Fair - Poor	Poor	Low	< 5 yrs	Declining	6.8	Yes	
199	1	Pinus radiata	Monterey Pine	Exotic Conifer	83	1.4m	10_15	10_15	Maturing	Fair - Poor	Poor	Low	< 5 yrs	Trunk decay	10	Yes	

Tree No	GAA Property No	Species	**Common Name**	Origin	DBH (cm)	DBH Height (m)	Height (m)	Crown Width (m)	Life Stage	Health	Structure	Retention Value	ULE	Comments	TPZ (m radius)	Site Accessed	Recommended Work
200	1	Pinus radiata	Monterey Pine	Exotic Conifer	55	1.4m	10_15	10_15	Maturing	Poor	Poor	None	< 5 Yrs		6.6	Yes	
201	1	Pinus radiata	Monterey Pine	Exotic Conifer	70	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		8.4	Yes	
202	1	Pinus radiata	Monterey Pine	Exotic Conifer	55	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		6.6	Yes	
203	1	Pinus pinaster	Maritime Pine	Exotic Conifer	45	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		5.4	Yes	
204	1	Pinus pinaster	Maritime Pine	Exotic Conifer	37	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4.4	Yes	
205	1	Pinus pinaster	Maritime Pine	Exotic Conifer	49	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		5.9	Yes	
206	1	Cupressus macrocarpa	Monterey Cypress	Exotic Conifer	48	1.4m	10_15	10_15	Maturing	Poor	Poor	None	< 5 Yrs		5.8	Yes	
207	1	Pinus radiata	Monterey Pine	Exotic Conifer	40	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4.8	Yes	
208	1	Pinus radiata	Monterey Pine	Exotic Conifer	40	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4.8	Yes	
209	1	Eucalyptus globulus	Tasmanian Blue Gum	Victorian Native	75	1.4m	10_15	10_15	Maturing	Poor	Poor	None	< 5 Yrs		9	Yes	
210	1	Pinus radiata	Monterey Pine	Exotic Conifer	75	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		9	Yes	
211	1	Eucalyptus bicostata	Victorian Blue Gum	Victorian Native	70	1.4m	10_15	10_15	Maturing	Poor	Fair - Poor	Low	5_15 Yrs		8.4	Yes	
212	4	Eucalyptus viminalis	Manna Gum	Victorian Native	60	1.4m	10_15	8	Semi-mature	Fair	Poor	Low	5_15 yrs	Fungal Fruiting Body	7.2	Yes	
213	4	Ulmus sp.	Elm Tree	Exotic Deciduous	45	1.4m	5	5_10	Semi-mature	Fair	Poor	Low	5_15 Yrs		5.4	Yes	
214	4	Salix sp.	Willow	Exotic Deciduous	40	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4.8	Yes	
215	4	Pinus radiata	Monterey Pine	Exotic Conifer	35	1.4m	5_10	5_10	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4.2	Yes	
216	4	Schinus areira	Peppercorn Tree	Exotic Evergreen	50	1.4m	5_10	7	Maturing	Fair	Fair - Poor	Low	15_25 Yrs		6	Yes	
217	4	Schinus areira	Peppercorn Tree	Exotic Evergreen	50	1.4m	5_10	7	Semi-mature	Fair	Fair - Poor	Low	15_25 Yrs		6	Yes	
218	4	Eucalyptus melliodora	Yellow Box	Victorian Native	45	1.4m	5_10	6	Semi-mature	Fair	Poor	Low	5_15 Yrs	Lopped	5.4	Yes	
219	8	Eucalyptus camaldulensis	River Red Gum	Victorian Native	70	1.4m	10_15	11	Semi-mature	Fair	Poor	Low	5_15 Yrs	Trunk decay - fruiting bodies	8.4	Yes	
220	8	Eucalyptus botryoides	Southern Mahogany	Victorian Native	80	1.4m	15_20	17	Maturing	Fair	Poor	Low	5_15 Yrs	Trunk decay	9.6	Yes	
221	4	Eucalyptus sp.	Gum Tree	Victorian Native	45	1.4m	5_10	2	Semi-mature	Dead	Poor	None	< 5 Yrs		5.4	Yes	
222	1	Acacia mearnsii	Late Black Wattle	Victorian Native	40	1.4m	5_10	9	Semi-mature	Fair	Fair - Poor	Low	5_15 Yrs		4.8	Yes	
223	1	Pinus radiata	Monterey Pine	Exotic Conifer	70	1.4m	10_15	10	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		8.4	Yes	
224	1	Pinus radiata	Monterey Pine	Exotic Conifer	40	1.4m	5_10	9	Semi-mature	Fair	Fair - Poor	Low	5_15 Yrs		4.8	Yes	
225	1	Eucalyptus botryoides	Southern Mahogany	Victorian Native	45	1.4m	5_10	8	Semi-mature	Fair	Poor	Low	5_15 Yrs		5.4	Yes	
226	2	Corymbia citriodora	Lemon-scented Gum	Australian Native	20	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		2.4	No	
227	2	Corymbia citriodora	Lemon-scented Gum	Australian Native	20	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		2.4	No	
228	1	Callistemon viminalis	Weeping Bottlebrush	Australian Native	24	1.4m	3_5	6	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		2.9	Yes	

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Tree No	GAA Property No	Species	**Common Name**	Origin	DBH (cm)	DBH Height (m)	Height (m)	Crown Width (m)	Life Stage	Health	Structure	Retention Value	ULE	Comments	TPZ (m radius)	Site Accessed	Recommended Work
229	6	Cupressus macrocarpa	Monterey Cypress	Exotic Conifer	80	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		9.6	Yes	
230	6	Cupressus macrocarpa	Monterey Cypress	Exotic Conifer	125	1.4m	10_15	10_15	Over Mature	Fair - Poor	Fair - Poor	Low	5_15 Yrs		15	Yes	
231	2	Pinus radiata	Monterey Pine	Exotic Conifer	40	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	5_15 Yrs		4.8	No	
232	2	Eucalyptus cladocalyx	Sugar Gum	Australian Native	40	1.4m	10_15	10_15	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs	Lopped-power lines.	4.8	No	
233	2	Phoenix canariensis	Canary Island Date Palm	Exotic Palm	70	1.4m	10_15	5_10	Semi-mature	Fair	Fair	Moderate	15_25 Yrs		8.4	No	

Appendix 1B: Individual Tree assessment details: PSP 1059 - Beveridge North west

Refer to following 4 pages.

DBH = Diameter at Breast Height (measured in centimetres at 1.3m above ground unless otherwise stated).

H x W = Height x Width of crown (measured in metres).

TPZ = Tree Protection Zone (metre radius). Radius distances measured in metres from the centre of the trunk.
ULE = Useful Life Expectancy (Estimated)

For tree location and numbering refer to plans at Appendix 2. See Appendix 3 for tree descriptors.

