



Tree Consultants & Contractors

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12 Nov 2021

Perkins Architects
Attn. Kylie Freeman
153 High Street,
Prahran, Vic.

Dear Sir,

re: 452-454 Waverley Road, Mt Waverley Childcare

Introduction

A two storey childcare project with basement parking and café is planned for 452-454 Waverley Road, Mt Waverley Childcare. Galbraith and Associates has been requested by Perkins Architects to prepare an Arborist Report.

This entails the assessment and reporting on all the trees within and close to the area defined by the red line on the aerial image on page 2. Each of these trees, or groups where relatively homogeneous, is described in terms of species type, origin, size, condition and, in the case of the site trees, worth for retention. Tree protection zones according to the Australian Standard approach are provided for the higher worth site trees plus any neighbouring trees in close proximity.

The location of the trunk base of each tree is located and approximated on the accompanying aerial image on page 3 and described on pages 4 and 5.

The design drawings upon which I base my assumptions are numbers TP01 – TP03, TP04B, TP05B and TP06 – TP13 by Perkins Architects.

I have also been provided with the set of landscape drawings by Site Image, dated March 2017, for a previously permitted aged care scheme.

The Trees – General

The site is essentially a cleared area near a creek bank which has undergone re-planting over the last 40-50 years. The dominant trees are eucalypts, consisting of a mix of indigenous and introduced species. Examples of two indigenous species are present, namely trees 5, 10, 14 and 23 of Manna Gum (*Eucalyptus viminalis*) and tree 12 of Swamp Gum (*Euc. ovata*). It is difficult to say whether these trees have been planted or are self-sown, however if I had to guess I would suggest that trees 5, 12, 14

and 23 are of local provenance and could be self-sown. Tree 23 in an adjacent property is clearly much older than the others, and trees 5 and 14 are morphologically consistent with it. Of these tree 5 is in poor condition.

Introduced eucalypts, also of 40-50 years of age, include Peppermint Gum (*Euc. nicholii*), Spotted Gum (*Corymbia maculata*), Grey Gum (*Euc. punctata*) and River Red Gum (*Euc. camaldulensis*).

Silver Wattle, Black Wattle and Blackwood is also found in the area. These are examples of indigenous species which have almost certainly been planted, probably less than 20 years ago.

Weeds such as Desert Ash (*Fraxinus angustifolia*) and Sweet Pittosporum (*Pittosporum undulatum*) are also present.

VPO1 – Schedule 1 to the Vegetation Protection Overlay

A VPO1 applies to the site, thus a permit is required to remove any vegetation which
Has a trunk circumference greater than 500mm (160mm diameter) at 1200mm above ground level and
Is higher than 10 metres.

Desert Ashes and Sweet Pittosporums are exempt.

Thus the trees within the surveyed area which require a permit to remove are numbers 1-6, 10-12, 14, 16, 17, 19, 21, one Black Wattle in clump 22 and 23, however not all these trees are proposed to be removed or impacted.



