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# ARBORICULTURAL ASSESSMENT & REPORT

## Kongwak Cheese & Butter Factory, Kongwak

### ADVERTISED PLAN

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## Arboricultural Assessment & Report

### Kongwak Cheese & Butter Factory, Kongwak

## Introduction

Glenn Waters has been engaged to undertake an inspection and report for the subject site and road reserve trees at Kongwak Cheese & Butter Factory, Kongwak.

This report is considered to be a 'Preliminary Tree Assessment' under the Australian Standard AS 4970-2009 *Protection of trees on development sites* and the purpose of this assessment is to provide quantitative and qualitative information on the trees and is the basis for deciding which trees are suitable for retention.

This report will provide comment on the individual site and road reserve trees in question and provide advice regarding the species, condition and suitability for retention of the existing site trees and also provide advice regarding the future management of the trees.

## Objectives

- To inspect the site and existing trees located within site at Kongwak Cheese & Butter Factory, Kongwak including any nearby road reserve trees that may be impacted by the proposed development of the subject site.
- To collect data on the individual site and road reserve trees and provide a tree number plan that corresponds to the report tree data.
- To provide an arboricultural report that provides advice and solutions for the future management of the site and road reserve trees (as required).

## Method

- Trees or shrubs under 3.0 metres in height were not assessed as they do not meet the criteria for a 'tree' under the Australian Standard AS 4970-2009 *Protection of trees on development sites*.
- No aerial climbing assessment was done. No samples of tree or site soil were taken and no diagnostic testing was undertaken as part of this assessment.
- The diameter at breast height (DBH) of trees was measured using a diameter tape at 1.4m above ground level in accordance with AS-4970.
- Heights and spreads of canopies were measured using a laser height meter.
- Where direct access to the trees was not possible (eg: neighbouring property trees) DBH, heights and spreads have been estimated.
- Where leaves, buds and fruit of a tree are inaccessible, botanical identification is as accurate as is possible.

## Observations

The site actually comprises several residential and rural properties and includes the old Kongwak Cheese & Butter Factory, Kongwak and the site inspection and assessment captured data on ninety-six (96) individual trees (or tree groups) including thirty-eight (38) road reserve trees.

### **1492 Korumburra-Wonthaggi Road:**

This residential site contains 16 trees with the majority being very poor garden specimens having little or no arboricultural/retention value.

It is only trees #15, Tulip Tree and #17, English Oak, that have any real value.

### **Kongwak Cheese & Butter Factory:**

The trees situated within this site are typically young and semi-mature Swamp Gums that are located along and down the bank of the creek area.

Trees #18, #129 and #20 are much larger specimens but are unfortunately in very poor condition and have only been rated as having 'Low' arboricultural/retention value.

### **Road Reserve Trees:**

The trees sited along Korumburra-Wonthaggi Road are a mix of the very old large and mature Avenue of Honour trees and younger trees of more recent plantings.

Several of the older Avenue of Honour trees have significant value and are some of the largest specimens of their species in Victoria. This includes the English Oak (#63), the Honey Locust (#51 and the Sawtooth Oaks (#73, #75 & #76)

## Discussion

### **General Tree Retention Discussion:**

The Australian Standard AS 4970-2009 Protection of trees on development sites has been used to calculate the TPZ for the neighbouring property and street trees.

The TPZ is calculated based on trunk (stem) diameter (DBH), measured at approximately 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.

With a site such as this, it is important to understand that tree root growth is opportunistic and occurs where the essentials to life (primarily air and water) are present. Heterogeneous soil conditions, existing barriers, hard paved surfaces, roads and buildings may have inhibited the development of a symmetrically radiating root system and this may impact on the size and shape of a TPZ and therefore 'normal' tree protection zone calculations may need to be modified to allow for such anomalies.

The Australian Standard AS 4970-2009 Protection of trees on development sites identifies this as *“The presence of existing or past structures or obstacles affecting root growth”* and it is areas of TPZ that are currently covered by hard surfaces or buildings where tree root growth is unable to occur. Such areas should not be included in the TPZ area and are not considered to be a current encroachment.

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.

The Structural Root Zone (SRZ) is the area required for tree stability. A larger area is required to maintain a viable tree. The SRZ formula does not apply to palms and other monocots, cycads and tree ferns.

The SRZ only needs to be calculated when major encroachment into a TPZ is proposed.

- Appendix 1 lists the standard tree protection works that should be considered as part of the management of trees to be retained during development and these works should be seen as a minimum standard to apply.
- Appendix 2 contains the full detailed listing of all assessed trees.
- Appendix 3 contains the marked up survey plans with all assessed trees numbered as per the tree data spreadsheet.