Group No	GAA Property No	Predominant Species	Other Species 1	Other species 2	Origin	Average_ DBH	Estimated No. of Stems	Avg Height	Avg Width	Life Stage	Overall Health	Overall Structure	Retention Value	ULE	Comments	Site Accessed
Gp 1	1	Eucalyptus camaldulensis			Planted Victorian Native	15	35	5	4	Semi-mature	Fair	Fair	Moderate	>50 Yrs		Yes
Gp 2	1	Eucalyptus camaldulensis			Planted Victorian Native	15	40	5	4	Semi-mature	Fair	Fair	Moderate	>50 Yrs		Yes
Gp 3	1	Eucalyptus camaldulensis			Planted Victorian Native	15	60	5	4	Semi-mature	Fair	Fair	Moderate	>50 Yrs		Yes
Gp 4	1	Eucalyptus tereticornis	Eucalyptus globulus	Pinus radiata	Australian Native	35	50	9	7	Semi-mature	Fair	Fair - Poor	Moderate	25_50 Yrs		Yes
Gp 5	9	Eucalyptus globulus			Victorian Native	15	300	7	4	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 6	1	Dwarf Sugar Gum			Australian Native	30	20	10	9	Maturing	Fair	Fair	Moderate	15_25 Yrs		Yes
Gp 7	Roadside	Eucalyptus obliqua	Mixed Acacias	Eucalyptus cladocalyx	Indigenous	30	600	10	8	Semi-mature	Fair	Fair	High	25_50 Yrs	Naturally occurring indigenous roadside vegetation.	Yes
Gp 8	1	Eucalyptus spp.	Mixed Acacias		Australian Native	20	180	7	6	Semi-mature	Fair	Fair	Moderate	25_50 Yrs	Linear windrow planting inc. E polyanthemos, camaldulensis, ovata Allocasuarina verticillata.	Yes
Gp 9	1	Eucalyptus camaldulensis	Mixed Acacias.	Mixed natives.	Planted Victorian Native	20	70	12	5	Semi-mature	Fair	Fair	Moderate	25_50 Yrs	Multi-rowed wood lot.	Yes
Gp 10	5	Mixed Eucalypts.			Mixed Natives	30	44	9	7	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 11	8	Eucalyptus ovata	Eucalyptus camaldulensis		Planted Indigenous	33	68	9	7	Semi-mature	Fair - Poor	Fair - Poor	Low	15_25 Yrs	Areas of dieback and failures within group.	Yes
Gp 12	8	Eucalyptus cladocalyx	Melaleuca armillaris		Australian Native	33	100	9	9	Maturing	Fair	Fair - Poor	Low	15_25 Yrs	Branch failures & collapses.	Yes
Gp 13	8	Eucalyptus ovata	Eucalyptus cladocalyx 'Nana'		Mixed Natives	30	25	9	7	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Linear windrow.	Yes
Gp 14	8	Eucalyptus nicholii	Eucalyptus polyanthemos		Mixed Natives	38	55	10	9	Semi-mature	Fair	Fair	High	15_25 Yrs	Surrounding a rock pile. Dominant and co-dominant tree crowns.	Yes
Gp 15	8	Eucalyptus cladocalyx 'Nana'	Eucalyptus botryoides		Australian Native	40	35	10	10	Maturing	Fair - Poor	Fair - Poor	Low	15_25 Yrs	Interspersed with Melaleuca armillaris	Yes
Gp 16	8	Eucalyptus globulus	Eucalyptus bicostata		Victorian Native	38	30	11	8	Semi-mature	Fair	Fair - Poor	Low	15_25 Yrs	Dead Eucalypts & Acacias.	Yes
Gp 17	8	Eucalyptus botryoides	Eucalyptus globulus		Victorian Native	45	22	13	9	Semi-mature	Fair - Poor	Fair - Poor	Low	15_25 Yrs		Yes
Gp 18	8	Eucalyptus camaldulensis	Eucalyptus cladocalyx 'Nana'		Mixed Natives	30	27	10	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 19	8	Eucalyptus saligna	Eucalyptus cladocalyx 'Nana'		Australian Native	30	32	10	7	Semi-mature	Fair - Poor	Fair - Poor	Low	15_25 Yrs	Multi-row windrow group.	Yes
Gp 20	8	Mixed Eucalypt spp.			Mixed Natives	25	90	9	6	Semi-mature	Fair	Fair - Poor	Moderate	15_25 Yrs	Linear Windrow group with HV power lines to east.	Yes
Gp 21	8	Eucalyptus bicostata	Eucalyptus tereticornis		Mixed Natives	45	26	14	8	Semi-mature	Fair	Fair	Moderate	25_50 Yrs	Single linear windrow.	Yes
Gp 22	Roadside	Eucalyptus globulus ssp.			Victorian Native	35	36	11	12	Semi-mature	Good	Fair	Moderate	15_25 Yrs	Hume Highway plantation.	Yes
Gp 23	8	Eucalyptus bicostata			Victorian Native	44	21	16	9	Semi-mature	Poor	Fair - Poor	Low	5_15 Yrs	40% trees dead due to inundation.	Yes
Gp 24	1	Eucalyptus globulus 'Compacta'	Eucalyptus globulus		Australian Native	40	63	13	8	Maturing	Fair	Fair - Poor	Low	5_15 Yrs	Dieback in E globulus.	Yes
Gp 25	1	Cupressus macrocarpa			Exotic conifer	70	12	14	14	Over Mature	Poor	Poor	None	5_15 Yrs	Declining & limb failures.	Yes
Gp 26	1	Eucalyptus polyanthemos	Mixed Acacias	Mixed Eucalypts.	Mixed Natives	17	250	7	5	Semi-mature	Good	Fair	Moderate	25_50 Yrs	Multi-rowed wood lot.	Yes
Gp 27	1	Eucalyptus polyanthemos	Eucalyptus melliodora	Mixed natives.	Mixed Natives	15	100	6	5	Semi-mature	Good	Fair	Moderate	25_50 Yrs		Yes
Gp 28	1	Eucalyptus ovata	Mixed Victorian natives		Planted Indigenous	20	250	9	5	Semi-mature	Fair	Fair	Moderate	25_50 Yrs	Multi-rowed revegetation woodlot.	Yes
Gp 29	1	Eucalyptus ovata	Mixed Victorian Eucalypt ssp.	Mixed Acacias	Planted Indigenous	18	200	9	6	Semi-mature	Good	Fair	High	25_50 Yrs	Multi-rowed creek line revegetation woodlot.	Yes
Gp 30	1	Eucalyptus ovata	Eucalyptus camaldulensis	Mixed Victorian natives.	Planted Indigenous	18	250	8	6	Semi-mature	Good	Fair	High	25_50 Yrs	Multi-rowed creek line revegetation woodlot.	Yes
Gp 31	1	Mixed Eucalypt spp.	Acacia melanoxylon	Mixed natives.	Mixed Natives	14	280	7	5	Semi-mature	Fair	Fair	Moderate	25_50 Yrs	Multi-rowed creek line revegetation woodlot. Inc. Corymbia maculata, Euc occidentalis, E sideroxylon.	Yes
Gp 32	4	Corymbia maculata	Melaleuca armillaris	Eucalyptus leucoxylon	Mixed Natives	36	75	10	8	Semi-mature	Fair - Poor	Fair - Poor	Low	5_15 Yrs	Other than individual trees group is generally Low and under stored of Low rated Melaleuca armillaris.	Yes

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Group No	GAA Property No	Predominant Species	Other Species 1	Other species 2	Origin	Average_ DBH	Estimated No. of Stems	Avg Height	Avg Width	Life Stage	Overall Health	Overall Structure	Retention Value	ULE	Comments	Site Accessed
Gp 33	1	26 Pines	Low		Exotic conifer		26				Fair - Poor	Fair - Poor	Low			Yes
Gp 34	1	16 planted natives	Low		Mixed Natives		16				Fair - Poor	Fair - Poor	Low			Yes
Gp 35	1	Young planted shelterbelt of mixed natives	Low		Mixed Natives		100				Fair - Poor	Fair - Poor	Low			Yes
Gp 36	1	Young planted natives	Low		Mixed Natives		200				Fair - Poor	Fair - Poor	Low			Yes
Gp 37	1	Planted natives	Low		Mixed Natives		12				Fair - Poor	Fair - Poor	Low			Yes
Gp 38	1	3 Pines	Low		Exotic conifer		3				Fair - Poor	Fair - Poor	Low			Yes
Gp 39	1	Young planted natives	Low		Mixed Natives		500				Fair - Poor	Fair - Poor	Low			Yes
Gp 40	1	50 Tree Lucerne and 4 small eucalypts	Low		Weed species		54				Fair - Poor	Fair - Poor	Low			Yes
Gp 41	1	8 Pines	Low		Exotic conifer		8				Fair - Poor	Fair - Poor	Low			Yes
Gp 42	1	2 pines	Low		Exotic conifer		2				Fair - Poor	Fair - Poor	Low			Yes
Gp 43	1	Young planted natives	Low		Mixed Natives		250				Fair - Poor	Fair - Poor	Low			Yes
Gp 44	1	Young planted River Red Gum	Low		Planted Victorian Native		50				Fair - Poor	Fair - Poor	Low			Yes
Gp 45	4	25 Cupressus glabra	Low		Exotic conifer		25				Fair - Poor	Fair - Poor	Low			Yes
Gp 46	4	10 mixed conifers.	Low		Exotic conifer		10				Fair - Poor	Fair - Poor	Low			Yes
Gp 47	4	25 Planted natives	Low		Planted Victorian Native		25				Fair - Poor	Fair - Poor	Low			Yes
Gp 48	4	10 Cupressus macrocarpa	Low		Exotic conifer		10				Fair - Poor	Fair - Poor	Low			Yes
Gp 49	4	12 pines	Low		Exotic conifer		12				Fair - Poor	Fair - Poor	Low			Yes
Gp 50	4	15 Planted natives	Low		Mixed Natives		15				Fair - Poor	Fair - Poor	Low			Yes
Gp 51	4	45 Melaleuca armillaris	Low		Victorian Native		45				Fair - Poor	Fair - Poor	Low			Yes
Gp 52	4	16 Planted natives	Low		Mixed Natives		16				Fair - Poor	Fair - Poor	Low			Yes
Gp 53	4	Mixed spp. Including eucs, cypress and pines x13	Low		Exotic conifer		13				Fair - Poor	Fair - Poor	Low			Yes
Gp 54	4	17 Planted natives	Low		Mixed Natives		17				Fair - Poor	Fair - Poor	Low			Yes
Gp 55	4	10 planted natives	Low		Mixed Natives		10				Fair - Poor	Fair - Poor	Low			Yes
Gp 56	4	Sugar gums, Spotted Gums, Yellow Gums x 50	Low		Mixed Natives		50				Fair - Poor	Fair - Poor	Low			Yes
Gp 57	4	Various small trees and shrubs	Low		Garden trees/shrubs		12				Fair - Poor	Fair - Poor	Low			Yes
Gp 58	8	12 Monterey Cypress	Low		Exotic conifer		12				Fair - Poor	Fair - Poor	Low			Yes
Gp 59	8	20 Monterey Cypress	Low		Exotic conifer		20				Fair - Poor	Fair - Poor	Low			Yes
Gp 60	8	15 Melaleuca armillaris	Low		Victorian Native		15				Fair - Poor	Fair - Poor	Low			Yes
Gp 61	8	25 low rated trees and shrubs	Low		Garden trees/shrubs		25				Fair - Poor	Fair - Poor	Low			Yes
Gp 62	1	Semi-mature mixed Aust. Natives	Moderate		Australian Native		75			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 63	1	Semi-mature mixed Australian natives	Moderate		Australian Native		75			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 64	1	5 20dbh Acacia mearnsii	Low		Victorian Native		5				Fair - Poor	Fair - Poor	Low			Yes
Gp 65	1	20 Acacia mearnsii ~20dbh	Low		Victorian Native		20				Fair - Poor	Fair - Poor	Low			Yes