452-454 WAVERLEY ROAD, MOUNT WAVERLEY
SITE BOUNDARY

THE TREES

Tree No.	Species Indigenous (I) Victorian (V) Australian (A) Exotic (E) Weed (W)	DBH (cm)	HxS (m)	Comments, WOR, TPZ(m), SRZ(m)
1	<i>Corymbia maculata</i> V Spotted Gum	72	22x16	Large mature tree in good condition with a high streetscape significance. WOR 7 TPZ 8.6 SRZ 3
2	<i>Euc. nicholii</i> A Peppermint Gum	55	18x20	Mature tree in poor condition with approximately 40% of the crown being dead. WOR 3 TPZ 6.6 SRZ 2.8
3	<i>Euc. nicholii</i> A	41	10x11	Mature tree heavily lopsided to the south-east. WOR 5 TPZ 4.9 SRZ 2.5
4	<i>Corymbia maculata</i> A	20, 25	12x7	Healthy, lopsided to the east, structurally fair-poor with split prone pressure forking. WOR 5 TPZ 3.9 SRZ 2.2
5	<i>Euc. viminalis</i> I Manna Gum	72	22x17	Mature tree in poor condition. It leans heavily to the west. > 25% of the crown is dead. > 50% of the circumference of the trunk is dead near the base, on the tension side of the lean, due to a canker. WOR 2 TPZ 8.6 SRZ 3
6	<i>Euc. leucoxydon</i> V 'Rosea type' Yellow Gum	38, 29	10x10	Fair – the smaller westerly stem has snapped at 5m. WOR 4 TPZ 5.7 SRZ 2.6
7	<i>Fraxinus angustifolia</i> EW Desert Ash	30	7x8	Healthy weed tree. Several smaller weed trees are near it. WOR 3 TPZ 3.6 SRZ 2.1
8	<i>Fraxinus angustifolia</i> EW	15, 16	5x9	Healthy weed tree. WOR 3 TPZ 2.6 SRZ 1.8
9	<i>Malus domestica</i> E Apple	10	4x5	Small fruit tree of little note. WOR 3
10	<i>Euc. viminalis</i> I	63	20x14	Slight lean to the east, good condition. WOR 7 TPZ 7.6 SRZ 2.8
11	<i>Grevillea robusta</i> A Queensland Silky Oak	~60	20x14	Healthy tree in private property centred 5m east of the boundary. TPZ 7.2 SRZ 2.9
12	<i>Euc. ovata</i> I Swamp Gum	58	13x15	Mature tree in good condition but with heavy lean to the west. WOR 6 TPZ 7 SRZ 2.8
13	<i>Fraxinus angustifolia</i> EW	27, 21	6x6	Almost dead weed tree. WOR 1
14	<i>Euc. viminalis</i> I	76	22x16	Mature tree with a slight lean to the west. A canker is present in the trunk at 2m which will become problematic over time. WOR 6 TPZ 5.2 SRZ 3.1
15	<i>Fraxinus angustifolia</i> EW	26	7x7	Healthy weed. WOR 3

Tree No.	Species Indigenous (I) Victorian (V) Australian (A) Exotic (E) Weed (W)	DBH (cm)	HxS (m)	Comments, WOR, TPZ(m), SRZ(m)
16	Corymbia maculata A Spotted Gum	41, 42, 19	22x13	Healthy but has a branch shed history. WOR 5 TPZ 7.4 SRZ 3
17	Euc. punctata A Grey Gum	56	18x11	Fair to good condition. WOR 6 TPZ 6.7 SRZ 2.8
18	Acacia dealbata I Silver Wattle	15, 18	7x5	Leans east. WOR 4 TPZ 2.8 SRZ 1.9
19	Acacia dealbata I Silver Wattle	36	11x9	Young mature, healthy. WOR 5 TPZ 4.3 SRZ 2.4
20	Acacia melanoxyton I Blackwood	15	4x4	Fair-poor – upper 20% is dead. WOR 3 TPZ 2 SRZ 1.5
21	Euc. camaldulensis V River Red Gum	37	18x13	Good condition. WOR 6 TPZ 4.4 SRZ 2.4
22	Acacia dealbata I & Acacia melanoxyton I. Clump of plantings up to 10m tall and < 23cm DBH. TPZ < 2.8			
23	Euc. viminalis I	~100	22x22	Probably a naturally occurring tree in private property to the east, centred 3.5m from fence. Large and in good condition. TPZ 12 SRZ 3.5

Impact of the Proposal

Trees Proposed for Removal	WOR	Tree No. from Previous Permitted Scheme	Tree No. from EHP Biodiversity
1 Spotted Gum	7	55	
2 Peppermint Gum	3	54	
3 Peppermint Gum	5	53	
5 Manna Gum	2	43	60
6 Yellow Gum	4	41	
7 Desert Ash	3	42	
8 Desert Ash	3	39	
9 Apple	3	not described	
12 Swamp Gum	6	31	2
13 Desert Ash	1	32	
15 Desert Ash	3	29	

Of the above trees stipulated for removal, trees 1, 2, 3, 5, 6 and 12 will require a permit to remove under the VPO1. Trees 7, 8, 9, 13 and 15 do not require a permit given their weed status and/or small size.