Glenn Waters

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**GARDEN TREES AT 1492 KORUMBURRA RD**



**TYPICAL ROAD RESERVE TREES**



**TREES #50 & #51**



**ROAD RESERVE TREES**



**ROAD RESERVE TREES**



**TREE #58**





**TREES ACROSS THE CREEK #92-#96**



**TREES #23 - #27**



**TREES #18, #19 & #20**



**VIEW OF THE CREEKSIDE TREES**



**TREE #86**



## Appendix 1: Tree Protection During Development

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. This fence should 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. Australian Standard AS 4687 - 2007 *Temporary fencing and hoardings*, specifies appropriate fencing requirements. Existing perimeter fencing can be incorporated into the protective fencing. Shade cloth should be attached to reduce the movement of dust and other particulates into the TPZ. Signs identifying the TPZ are to be placed on the fencing.
- If the area within the TPZ is to be accessed during the construction phase then the area will need ground protection. Measures may include a permeable membrane, such as a geotextile, to cover the TPZ area beneath a 100 mm layer of crushed rock below rumble boards.
- 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.
- The Project Arborist is on-site to supervise excavation works around the existing trees where the TPZ will be encroached.
- There is no immediate requirement for mulching within the TPZ. There is benefit to maintaining existing site conditions within the TPZ and is more analogous to proposed completion conditions. Monitoring of the trees in-line with prevailing weather conditions will indicate if mulching will be required. The same approach is to be used in providing supplemental irrigation.
- No persons, vehicles or machinery to enter the TPZ without the consent of the consulting arborist or site manager.
- 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 refuelling 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 the tree. Nothing whatsoever should be attached to the tree including temporary services wires, nails, screws or any other fixing device.
- Any pruning that is required must be carried out by trained and competent arborist who has a thorough knowledge of tree physiology and pruning methods and carry out pruning to the Australian Standard – AS 4373 – 2007 *Pruning of Amenity Trees*.
- All excavation within the Tree Protection Zone must be carried out by hand digging or with the use of 'NDD-Excavation' techniques and only when supervised by the Project Arborist. Where the Project Arborist identifies roots to be pruned within the TPZ, they should be pruned with a final cut to undamaged wood. Pruning cuts should be made with sharp tools such as secateurs, pruners, handsaws or chainsaws. It is not acceptable for roots within the TPZ to be 'pruned' with machinery such as backhoes or excavators.