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Group No	GAA Property No	Predominant Species	Other Species 1	Other species 2	Origin	Average_ DBH	Estimated No. of Stems	Avg Height	Avg Width	Life Stage	Overall Health	Overall Structure	Retention Value	ULE	Comments	Site Accessed
Gp 66	1	Mixed Australian natives	Moderate		Australian Native		75			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 67	1	Acacia melanoxylon 15dbh	Moderate		Planted Indigenous		70			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 68	Roadside	Mixed roadside vegetation, mostly degraded. Black wood, Hedge Wattle, Sugar Gum, Late Black Wattle, Monterey Pine	Low		Mixed Natives		80				Fair - Poor	Fair - Poor	Low			Yes
Gp 69	1 & 4	39 Monterey Pine	Low		Exotic conifer		39				Fair - Poor	Fair - Poor	Low			Yes
Gp 70	1	Mixed Australian natives	Low		Mixed Natives		75				Fair - Poor	Fair - Poor	Low			Yes
Gp 71	1	Pinus radiata	Low		Exotic conifer		72				Fair - Poor	Fair - Poor	Low			Yes
Gp 72	1	Pinus radiata and 2 Yellow Gum at East end	Low		Exotic conifer		12				Fair - Poor	Fair - Poor	Low			Yes
Gp 73	1	6m Pinus radiata	Low		Exotic conifer		25				Fair - Poor	Fair - Poor	Low			Yes
Gp 74	1	Mixed Australian natives	Moderate		Mixed Natives		150			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 75	1	40 Pinus radiata	Low		Exotic conifer		40				Fair - Poor	Fair - Poor	Low			Yes
Gp 76	1	11 Cupressus macrocarpa	Low		Exotic conifer		11				Fair - Poor	Fair - Poor	Low			Yes
Gp 77	1	6 Sugar Gums	Low		Australian Native		6				Fair - Poor	Fair - Poor	Low			Yes
Gp 78	1	3 Quercus canariensis	Low		Exotic evergreen		3				Fair - Poor	Fair - Poor	Low			Yes
Gp 79	1	Mixed Australian natives	Moderate		Mixed Natives		75			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 80	Roadside	Mixed roadside vegetation, mostly degraded. Black wood, Hedge Wattle, Sugar Gum, Late Black Wattle, Monterey Pine	Low		Mixed Natives		80				Fair - Poor	Fair - Poor	Low			Yes
Gp 81	Roadside	Mixed roadside vegetation, mostly degraded. Black wood, Hedge Wattle, Sugar Gum, Late Black Wattle, Monterey Pine, Gorse.	Low		Mixed Natives		60				Fair - Poor	Fair - Poor	Low			Yes
Gp 82	Roadside	Mixed roadside vegetation, mostly Hedge Wattle, Sugar Gum, Monterey Pine	Low		Mixed Natives		50				Fair - Poor	Fair - Poor	Low			Yes
Gp 83	2	Leyland Cypress	Low		Exotic conifer		35				Fair - Poor	Fair - Poor	Low			No
Gp 84	2	Monterey Pine	Low		Exotic conifer		12				Fair - Poor	Fair - Poor	Low			No
Gp 85	2	Leyland Cypress	Low		Exotic conifer		25				Fair - Poor	Fair - Poor	Low			No
Gp 86	Roadside	Open spaced mixed native linear windrow inc E. goniocalyx, melliodora, camaldulensis, Acacias & Allocasuarina.	Low		Planted Indigenous		25				Fair - Poor	Fair - Poor	Low			Yes
Gp 87	2	Garden specimens.	Low		Garden trees/shrubs		13				Fair - Poor	Fair - Poor	Low			No
Gp 88	5	4 x Eucalyptus cosmophylla & 1 E macrandra	Moderate		Australian Native		5			Semi-mature	Fair	Fair	Moderate	15_25 Yrs		Yes
Gp 89	5	37 Monterey Pines & 4 Sugar gums	Low		Exotic conifer		37				Fair - Poor	Fair - Poor	Low			Yes

Prepared by Bruce Callander
Consultant arborist
Tree Logic Pty. Ltd.

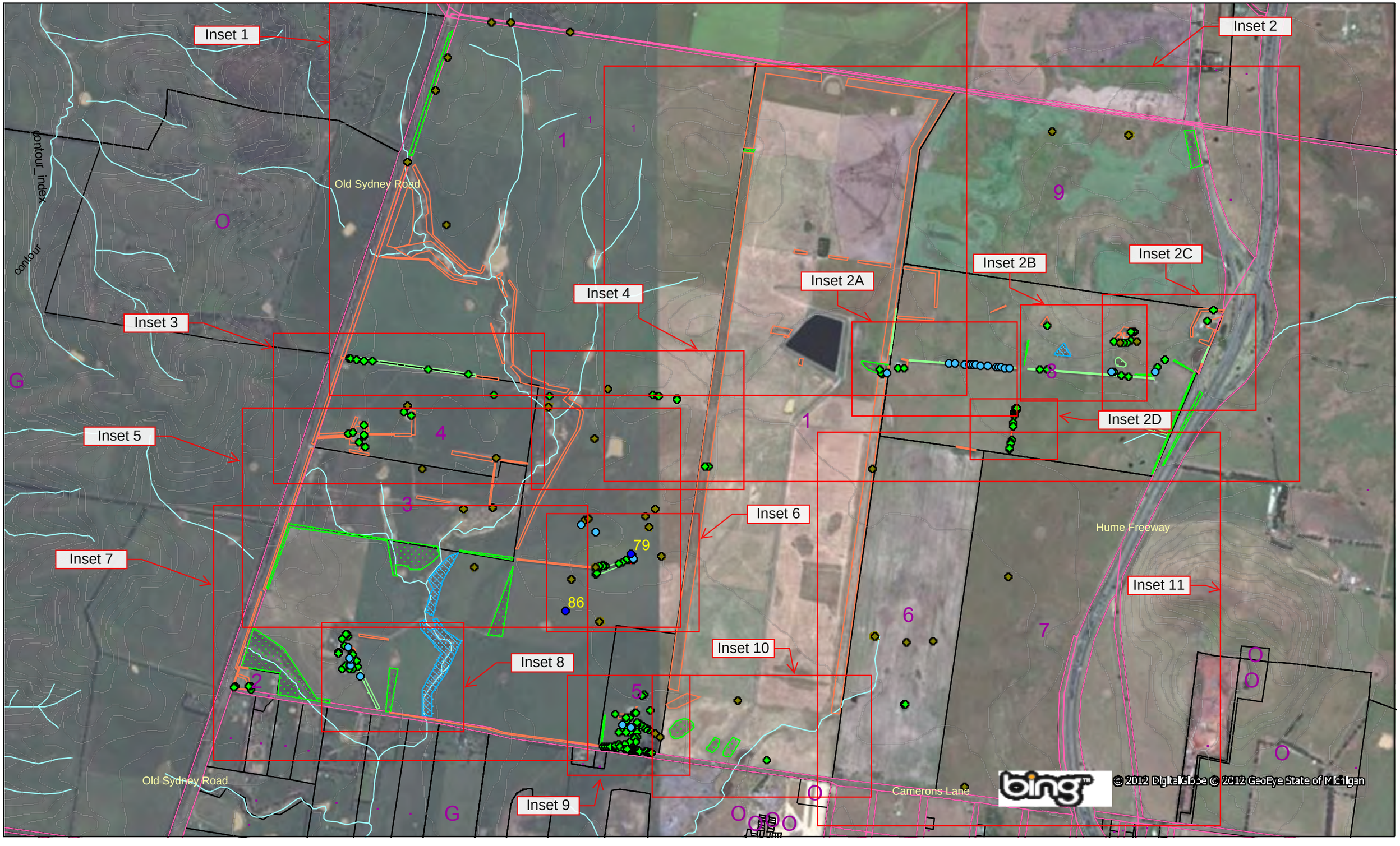
Group No	GAA Property No	Predominant Species	Other Species 1	Other species 2	Origin	Average_ DBH	Estimated No. of Stems	Avg Height	Avg Width	Life Stage	Overall Health	Overall Structure	Retention Value	ULE	Comments	Site Accessed
Gp 90	8	Mixed natives 5-6 metres.	Moderate		Mixed Natives		90			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 91	8	Mixed natives~ 4-5 metres.	Moderate		Mixed Natives		35			Semi-mature	Fair	Fair	Moderate	25_50 Yrs		Yes
Gp 92	8	Eucalyptus cladocalyx 'Nana'	Moderate		Australian Native		25			Semi-mature	Fair	Fair	Moderate	15_25 Yrs		Yes
Gp 93	8	12 over-mature Monterey Cypress trees; Collapsing.	Low		Exotic conifer		12				Fair - Poor	Fair - Poor	Low			Yes
Gp 94	8	Melaleuca armillaris - Collapsing.	None		Victorian Native		35				Poor	Poor	None			Yes
Gp 95	8	Mixed planted natives and Eucalyptus nicholii	Low		Australian Native		35				Fair - Poor	Fair - Poor	Low			Yes
Gp 96	8	Deciduous Poplars. Suckering and collapsing.	Low		Exotic deciduous		12				Fair - Poor	Fair - Poor	Low			Yes
Gp 97	8	Prickly Paperbarks.	Low		Australian Native		7				Fair - Poor	Fair - Poor	Low			Yes
Gp 98	8	Fraxinus angustifolia.	Low		Exotic deciduous		5				Fair - Poor	Fair - Poor	Low			Yes
Gp 99	8	Monterey Pines	Low		Exotic conifer		7				Fair - Poor	Fair - Poor	Low			Yes
Gp 100	8	Mixed garden specimens.	Low		Garden trees/shrubs		15				Fair - Poor	Fair - Poor	Low			Yes
Gp 101	8	Suckering Poplar trees.	None		Exotic deciduous		20				Fair - Poor	Poor	None			Yes
Gp 102	1	150 semi-mature Monterey Pines	Low		Exotic conifer		150				Fair - Poor	Fair - Poor	Low			Yes

Appendix 2: Tree numbers & locations: PSP 1059 - Beveridge North west

Refer to following 17 pages including 16 pages of details

Appendix 2. Beveridge Nth West_PSP 1059_Tree study area and insets.

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale Blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other



Appendix 2. Inset 1. North west corner - Parcel 1.

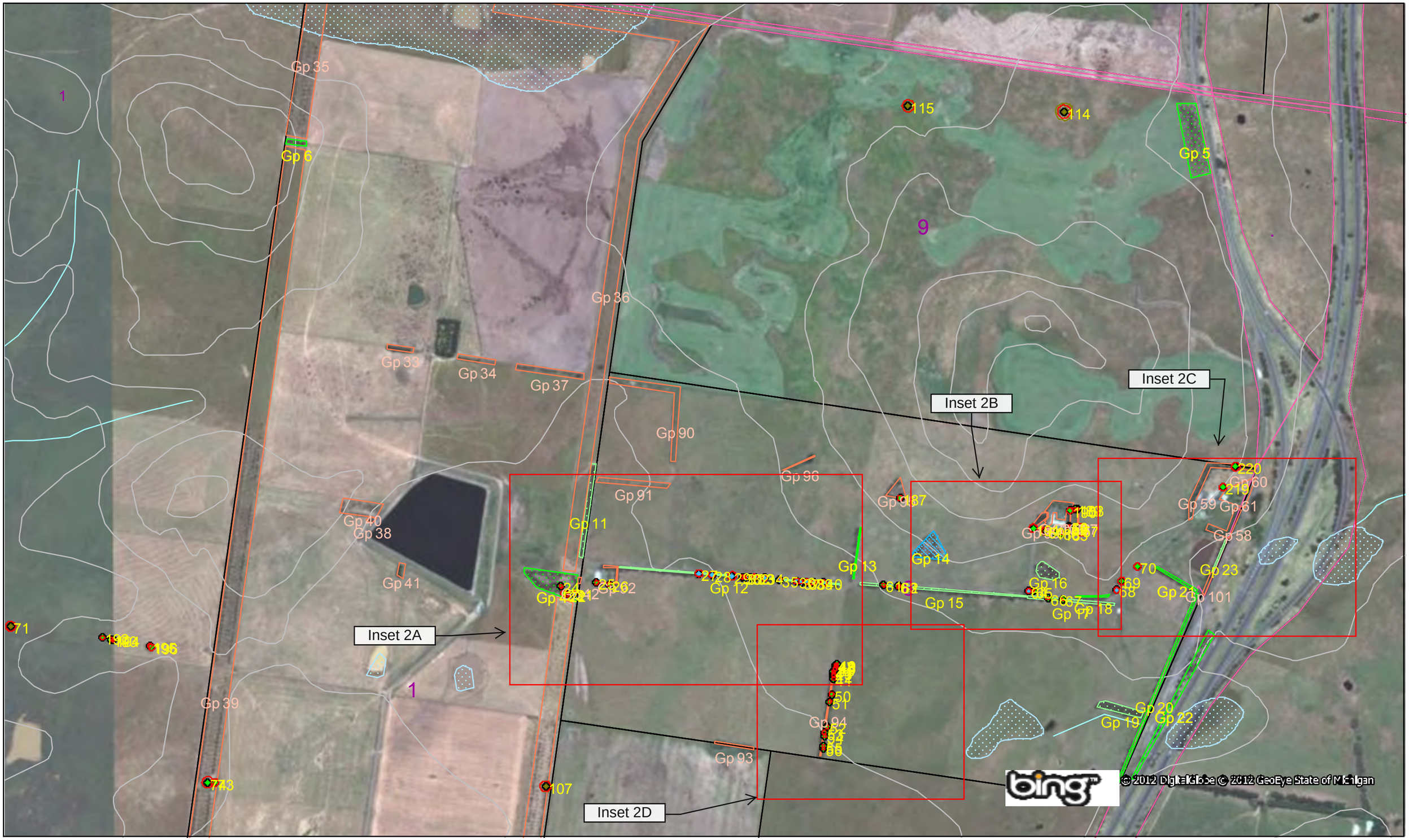
Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)

Appendix 2. Inset 2. North east corner - Parcels 8 and 9.

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)



Appendix 2. Inset 2A. Parcel 8 (West)

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

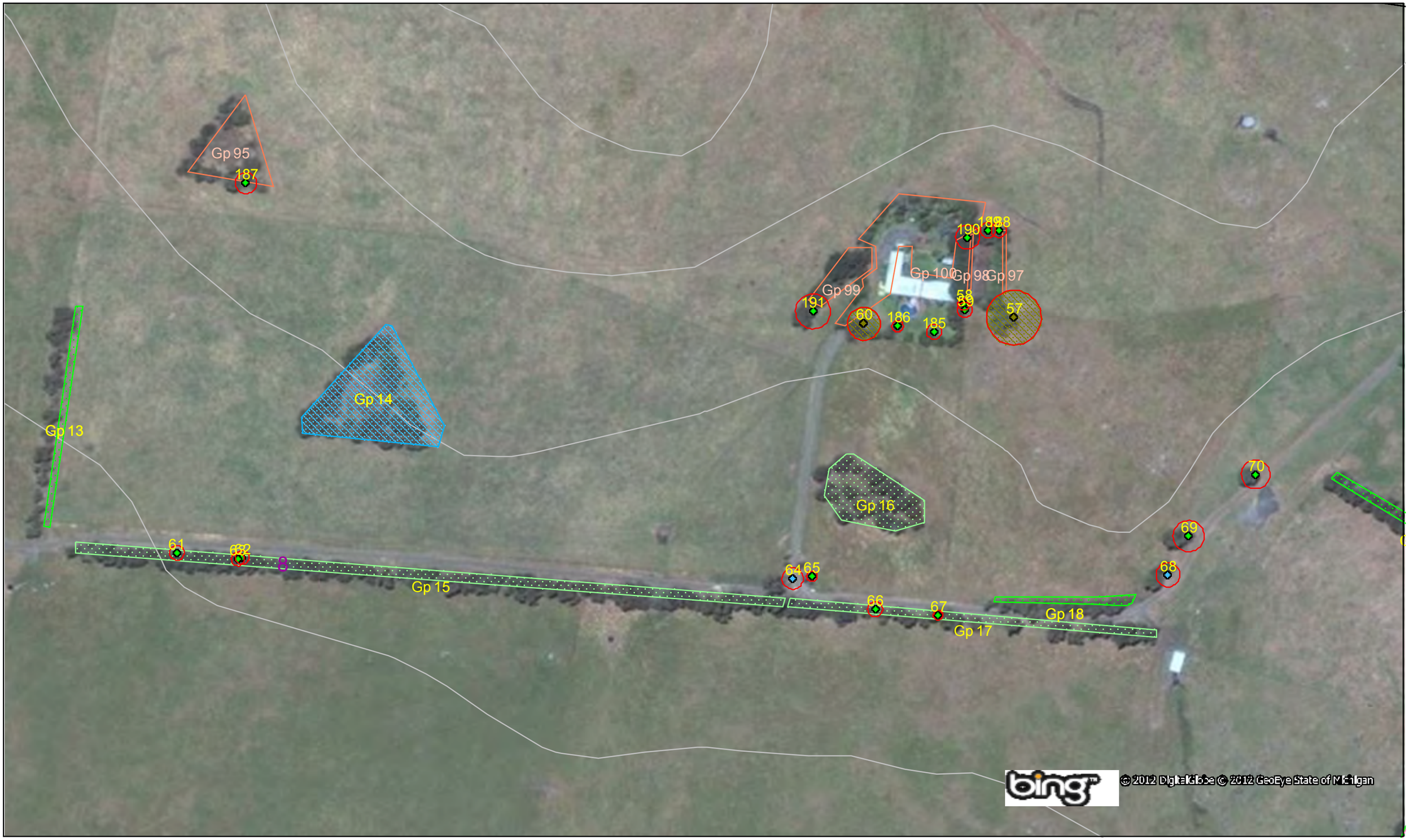
= Tree Protection Zone (TPZ)

Appendix 2. Inset 2B. Parcel 8 (Middle)

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others

Groups: Blue=High rated Green= Moderate rated Orange=Other

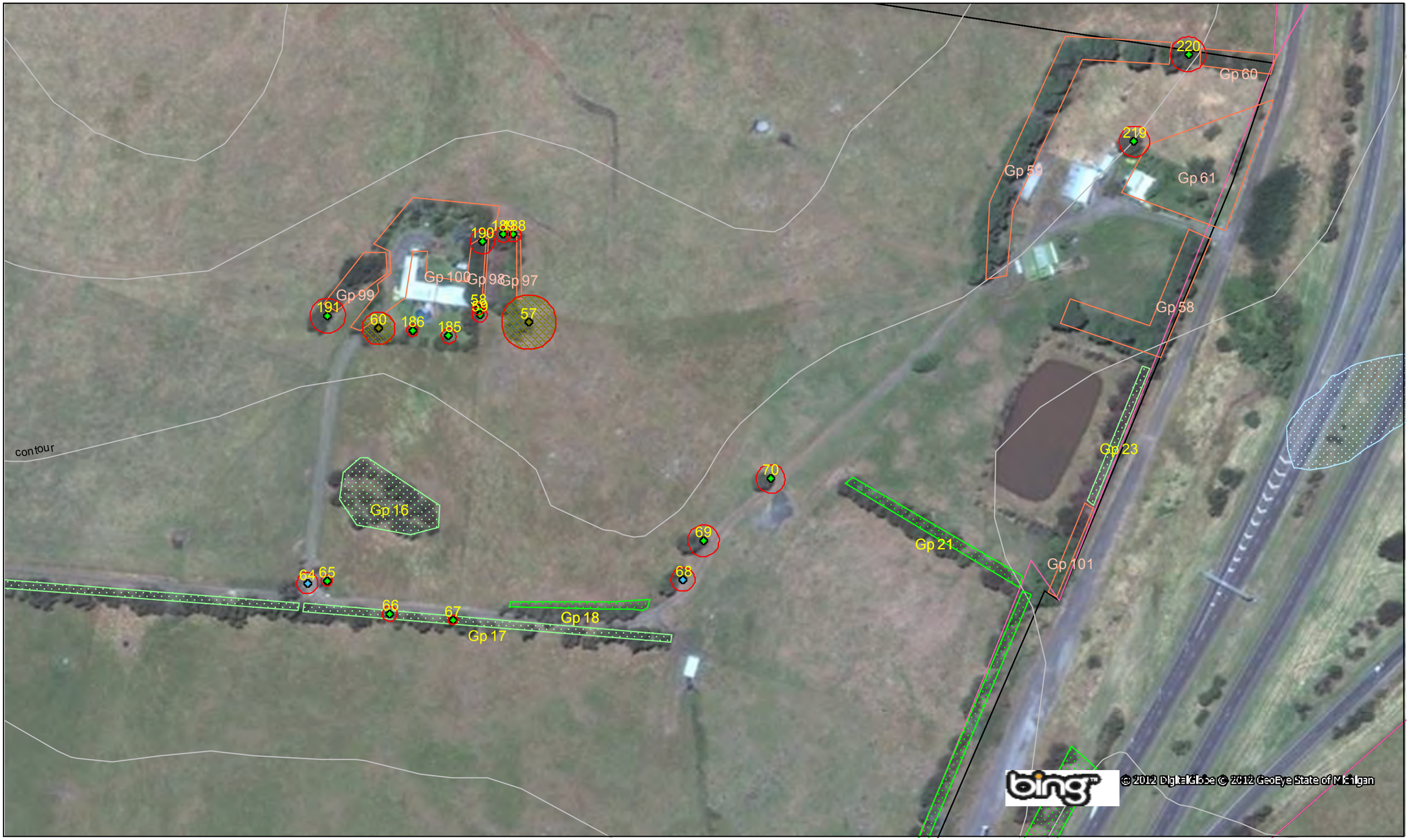
= Tree Protection Zone (TPZ)