No	Species	Common Name	Dbh	btd	H x S	Health	Structure	Age	Arb Value	TPZ	SRZ	Origin	Comments
1	Lagerstroemia indica	Crepe Myrtle	multi	15	5 x 6	Fair-Poor	Very Poor	Semi-mature	None			Exotic Deciduous	road reserve tree
2	Syzygium paniculata	Brush Cherry	multi	50	6 x 6	Fair	Very Poor	Young	None			Aust. Native	shoots off old stump
3	Leptospermum petersonii	Lemon Scented Tea-tree	multi	40	5 x 5	Fair-Poor	Very Poor	Semi-mature	None			Aust. Native	2 trees
4	Pittosporum eugenioides 'Variegatum'	Silver Tarata	multi	35	6 x 6	Fair	Very Poor	Semi-mature	Low		2.1m	Exotic Evergreen	
5	Leptospermum petersonii	Lemon Scented Tea-tree	multi	28	4 x 5	Fair-Poor	Very Poor	Semi-mature	None			Aust. Native	
6	Photinia serratifolia	Chinese Hawthorn	multi	25	4 x 4	Fair	Very Poor	Semi-mature	None			Exotic Evergreen	
7	Tristaniopsis laurina	Kanooka	28,28	50	8 x 8	Fair-Poor	Poor	Maturing	Low		2.5m	Aust. Native	
8	Magnolia liliflora	Lily Magnolia	multi	20	3.5 x 7	Fair	Very Poor	Maturing	None			Exotic Deciduous	
9	Rhododendron sp.	Rhododendron	multi	28	5 x 4	Fair-Poor	Poor	Maturing	None			Exotic Evergreen	
10	Stenocarpus sinatus	Firewheel Tree	multi	25	5 x 4	Fair-Poor	Very Poor	Semi-mature	Low		1.8m	Aust. Native	
11	Acacia melanoxylon	Blackwood	25	30	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	3.0m	2.0m	Vic. Native	
12	Cordyline australis	Cabbage Tree Palm	45	60	6 x 5	Poor	Poor	Maturing	None			Exotic Palm	
13	Pittosporum eugenioides 'Variegatum'	Silver Tarata	50	55	10 x 12	Fair-Poor	Poor	Mature	Low	6.0m	2.6m	Exotic Evergreen	
14	Acer palmatum	Japanese Maple	28,28	40	7 x 8	Very Poor	Very Poor	Mature	None		2.3m	Exotic Deciduous	
15	Liriodendron tulipifera	Tulip Tree	50	60	18 x 15	Fair-Poor	Fair	Maturing	Moderate	6.0m	2.7m	Exotic Deciduous	
16	Prunus serrulata	Japanese Cherry	40	45	7 x 9	Poor	Fair-Poor	Over-mature	Low	4.8m	2.4m	Exotic Deciduous	
17	Quercus robur	English Oak	80	100	20 x 18	Fair-Poor	Fair	Mature	Moderate-High	9.6m	3.3m	Exotic Deciduous	
18	Eucalyptus radiata	Narrow-leaf Peppermint	40	50	12 x 12	Fair-Poor	Very Poor	Maturing	Low	4.8m	2.5m	Local Native	major bifurcation
19	Eucalyptus ovata	Swamp Gum	80	90	20 x 18	Fair-Poor	Very Poor	Maturing	Low	9.6m	3.2m	Local Native	bifurcation of main leaders with decay
20	Eucalyptus ovata	Swamp Gum	50,40,40	90	18 x 16	Fair-Poor	Very Poor	Maturing	Low	9.0m	3.2m	Local Native	lost 2 leaders
21	Schinus areria	Peppercorn	80,38	90	15 x 26	Fair-Poor	Fair-Poor	Maturing	Moderate	10.6m	3.2m	Exotic Evergreen	
22	Eucalyptus ovata	Swamp Gum	28	35	10 x 9	Fair-Poor	Very Poor	Semi-mature	None			Local Native	Lost bifurcated leader
23	Eucalyptus ovata	Swamp Gum	30	38	15 x 13	Fair-Poor	Poor	Semi-mature	Low	3.6m	2.2m	Local Native	
24	Eucalyptus ovata	Swamp Gum	30	38	15 x 13	Fair-Poor	Poor	Semi-mature	Low	3.6m	2.2m	Local Native	
25	Eucalyptus ovata	Swamp Gum	30	38	15 x 13	Fair-Poor	Poor	Semi-mature	Low	3.6m	2.2m	Local Native	
26	Quercus robur	English Oak	28	35	8 x 8	Fair	Fair-Poor	Semi-mature	Low-Moderate	3.4m	2.1m	Exotic Deciduous	
27	Eucalyptus ovata	Swamp Gum	20	25	13 x 6	Fair-Poor	Fair-Poor	Young	Low	2.4m	1.8m	Local Native	3 trees
28	Eucalyptus ovata	Swamp Gum	15	18	10 x 4	Fair	Fair	Young	Low	2.0m	1.6m	Local Native	
29	Eucalyptus ovata	Swamp Gum	13	15	9 x 4	Fair-Poor	Poor	Young	Low	2.0m	1.5m	Local Native	
30	Eucalyptus ovata	Swamp Gum	25	30	15 x 8	Fair-Poor	Poor	Semi-mature	Low	3.0m	2.0m	Local Native	
31	Eucalyptus ovata	Swamp Gum	30	40	16 x 9	Fair-Poor	Fair-Poor	Semi-mature	Low-Moderate	3.6m	2.3m	Local Native	
32	Eucalyptus ovata	Swamp Gum	20	25	9 x 8	Fair-Poor	Fair-Poor	Young	Low	2.4m	1.8m	Local Native	
33	Eucalyptus ovata	Swamp Gum	38	45	16 x 12	Fair-Poor	Fair-Poor	Semi-mature	Low-Moderate	4.6m	2.4m	Local Native	
34	Eucalyptus ovata	Swamp Gum	30	40	15 x 10	Fair	Fair-Poor	Semi-mature	Low-Moderate	3.6m	2.3m	Local Native	
35	Eucalyptus ovata	Swamp Gum	18	25	12 x 6	Fair-Poor	Very Poor	Young	None			Local Native	
36	Eucalyptus ovata	Swamp Gum	18	25	13 x 7	Fair-Poor	Fair	Young	Low	2.2m	1.8m	Local Native	
37	Eucalyptus ovata	Swamp Gum	28	35	18 x 11	Fair-Poor	Fair-Poor	Semi-mature	Low-Moderate	3.4m	2.1m	Local Native	2 stems
38	Eucalyptus ovata	Swamp Gum	15	18	8 x 7	Fair-Poor	Very Poor	Young	None			Local Native	central leader snapped
39	Acacia melanoxylon	Blackwood	20	25	8 x 5	Fair-Poor	Poor	Semi-mature	None			Local Native	
40	Eucalyptus ovata	Swamp Gum	30	38	8 x 8	Fair-Poor	Very Poor	Semi-mature	None			Local Native	lost central leader
41	Eucalyptus ovata	Swamp Gum	40	50	18 x 13	Fair-Poor	Poor	Semi-mature	Low	4.8m	2.5m	Local Native	multiple bifurcations
42	Eucalyptus nicholii	Willow-leaf Peppermint	70	70	12 x 12	Fair	Fair-Poor	Maturing	Low-Moderate	8.4m	2.8m	No Value	probable decay in trunk
43	Eucalyptus camaldulensis	River Red Gum	50	60	13 x 11	Fair-Poor	Very Poor	Semi-mature	Low	6.0m	2.7m	Vic. Native	bifurcation of main leaders, decay in trunk
44	Eucalyptus ovata	Swamp Gum	28	35	15 x 9	Fair-Poor	Fair-Poor	Semi-mature	Low-Moderate	3.4m	2.1m	Local Native	