Appendix 2. Inset 2C. Parcel 8 (East)

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)



Appendix 2. Inset 2D. Parcel 8 (Group 94)

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

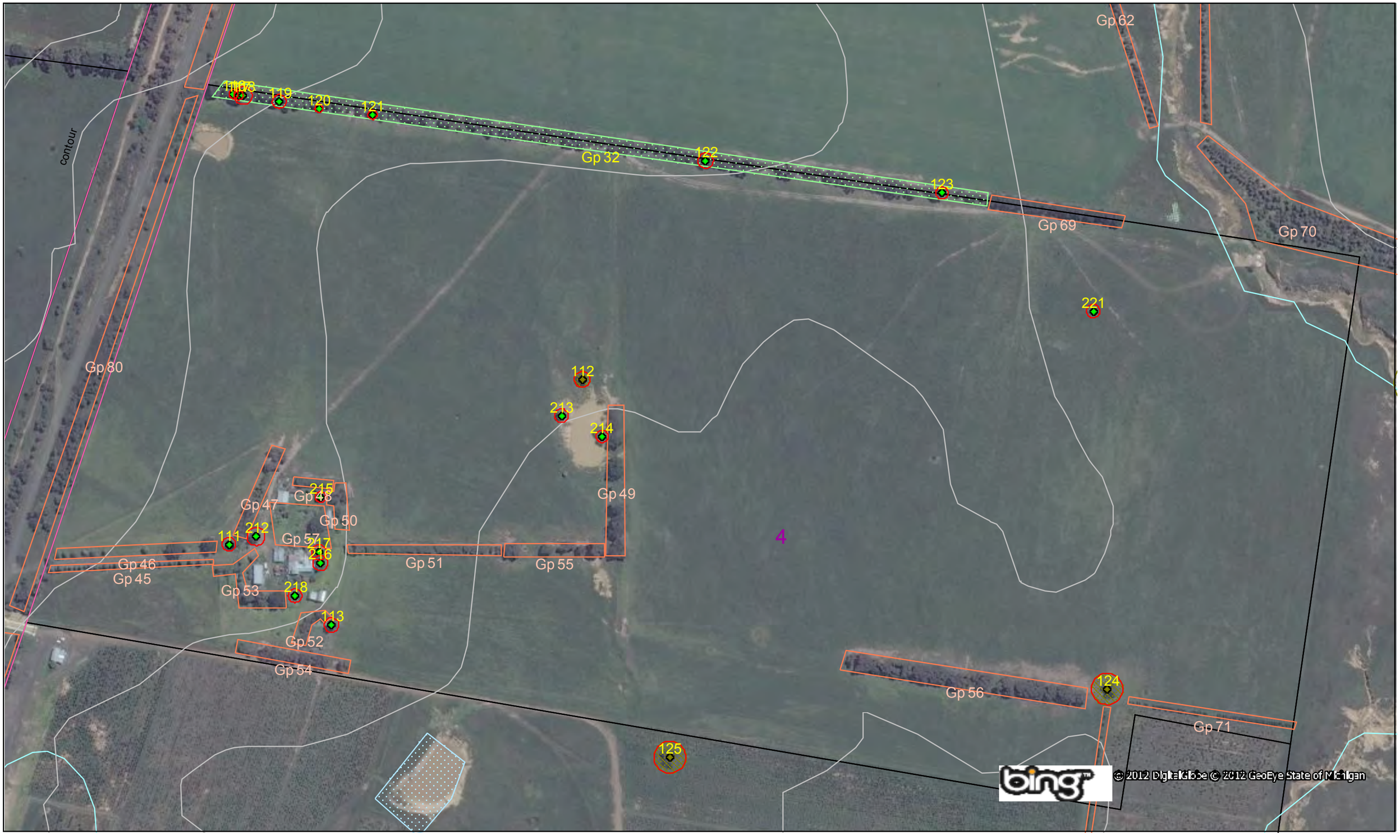
= Tree Protection Zone (TPZ)

Appendix 2. Inset 3. Parcel 4.

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others

Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)



Appendix 2. Inset 4. Parcel 1 (east of 4).

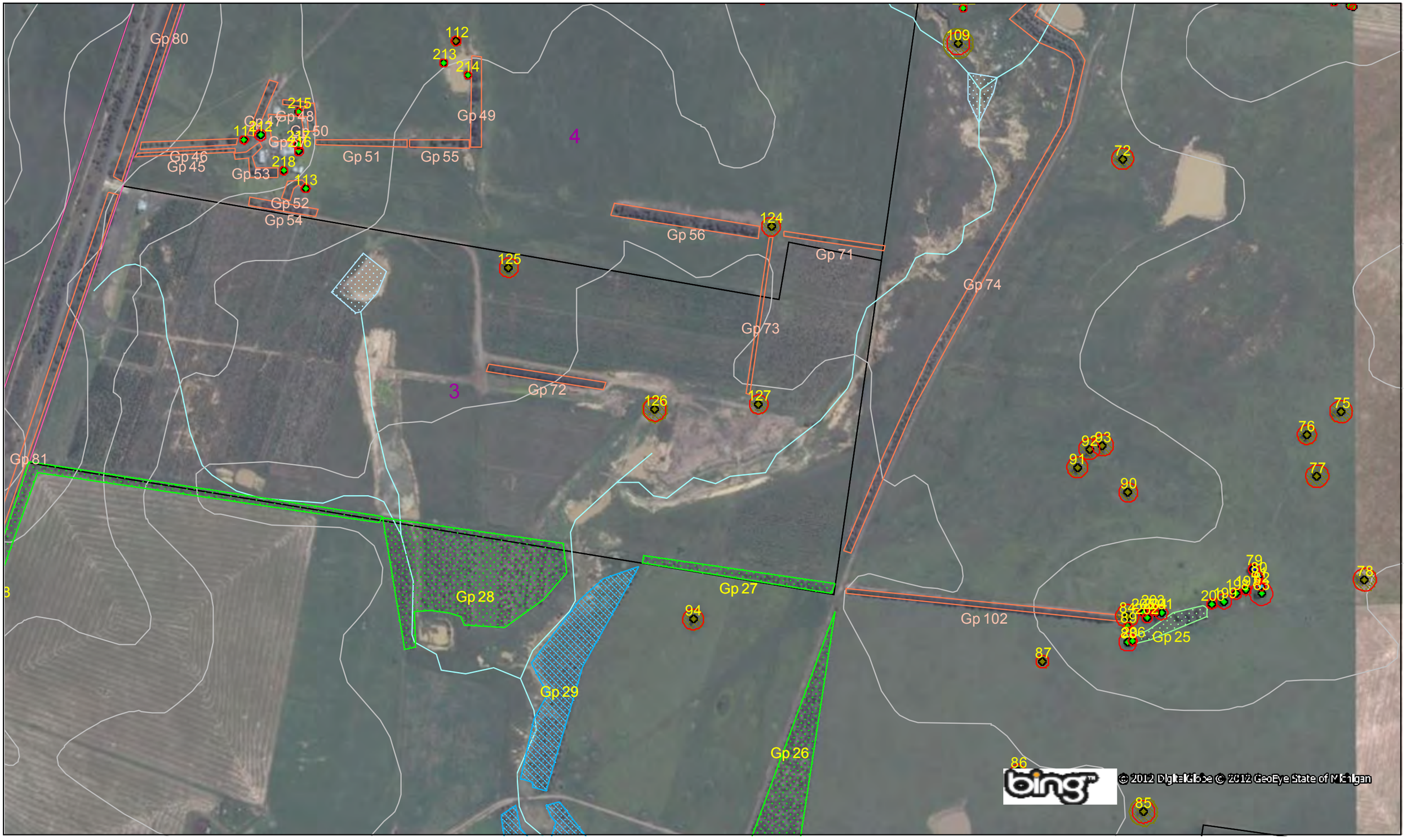
Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)

Appendix 2. Inset 5. Parcel 3.

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)



Appendix 2. Inset 6. Parcel 1 (east of 3).

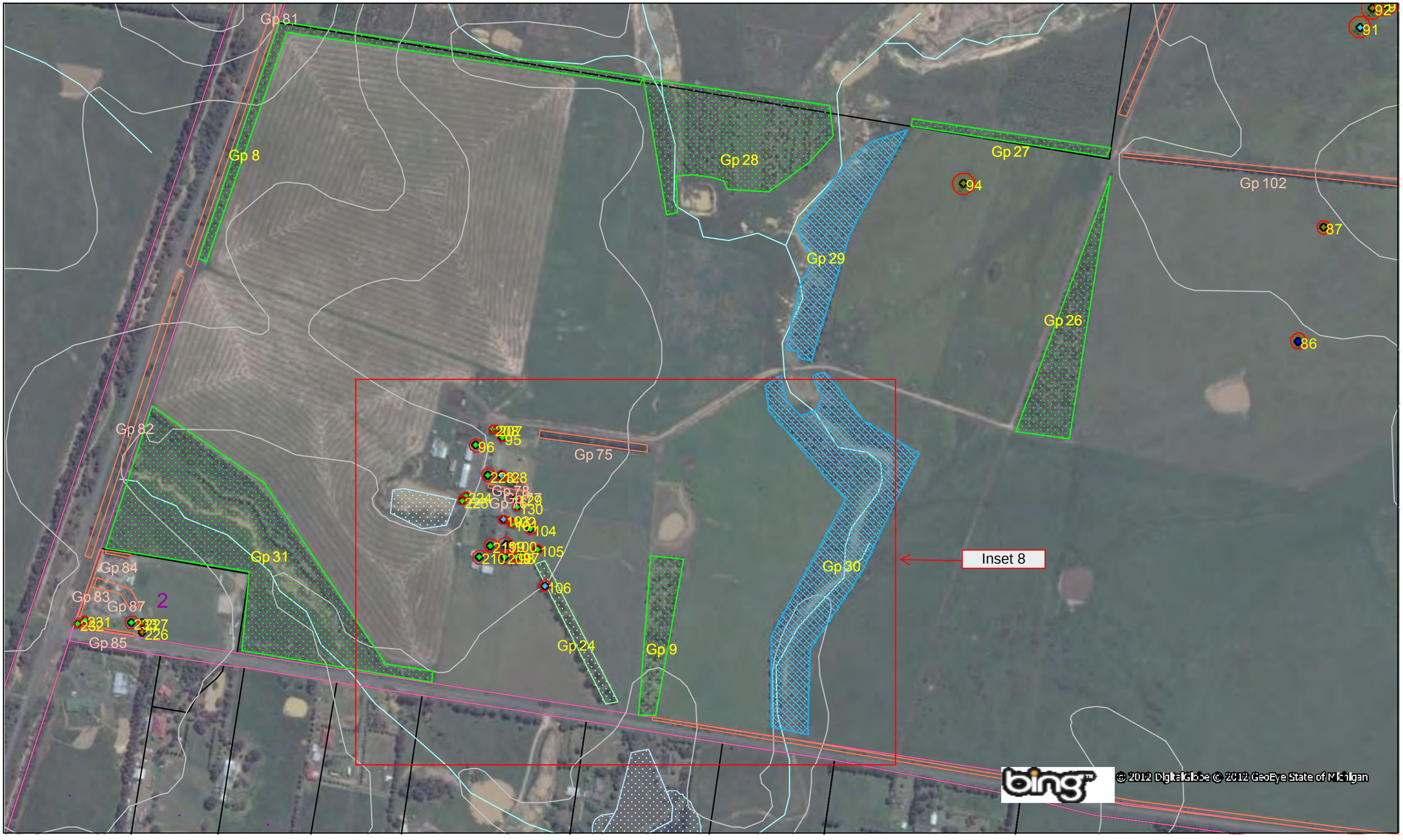
Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)

Appendix 2. Inset 7. South west corner. Parcels 1 and 2.

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)



Appendix 2. Inset 8. Parcel 1 House and driveway.

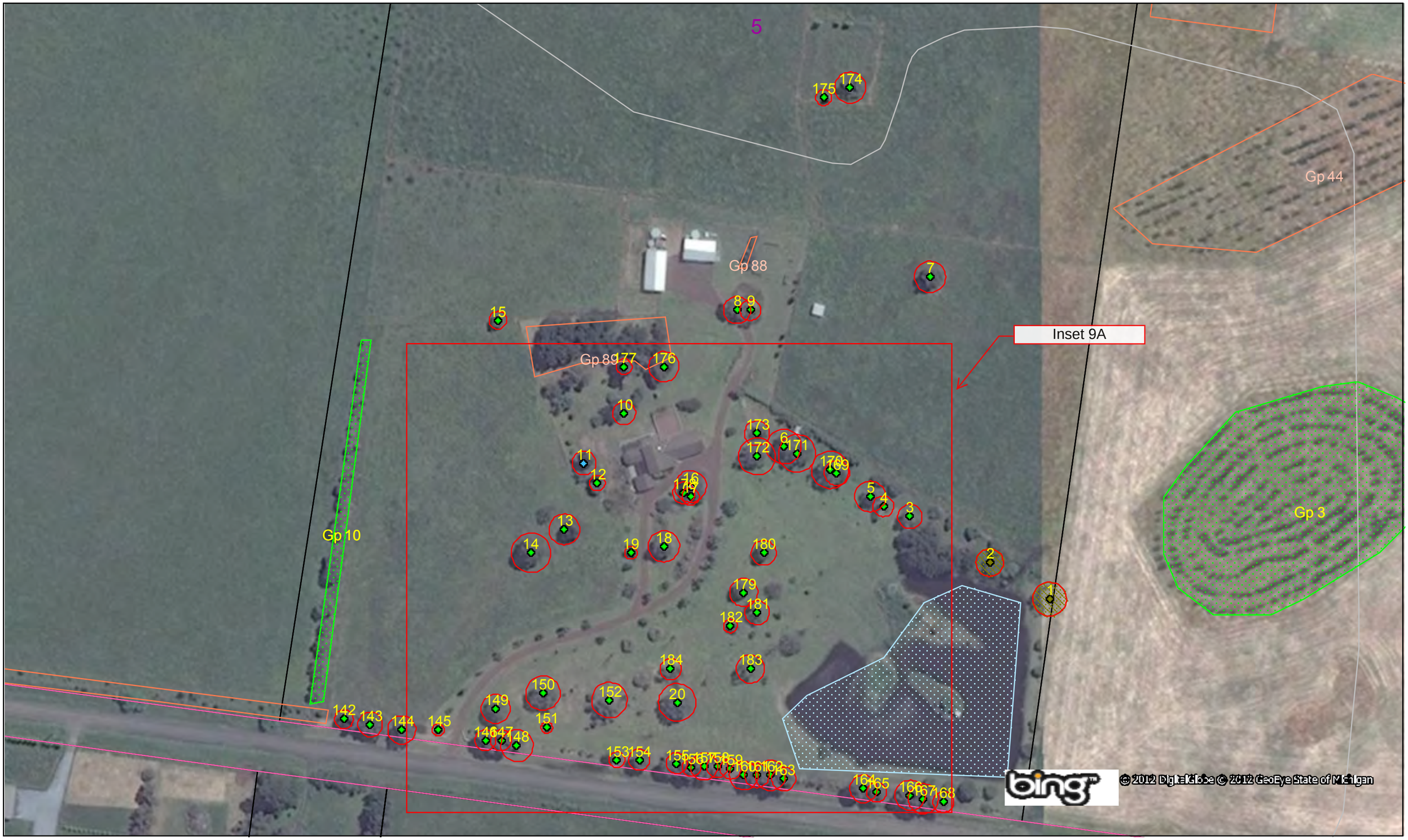
Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)

Appendix 2. Inset 9. Parcel 5.

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

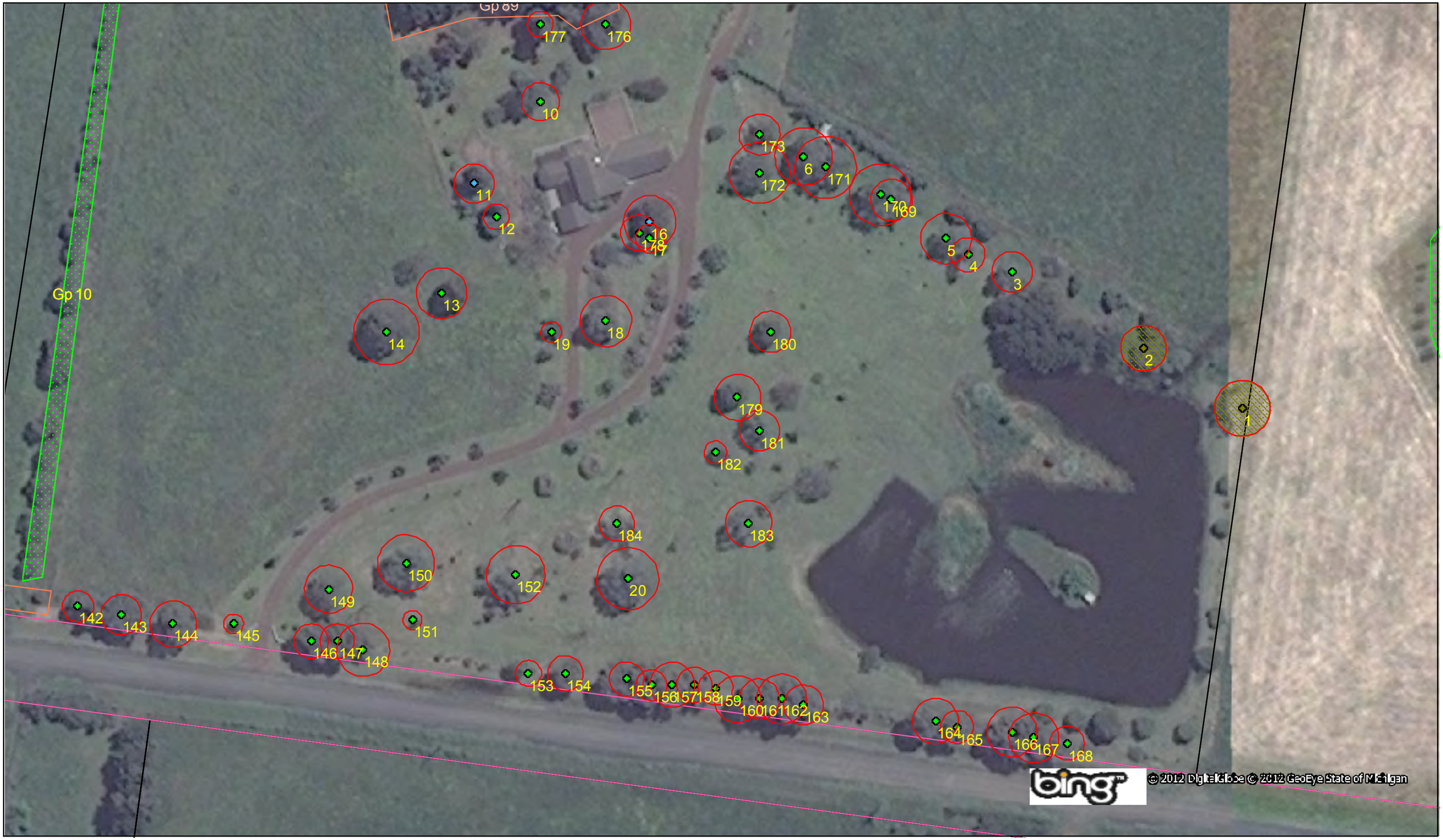
= Tree Protection Zone (TPZ)



Appendix 2. Inset 9A. Parcel 5 (detail).

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)



Appendix 2. Inset 10. Parcel 1 - Entrance to Yarra Valley Water site.