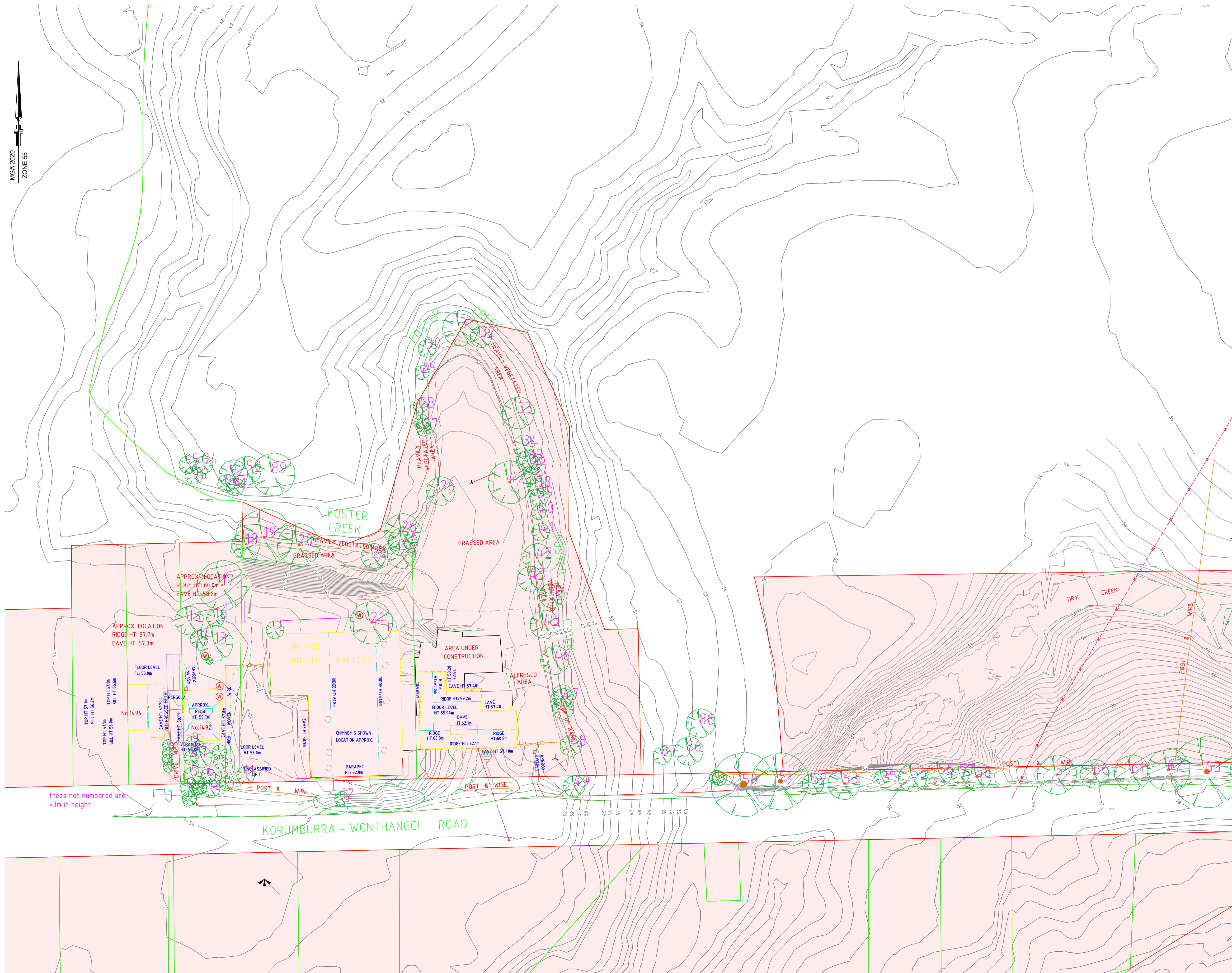


1	Lagerstroemia indica	Crepe Myrtle	multi	15	5 x 6	Fair-Poor	Very Poor	Semi-mature	None			Exotic Deciduous	road reserve tree
45	Eucalyptus ovata	Swamp Gum	25	30	15 x 8	Fair-Poor	Poor	Semi-mature	Low	3.0m	2.0m	Local Native	
46	Eucalyptus ovata	Swamp Gum	30	40	16 x 13	Fair-Poor	Poor	Semi-mature	Low	3.6m	2.3m	Local Native	multiple bifurcations
47	Eucalyptus ovata	Swamp Gum	20	25	13 x 7	Fair-Poor	Fair-Poor	Young	Low	2.4m	1.8m	Local Native	4 trees
48	Quercus robur	English Oak	40	55	9 x 12	Fair	Fair-Poor	Semi-mature	Moderate	4.8m	2.6m	Exotic Deciduous	
49	Quercus robur	English Oak	40	55	9 x 12	Fair	Fair-Poor	Semi-mature	Moderate	4.8m	2.6m	Exotic Deciduous	
50	Quercus actutissima	Sawtooth Oak	160	180	22 x 26	Fair	Fair	Mature	Significant	15.0m	4.2m	Exotic Deciduous	
51	Gleditsia triacanthus	Honey Locust	110	130	25 x 20	Fair-Poor	Fair	Mature	Significant	13.2m	3.7m	Exotic Deciduous	
52	Quercus palustris	Pin Oak	30	38	10 x 10	Fair	Fair	Semi-mature	Moderate	3.6m	2.2m	Exotic Deciduous	suppressed by 51
53	Quercus palustris	Pin Oak	60	80	18 x 14	Fair	Fair	Maturing	Moderate-High	7.2m	3.0m	Exotic Deciduous	
54	Populus alba	White Poplar	12	18	9 x 5	Fair	Poor	Young	None	2.0m	1.6m	Exotic Deciduous	suckers from old stump
55	Quercus palustris	Pin Oak	40	60	18 x 14	Fair	Fair	Maturing	Moderate-High	4.8m	2.7m	Exotic Deciduous	
56	Populus alba	White Poplar	55	65	18 x 12	Fair-Poor	Fair	Maturing	Low-Moderate	6.6m	2.8m	Exotic Deciduous	
57	Populus alba	White Poplar	12	18	9 x 5	Fair	Poor	Young	None	2.0m	1.6m	Exotic Deciduous	suckers from old stump
58	Populus alba	White Poplar	80	90	19 x 16	Fair-Poor	Fair-Poor	Mature	Moderate	9.6m	3.2m	Exotic Deciduous	
59	Aesculus hippocastanum	Horse Chestnut	65	65	11 x 13	Fair-Poor	Fair	Maturing	Moderate-High	7.8m	2.8m	Exotic Deciduous	
60	Grevillia robusta	Silky Oak	90	110	19 x 16	Very Poor	Poor	Over-mature	Low	10.8m	3.4m	Aust. Native	significant decline
61	Gleditsia triacanthus	Honey Locust	60	75	15 x 16	Fair-Poor	Poor	Mature	Moderate	7.2m	2.9m	Exotic Deciduous	
62	Quercus robur	English Oak	80	100	18 x 18	Fair-Poor	Fair	Mature	High	9.6m	3.3m	Exotic Deciduous	
63	Quercus robur	English Oak	140	160	20 x 22	Fair-Poor	Fair	Mature	Significant	15.0m	4.0m	Exotic Deciduous	
64	Aesculus hippocastanum	Horse Chestnut	40	50	10 x 11	Fair-Poor	Fair-Poor	Maturing	Low-Moderate	4.8m	2.5m	Exotic Deciduous	some decline
65	Prunus cerasifera	Cherry Plum	multi	75	7 x 9	Fair-Poor	Very Poor	Over-mature	Low	#N/A	2.9m	Exotic Deciduous	