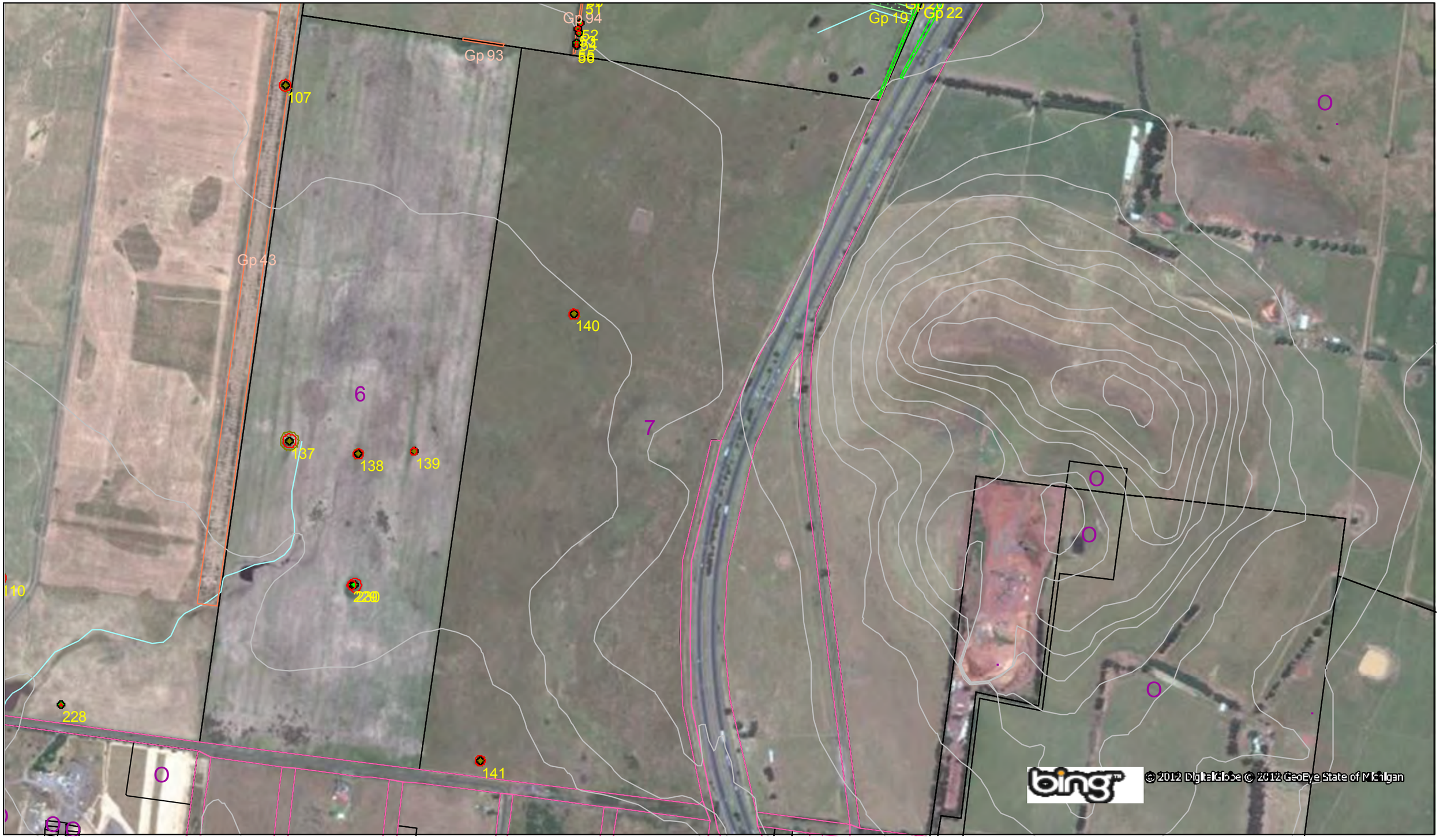
Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)

Appendix 2. Inset 11. Parcels 6 and 7.

Tree symbols: Tan=Indigenous. Blue= Very High rated. Pale blue=High rated. Green= Others
Groups: Blue=High rated Green= Moderate rated Orange=Other

= Tree Protection Zone (TPZ)



Appendix 3: Arboricultural Descriptors

1. Tree Condition

The assessment of tree condition evaluates factors of health and structure. The descriptors of health and structure attributed to a tree evaluate the individual specimen t o 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.

Diagram 1, provides an indicative distribution curve for tree condition to illustrate that within a normal tree population the majority of specimens are centrally located within the condition range (normal distribution curve). Furthermore, that those individual trees with an assessed condition approaching the outer ends of the spectrum occur less often.

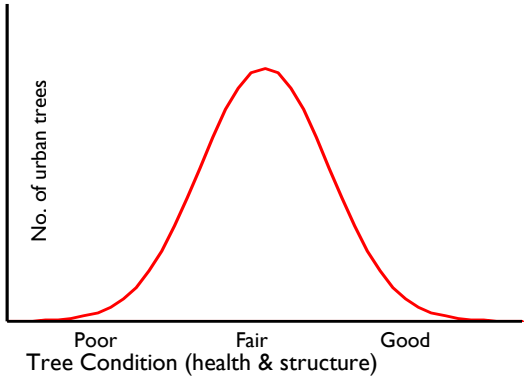


Diagram 1: Indicative normal distribution curve for tree condition

2. Tree Name

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

3. Tree Type

Describes the general geographic origin of the species and its type e.g. deciduous or evergreen.

Category	Description
Indigenous	Occurs naturally in the area or region of the subject site
Victorian native	Occurs naturally within some part of the State of Victoria (not exclusively) but is not indigenous
Australian native	Occurs naturally within Australia but is not a Victorian native or indigenous
Exotic deciduous	Occurs outside of Australia and typically sheds its leaves during winter
Exotic evergreen	Occurs outside of Australia and typically holds its leaves all year round
Exotic conifer	Occurs outside of Australia and is classified as a gymnosperm
Native conifer	Occurs naturally within Australia and is classified as a gymnosperm
Native Palm	Occurs naturally within Australia. Woody monocotyledon
Exotic Palm	Occurs outside of Australia. Woody monocotyledon

4. Height and Width

Indicates height and width of the individual tree; dimensions are expressed in metres. Crown heights are measured with a height meter 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 height meter 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. In some instances the crown width can be measured on the four cardinal direction points (North, South, East and West).

5. Diameter at Breast Height (DBH)

Indicates the trunk diameter (expressed in centimetres) of an individual tree measured at 1.4m above the existing ground level or where otherwise indicated, multiple leaders are measured individually. Plants with multiple leader habit may be measured at the base. The range of methods to suit particular trunk shapes, configurations and site conditions can be seen in Appendix A of Australian Standard AS 4970-2009 Protection of trees on development sites. Measurements taken with foresters or builders tape.

6. 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

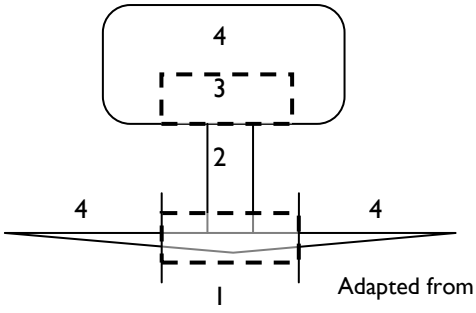
7. Structure

Assesses principal components of tree structure (Diagram 2).

Descriptor	Zone 1 - Root plate & lower stem	Zone 2 - Trunk	Zone 3 - Primary branch support	Zone 4 - Outer crown and roots
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
Fair	Minor damage or decay. Basal flare present.	Minor damage or decay	Typically formed, attached, spaced and tapered	Minor damage, disease or decay; minor branch end-weight or over-extension
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
Poor	Major damage, disease or decay; fungal fruiting bodies present. Excessive lean placing pressure on root plate	Major damage, disease or decay; exceeds recognised thresholds; fungal fruiting bodies present. Acute lean. Stump resprout	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
Very Poor	Excessive damage, disease or decay; unstable / loose in ground; altered exposure; failure probable	Excessive damage, disease or decay; cavities. Excessive lean. Stump resprout	Decayed, cavities or branch attachments with active split; failure imminent	Excessive damage, disease or decay; excessive branch end-weight or over-extension

Diagram 2: Tree structure zones

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



Adapted from Coder (1996)

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 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.

Structure ratings will also take into account general tree architecture which considers aspects of stem taper, live crown ratio, branch distribution or crown bias and position such as a tree being suppressed amongst more dominant trees.

The management of trees in the urban environment requires appropriate arboricultural input and consideration of risk. Risk potential will take into account the combination of likelihood of failure and impact, including the perceived importance of the target(s).

8. Life Stage

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

9. Arboricultural Rating

Relates to the combination of tree condition factors, including health and structure (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.

Category	Description
Very High	Tree of very high quality in good condition. Generally a prominent arboricultural feature. Tree is capable of tolerating changes in its environment if managed appropriately. These trees have the potential to be a long-term component of the landscape if managed appropriately. Retention of these trees is highly desirable.
High	Tree of high quality with generally sound structural condition and good health. Generally is or has the potential to become a prominent landscape feature. These trees have the potential to be a medium- to long-term component of the landscape if managed appropriately. Retention of these trees is highly desirable.
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. These trees have the potential to be a medium- to long-term component of the landscape if managed appropriately. Retention of these trees is generally desirable.
Low	Tree of low quality and/or little amenity value. Tree in poor health and/or with poor structure. 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 not be viable 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 with potential to spread into waterways or natural areas.

10. Tree significance

Trees have many values, not all of which are considered when an arboricultural assessment is undertaken. However, individual trees or tree group features may be considered important community resources because of unique or noteworthy characteristics or values other than their age, dimensions, health or structural condition. Recognition of one or more of the following criterion is designed to highlight other considerations that may influence the future management of such trees.