66	Ulmus procera	English Elm	65	75	18 x 20	Fair-Poor	Fair	Mature	Moderate-High	7.8m	2.9m	Exotic Deciduous	
67	Quercus robur	English Oak	80	100	16 x 18	Fair-Poor	Fair	Mature	Moderate-High	9.6m	3.3m	Exotic Deciduous	
68	Quercus palustris	Pin Oak	20	28	10 x 6	Fair-Poor	Fair	Semi-mature	Low-Moderate	2.4m	1.9m	Exotic Deciduous	
69	Quercus robur	English Oak	80	90	16 x 18	Poor	Fair	Mature	Moderate	9.6m	3.2m	Exotic Deciduous	
70	Quercus palustris	Pin Oak	30	40	11 x 10	Fair	Fair-Poor	Semi-mature	Low-Moderate	3.6m	2.3m	Exotic Deciduous	
71	Quercus palustris	Pin Oak	50	70	16 x 11	Fair	Fair	Maturing	Moderate	6.0m	2.8m	Exotic Deciduous	
72	Quercus palustris	Pin Oak	40	60	16 x 11	Fair	Fair	Maturing	Moderate	4.8m	2.7m	Exotic Deciduous	
73	Quercus actutissima	Sawtooth Oak	100	140	20 x 20	Fair-Poor	Fair-Poor	Mature	High	12.0m	3.8m	Exotic Deciduous	some decline
74	Grevillia robusta	Silky Oak	30	40	9 x 8	Poor	Poor	Semi-mature	Low	3.6m	2.3m	Aust. Native	significant decline
75	Quercus actutissima	Sawtooth Oak	150	185	23 x 22	Fair	Fair-Poor	Mature	Significant	15.0m	4.2m	Exotic Deciduous	
76	Quercus actutissima	Sawtooth Oak	150	180	28 x 22	Fair	Fair	Mature	High	15.0m	4.2m	Exotic Deciduous	
77	Quercus palustris	Pin Oak	30	40	14 x 13	Fair	Fair	Semi-mature	Moderate	3.6m	2.3m	Exotic Deciduous	
78	Agathis robusta	Kauri	12	18	5 x 4	Fair	Fair	Young	Low	2.0m	1.6m	Aust. Native	
79	Quercus palustris	Pin Oak	15	20	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	2.0m	1.7m	Exotic Deciduous	
80	Quercus palustris	Pin Oak	20	25	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	2.4m	1.8m	Exotic Deciduous	
81	Quercus palustris	Pin Oak	20	25	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	2.4m	1.8m	Exotic Deciduous	
82	Quercus palustris	Pin Oak	20	25	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	2.4m	1.8m	Exotic Deciduous	
83	Quercus palustris	Pin Oak	18	20	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	2.2m	1.7m	Exotic Deciduous	
84	Quercus palustris	Pin Oak	15	18	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	2.0m	1.6m	Exotic Deciduous	
85	Quercus palustris	Pin Oak	20	25	7 x 5	Fair	Fair	Semi-mature	Low-Moderate	2.4m	1.8m	Exotic Deciduous	
86	Acacia mearnsii	Late Black Wattle	65	75	16 x 13	Poor	Poor	Over-mature	None			Vic. Native	Significant decline
87	Acacia mearnsii	Late Black Wattle	28	40	14 x 8	Poor	Poor	Maturing	None			Vic. Native	Significant decline
88	Eucalyptus ovata	Swamp Gum	75	90	20 x 16	Fair-Poor	Fair-Poor	Mature	Moderate-High	9.0m	3.2m	Local Native	

1	Lagerstroemia indica	Crepe Myrtle	multi	15	5 x 6	Fair-Poor	Very Poor	Semi-mature	None			Exotic Deciduous	road reserve tree
89	Eucalyptus ovata	Swamp Gum	85	95	20 x 16	Fair-Poor	Very Poor	Mature	Low-Moderate	10.2m	3.2m	Local Native	bifurcation of main leaders
90	Acacia mearnsii	Late Black Wattle	50	60	18 x 13	Fair-Poor	Fair-Poor	Mature	Low-Moderate	6.0m	2.7m	Vic. Native	
91	Eucalyptus ovata	Swamp Gum	45	60	18 x 11	Fair-Poor	Fair	Maturing	Low-Moderate	5.4m	2.7m	Local Native	
92	Eucalyptus ovata	Swamp Gum	55	70	16 x 12	Fair-Poor	Fair-Poor	Maturing	Low-Moderate	6.6m	2.8m	Local Native	
93	Acacia mearnsii	Late Black Wattle	25	30	26 x 8	Fair-Poor	Fair-Poor	Semi-mature	Low	3.0m	2.0m	Vic. Native	
94	Acacia mearnsii	Late Black Wattle	40	50	18 x 9	Fair-Poor	Fair	Maturing	Low-Moderate	4.8m	2.5m	Vic. Native	
95	Eucalyptus ovata	Swamp Gum	45	55	16 x 12	Poor	Fair-Poor	Maturing	Low	5.4m	2.6m	Local Native	
96	Eucalyptus ovata	Swamp Gum	45	55	16 x 12	Poor	Poor	Maturing	Low	5.4m	2.6m	Local Native	



MGA 2020  
ZONE 55



**Notations**

Lengths shown are in metres  
Levels are to A.H.D. Vide Kongwak PM 27 RL:54.4m  
Contour datum is MGA2020 Zone 55 (Local Ground) Vide

KONGWAK PM 27 (Origin)  
E:387325.31  
N:5736270.38

KONGWAK PM 2  
E:387861.25  
N:5736239.20

Feature & Level Survey Contour Interval is 0.2 metres  
Date of Survey: 11/01/2023 - 12/01/2023

Vicmap Boundaries shown are for reference purposes only.  
A Title Re-establishment Survey has not been conducted onsite.

Features and Levels shown on this plan are for general design works only - any critical dimensions required should be requested independently of this plan. Prior to any demolition, excavation or construction on this site the relevant Authorities should be contacted to ascertain detailed locations of all existing services and the possible locations of future services.

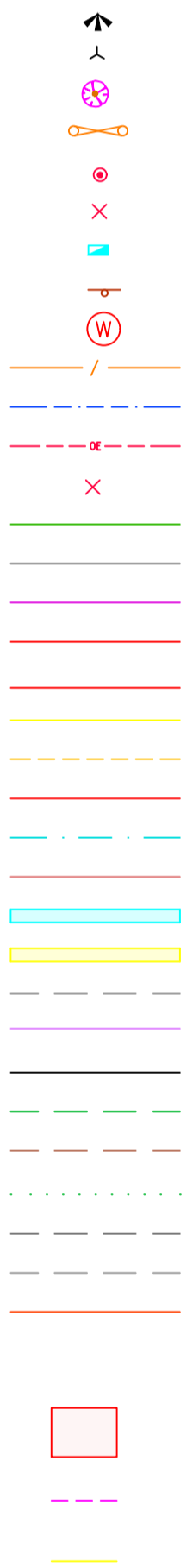
For site dimensions and easement details please refer to the relevant Certificate of Title.

Trees Shown thus  have been plotted to scale

Dial Before You Dig Data has not been compiled or added to this survey. Please verify services before design and/or construction.

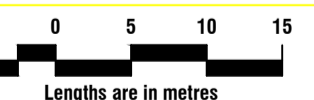
Digital Terrain Modeling directly abutting the land under survey (over vacant land) has been obtained from LIDAR information. Vertical Modeling accuracy +0.10m ( flown 28 Nov 2017 - 27 October 2018).