Significance	Description
Horticultural Value/ Rarity	Outstanding horticultural or genetic value; could be an important source of propagating stock, including specimens that are particularly resistant to disease or exposure. Any tree of a species or variety that is rare.
Historic, Aboriginal Cultural or Heritage Value	Tree could have value as a remnant of a particular important historical period or a remnant of a site or activity no longer in action. Tree has a recognised association with historic aboriginal activities, including scar trees. Tree commemorates a particular occasion, including plantings by notable people, or having associations with an important event in local history.
Ecological Value	Tree could have value as habitat for indigenous wildlife, including providing breeding, foraging or roosting habitat, or is a component of a wildlife reserve. Remnant Indigenous vegetation that contribute to biological diversity

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Pollard, A. H. (1974) Introductory statistics: a service course, Pergamon Press Australia, Australia.

Standards Australia (2009) Australian Standard AS 4970-2009 Protection of trees on development sites.

Appendix 4: Tree protection zones. Tree logic Pty. Ltd. © 2009

1.0 Introduction

In order to sustain trees on a development site consideration must be given to the establishment of tree protection zones.

The physical dimensions of tree protection zones can sometimes be difficult to define. The projection of a tree's crown can provide a guide but is by no means the definitive measure. The unpredictable nature of roots and their growth, differences between species and their tolerances, and observable and hidden changes to the trees growing environment, as a result of development, are variables that must be considered.

Most vigorous, broad canopied trees survive well if the area within the drip-line of the canopy is protected. Fine root density is usually greater beneath the canopy than beyond (Gilman, 1997). If few to no roots over 3cm in diameter are encountered and severed during excavation the tree will probably tolerate the impact and root loss. A healthy tree can sustain a loss of between 30% and 50% of absorbing roots (Harris, Clark, Matheny, 1999), however encroachment into the structural root system of a tree may be problematic.

The structural root system of a tree is responsible for ensuring the stability of the entire tree structure in the ground. A tree could not sustain loss of structural root system and be expected to survive let alone stand up to average annual wind loads upon the crown.

2.0 Allocation of tree protection zone (TPZ)

The method of allocating a TPZ to a particular tree will be influenced by site factors, the tree species, its age and developed form.

Once it has been established, through an arboricultural assessment, which trees and tree groups are to be retained, the next step will require careful management through the development process to minimise any impacts on the designated trees. The successful retention of trees on any particular site will require the commitment and understanding of all parties involved in the development process. The most important activity, after determining the trees that will be retained is the implementation of a TPZ.

The intention of tree protection zones is to:

- mitigate tree hazards;
- provide adequate root space to sustain the health and aesthetics of the tree into the future;
- minimise changes to the trees growing environment, which is particularly important for mature specimens;
- minimise physical damage to the root system, canopy and trunk; and
- define the physical alignment of the tree protection fencing

Tree protection

The most important consideration for the successful retention of trees is to allow appropriate above and below ground space for the trees to continue to grow. This requires the allocation of tree protection zones for retained trees.

The Australian Standard AS 4970-2009 Protection of trees on development sites has been used as a guide in the allocation of TPZs for the assessed trees. The TPZ for individual trees is calculated based on trunk (stem) diameter (DBH), measured at 1.4 metres up from ground level. The radius of the TPZ is calculated by multiplying the trees DBH by 12. The method provides a TPZ that addresses both the stability and growing requirements of a tree. TPZ distances are measured as a radius from the centre of the trunk at (or near) ground level. The minimum TPZ should be no less than 2m and the maximum no more than 15m radius. The TPZ of palms should be not less than 1.0m outside the crown projection.

Encroachment into the TPZ is permissible under certain circumstances though is dependent on both site conditions and tree characteristics. Minor encroachment, up to 10% of the TPZ, is generally permissible provided encroachment is compensated for by recruitment of an equal area contiguous with the TPZ. Examples are provided in Diagram 1. Encroachment greater than 10% is considered major encroachment under AS4970-2009 and is only permissible if it can be demonstrated that after such encroachment the tree would remain viable.

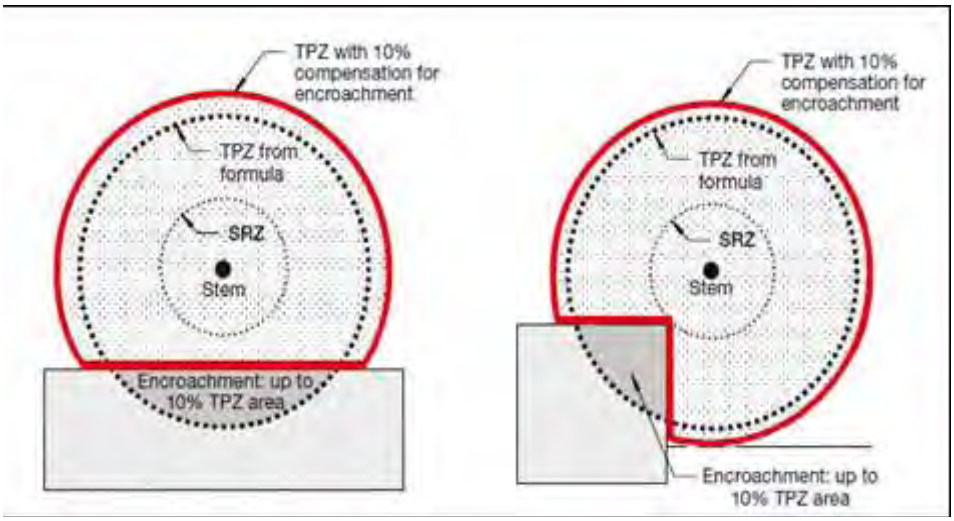

Diagram 1: Examples of minor encroachment into a TPZ. Extract from: AS4970-2009, Appendix D, p30 of 32

The 10% encroachment on one side equates to approximately ⅓ radial distance. Tree root growth is opportunistic and occurs where the essentials to life (primarily air and water) are present. Heterogeneous soil conditions, existing barriers, hard surfaces and buildings may have inhibited the development of a symmetrically radiating root system.

Existing infrastructure around some trees may be within the TPZ or root plate radius. The roots of some trees may have grown in response to the site conditions and therefore if existing hard surfaces and building alignments are utilised in new designs the impacts on the trees should be minimal. The most reliable way to estimate root disturbance is to find out where the roots are in relation to the demolition, excavation or construction works that will take place (Matheny & Clark, 1998). Exploratory excavation prior to commencement of construction can help establish the extent of the root system and where it may be appropriate to excavate or build.

The TPZ should also give consideration to the canopy and overall form of the tree. If the canopy requires severe pruning in order to accommodate a building and in the process the form of the tree is diminished it may be worthwhile considering altering the design or removing the tree.

General tree protection guidelines

The most important factors are:

- Prior to construction works the trees nominated for tree works should be pruned to remove larger dead wood. Pruning works may also identify other tree hazards that require remedial works.
- Installation of tree protection fencing. Once the tree protection zones have been determined the next step is to mulch the zone with woodchip and erect tree protection fencing. This must be completed prior to any materials being brought on-site, erection of temporary site facilities or demolition/earth works. The protection fencing must be sturdy and withstand winds and construction impacts. The protection fence should only be moved with approval of the site supervisor. Other root zone protection methods can be incorporated if the TPZ area needs to be traversed.
- Appropriate signage is to be fixed to the fencing to alert people as to importance of the tree protection zone.
- The importance of tree preservation must be communicated to all relevant parties involved with the site.
- Inspection of trees during excavation works.

Construction Guidelines

The following are guidelines that must be implemented to minimise the impact of the proposed construction works on the retained trees.

- The Tree Protection Zone (TPZ) is fenced and clearly marked at all times. The actual fence specifications should be a minimum of 1.2 - 1.5 metres of chain mesh or like fence with 1.8 meter posts (e.g. treated pine or star pickets) or like support every 3-4 metres and a top line of high visibility plastic hazard tape. The posts should be strong enough to sustain knocks from on site excavation equipment. This fence will deter the placement of building materials, entry of heavy equipment and vehicles and also the entry of workers and/or the public into the TPZ. Note: There are many different variations on the construction type and material used for TPZ fences, suffice to say that the fence should satisfy the responsible authority.
- Contractors and site workers should receive written and verbal instruction as to the importance of tree protection and preservation within the site. Successful tree preservation occurs when there is a commitment from all relevant parties involved in designing, constructing and managing a development project. Members of the project team need to interact with each other to minimise the impacts to the trees, either through design decisions or construction practices. The importance of tree preservation must be communicated to all relevant parties involved with the site.
- The consultant arborist is on-site to supervise excavation works around the existing trees where the TPZ will be encroached.
- A layer of organic mulch (woodchips) to a depth of no more than 100mm should be placed over the root systems within the TPZ of trees, which are to be retained so as to assist with moisture retention and to reduce the impact of compaction.
- No persons, vehicles or machinery to enter the TPZ without the consent of the consulting arborist or site manager.
- Where machinery is required to operate inside the TPZ it must be a small skid drive machine (i.e Dingo or similar) operating only forwards and backwards in a radial direction facing the tree trunk and not altering direction whilst inside the TPZ to avoid damaging, compacting or scuffing the roots.
- Any underground service installations within the allocated TPZ should be bored and utility authorities should common trench where possible.
- No fuel, oil dumps or chemicals shall be allowed in or stored on the TPZ and the servicing and re-fuelling of equipment and vehicles should be carried out away from the root zones.
- No storage of material, equipment or temporary building should take place over the root zone of any tree.
- Nothing whatsoever should be attached to any tree including temporary services wires, nails, screws or any other fixing device.
- Supplementary watering should be provided to all trees through any dry periods during and after the construction process. Proper watering is the most important maintenance task in terms of successfully retaining the designated trees. The areas under the canopy drip lines should be mulched with woodchip to a depth of no more than 100mm. The mulch will help maintain soil moisture levels. Testing with a soil probe in a number of locations around the tree will help ascertain soil moisture levels and requirements to irrigate. Water needs to be applied slowly to avoid runoff. A daily watering with 5 litres of water for every 30 mm of trunk calliper may provide the most even soil moisture level for roots (Watson & Himelick, 1997), however light frequent irrigations should be avoided. Irrigation should wet the entire root zone and be allowed to dry out prior to another application. Watering should continue from October until April.

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