**Legend**



**FEATURE & LEVEL SURVEY**  
1488 - 1492 KORUMBURRA - WONGTHAGGI ROAD,  
KONGWAK

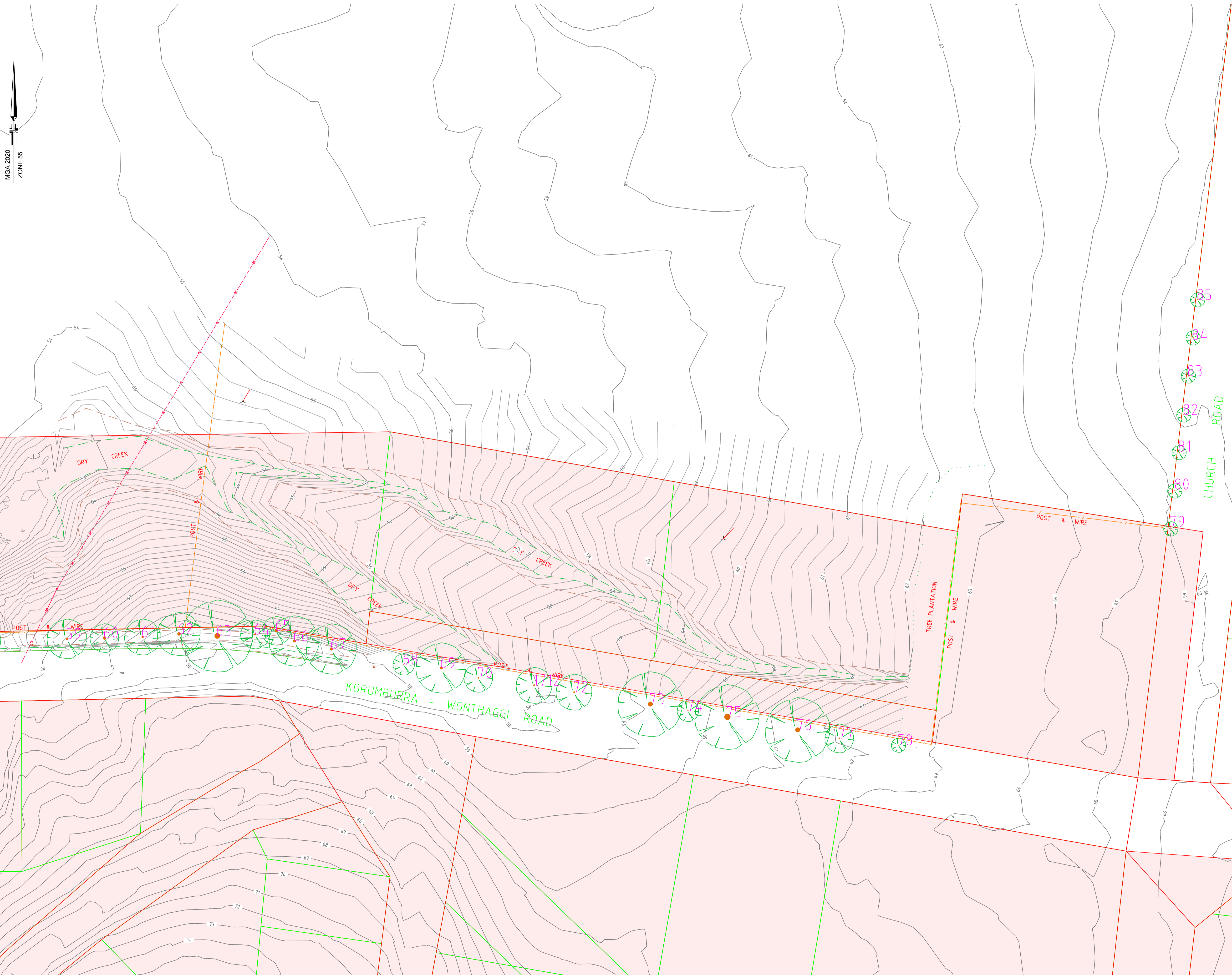
Co-ordinate Datum MGA 2020 Zone 55 Scale A1 1:500



Date	24-01-2023	Sheet	1 of 2
Drawing No.	311001-F800	Version	1
CAD Ref.	VOLUMES/DOCS_BACKUP/23_REPORTS/23_015_KONGWAK CF		
Drawn By	LA	Checked By	MT

REV	AMENDMENT	APPROVED	DATE





**Notations**

Lengths shown are in metres  
Levels are to A.H.D. Vide Kongwak PM 27 RL:54.4m  
Contour datum is MGA2020 Zone 55 (Local Ground) Vide

KONGWAK PM 27 (Origin)  
E:387325.31  
N:5736270.38

KONGWAK PM 2  
E:387861.25  
N:5736239.20

Feature & Level Survey Contour Interval is 0.2 metres  
Date of Survey: 11/01/2023 - 12/01/2023

Vicmap Boundaries shown are for reference purposes only.  
A Title Re-establishment Survey has not been conducted onsite.

Features and Levels shown on this plan are for general design works only - any critical dimensions required should be requested independently of this plan. Prior to any demolition, excavation or construction on this site the relevant Authorities should be contacted to ascertain detailed locations of all existing services and the possible locations of future services.




























For site dimensions and easement details please refer to the relevant Certificate of Title.

Trees Shown thus  have been plotted to scale

Dial Before You Dig Data has not been compiled or added to this survey.  
Please verify services before design and/or construction.

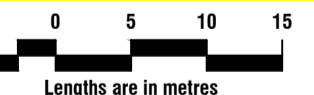
Digital Terrain Modeling directly abutting the land under survey ( over vacant land ) has been obtained from LIDAR information. Vertical Modeling accuracy +/-0.10m ( flown 28 Nov 2017 - 27 October 2018 ).

**Legend**

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**FEATURE & LEVEL SURVEY**  
1488 - 1492 KORUMBURRA - WONTHAGGI ROAD,  
KONGWAK

Co-ordinate Datum MGA 2020 Zone 55 Scale A1 1 : 500



Date 24-01-2023 Sheet 2 of 2

Drawing No. 311001-F800 Version 1

CAD File: J:\VOLUMES\DOCS\_BACKUP\23\REPORTS\23\_015\_KONGWAK CF

Drawn By: LR Checked By: MT

REV	AMENDMENT	APPROVED	DATE



## Tree Descriptors - Version 11 (June 2021)

The typical assessment of a tree evaluates the factors of health and structure. The descriptors of health and structure attributed to a tree evaluate the individual specimen as compared to what could be considered [typical for that species growing in its location](#). The two factors are completely separate and it is possible to have a tree in good health with very poor structure or, conversely, a tree in very poor health with good structure. These two factors are used as a guide to the overall tree condition at the time of inspection.

### Tree No:

A unique identifier, normally a number and often associated with a plan or map reference and used to identify an individual tree or tree group.

### Species:

Provides botanical name, (genus, species, variety and cultivar) according to accepted international codes of taxonomic classification (where possible).

### Common Name:

Provide the most well-known non-scientific name by which the tree is generally known.

### DBH (trunk diameter, measured at 1.4m from ground):

Indicates the trunk diameter (expressed in centimetres) of an individual tree measured at 1.4m above the existing ground level. Multi-stemmed trees may be measured below the 1.4m or at the tree base. DBH measurements are usually undertaken with foresters diameter tape or builders tape.

It is used to calculate the Tree Protection Zone (TPZ) as outlined in the Australian Standard AS 4970-2009 *Protection of trees on development sites*.

DBH in the tree data followed by an \* are where the dbh has been estimated due to not having access to the tree (usually neighbouring properties).

### Basal Trunk Diameter:

This is the trunk diameter measured as the base of the trunk immediately above the root buttress or trunk flare. It is used to calculate the Structural Root Zone (SRZ) as outlined in the Australian Standard AS 4970-2009 *Protection of trees on development sites*.

### H x W (Height x Width or Canopy Spread):

Indicates the height and width of the individual tree; dimensions are expressed in metres. Height is measured with a clinometer/height-meter where possible. Tree heights may be estimated in line with previous clinometer readings in conjunction with author's experience. Crown widths are generally paced (estimated) at the widest axis or averaged.

## 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
Palm	Woody monocotyledon

## Age:

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

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

## Health:

Assesses a range of attributes to describe the overall health of the tree.

Category	Growth Indicators	Decline symptoms/ Deadwood	Foliage density, colour, size, intact- ness	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	Considerable amount/ size	Exhibiting severe defi- ciencies	Contributing to decline
Very Poor	Below minimal	Significant amount and size	Significantly below typi- cal	Extreme
Dead	N/A	N/A	N/A	N/A



Structure:

Assesses principal components of tree structure.

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

The lowest or worst descriptor assigned to the tree in any column is generally the overall rating assigned to the tree. The assessment for structure is limited to observations of external and above ground tree parts. It does not include any exploratory assessment of underground or internal tree parts unless this is requested as part of the investigation.

Trees are assessed and the given a rating for a point in time. Generally, trees with a poor or very poor structure are beyond the benefit of practical arboricultural treatments. The management of trees in the urban environment requires appropriate arboricultural input and consideration of risk.

## Arboricultural / Retention Value Rating:

Relates to the combination of previous tree rating factors, including health, structure and form (arboricultural merit), and also conveys an amenity value. This rating relates to the trees biological, functional and aesthetic characteristics within an urban landscape context.

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

## Useful Life Expectancy

Assessment of useful life expectancy provides an indication of health and tree appropriateness and involves an estimate of how long a tree is likely to remain in the landscape based on species, stage of life (cycle), health, amenity, environmental services contribution, conflicts with adjacent infrastructure and risk to the community.

The assessment is based on the site conditions not being significantly altered and that any prescribed maintenance works are carried out (site conditions are presumed to remain relatively constant and the tree would be maintained under scheduled maintenance programs).

ULE Rating	Description
< 1 year	Tree may be dead or mostly dead. Tree may exhibit major structural faults. Tree may be an imminent failure hazard. Excessive infrastructure damage with high risk potential that cannot be remedied.
1 - 5 years	Tree is exhibiting severe chronic decline. Crown is likely to be less than 50% typical density. Crown may be mostly epicormic growth. Dieback of large limbs is common (large deadwood may have been pruned out). Over-mature and senescing. Infrastructure conflicts with heightened risk potential. Tree has outgrown site constraints.
6 - 10 years	Tree is exhibiting chronic decline. Crown density will be less than typical and epicormic growth is likely to present. The crown may still be mostly entire, but some dieback is likely to be evident. Dieback may include large limbs. Over-mature and senescing or early decline symptoms in short-lived species. Early infrastructure conflicts with potential to increase regardless of management inputs.
10-25 years	Trees displaying normal growth characteristics. Tree may be growing in restricted environment (e.g. streetscapes) or may be in late maturity. Tree may be growing in restricted environment (e.g. streetscapes) or may be in late maturity.
25+ years	Generally juvenile and semi-mature trees exhibiting normal growth characteristics in parks or open space. Could also be maturing, long-lived trees. Tree well suited to the site with negligible potential for infrastructure conflicts.

## Tree Risk Assessment

A primary goal of tree risk assessment is to provide information about the level of risk posed by a tree over a specific time period. This is accomplished in qualitative tree risk assessment by first determining the categories for likelihood and consequences of tree failure. These factors are determined by:

1. Evaluating the structural conditions that may lead to failure; the potential loads on the tree; and the trees' adaptations to weaknesses—to determine the likelihood of failure.
2. Evaluating the likelihood that a tree or branch could strike people or property or disrupt activities.
3. Assessing the injury, damage or disruption—to estimate the consequences of failure.

A matrix-based, qualitative approach to tree risk assessment is used to define the level of risk. The factors collected during the tree assessment, particularly with regard to the tree's structure, are used in this determination.

The risk category is then compared to the level of risk that is acceptable to the client, controlling authority, or societal standards. If the risk category defined for the tree risk exceeds the level of acceptable risk, mitigation is recommended.

### Risk Assessment Matrix

Likelihood of Failure	Likelihood of Failure (Target/Consequence)			
	Unlikely	Somewhat Likely	Likely	Very Likely
Imminent (Very Poor Structure)	Low	Moderate	High	Extreme
Probable (Poor Structure)	Low	Moderate	High	High
Possible (Fair-Poor Structure)	Low	Low	Moderate	Moderate
Improbable (Fair Structure)	Low	Low	Low	Low

### Bibliography:

- Coder, K D. (1996) Construction damage assessments: trees and sites, University of Georgia, USA
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- Standards Australia (2009) Australian Standard AS 4970-2009 Protection of trees on development sites.



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