In addition, trees 5 and 12 (trees 60 and 2 in the Oct/21 EHP report) will require a permit to remove under Clause 52.17 of the Planning Scheme given that they have been classified as 'scattered trees'.

Trees 2, 5, 7, 8, 9, 13 and 15 are of low worth for retention due to their poor condition or small stature or weed status. Trees 1, 3 and 6 range from low medium to high worth however their locations are such that it is very difficult to construct a child care whilst retaining them. Tree 1, the high worth Spotted Gum, is at the entry to the site and would need removal for virtually any re-development.

Previously Permitted Trees Of the trees tabulated to be removed, all with the exception of tree 9 have already been permitted to be removed under the previous scheme. Furthermore a number of other trees which had been issued permits for removal under the previous aged care scheme, are being retained under this scheme. These are trees 14(30), 16(28), 17(27), 18(26). It is apparent that tree 9 was not described in the report from the previous scheme, presumably because it is a small insignificant apple which is being out competed by tree 8.

A number of large trees in good condition within the subject site are being retained, eg. Trees 4, 10, 14, 16, 17 and 21. Substantial new tree establishment is proposed.

Scattered Trees – ‘Retain if Possible’ The trees in the EHP Biodiversity report close to the developable area, which are listed as ‘Retain if Possible’, are mentioned as being trees 3 (Manna Gum), 4 (Manna Gum), 5 (Manna Gum) and 62 (Narrow leaved Black Peppermint).

Tree 3 of the EHP report corresponds to number 14 of my report and on the plans. It is readily apparent that it is only the decking to the south of Playroom 5 which encroaches into the TPZ, and that encroachment is only 5.9%. This is minor according to the relevant Australian Standard 4970:2009 ‘Protection of trees on development sites’. Furthermore, there is no excavation required for the decking except for post holes which will have minimal impact on the roots. Thus one can be very confident that this tree can be satisfactorily retained.

Tree 4 of the EHP report corresponds to tree 17 of this report. It is actually a Grey Gum (*Eucalyptus punctata*), a species which does not occur naturally in Victoria. It is thus not indigenous. Again, one can be very confident of the tree’s satisfactory retention, despite there being encroachments into its TPZ from Playroom 6, the above ground decking and the footpath. With respect to Playroom 6, the TPZ area encroachment is only 2.8% which is negligible. In relation to the decking, the total encroachment is 11.7%, however as discussed for tree 14, the root loss caused by the excavation for post holes will be minimal. The proposed path to the south-east of the tree is to be on the existing grade – no excavation or root loss.

With respect to Tree 5 as shown on Figure 2 page 33 of the EHP report, there is actually no tree located where shown (see photo on page 15 of this report).

Tree 62 corresponds to tree 2, which is a Narrow leaved Black Peppermint in poor condition. This tree is not being retained and never was proposed to be retained.

According to the previously approved scheme, trees 3, 4 and 62 of the EHP report correspond to trees 30, 27 and 54 respectively of the previous scheme. All three trees were previously permitted for removal.

Of the trees to be retained, the only other tree which has any TPZ encroachment is the neighbouring large Manna Gum (tree 23). The encroachment is from Playroom 7 representing a 1% encroachment which is negligible and will have no impact on the tree.

Summary

Tree 1	Must be removed to provide vehicle & pedestrian access to site (limited site frontage)
Tree 2	Low WOR value Must be removed to provide vehicle & pedestrian access to site (limited site frontage)
Tree 3	Must be removed to provide vehicle & pedestrian access to site (limited site frontage). Approved to be removed Planning Permit No. TPA45487
Tree 5	Low WOR value Must be removed to provide vehicle access and carparking on site.
Tree 6	Low WOR value Must be removed to provide carparking. Approved to be removed Planning Permit No. TPA45487
Tree 7	Low WOR value Permit not required for removal
Tree 8	Low WOR value Permit not required for removal
Tree 9	Low WOR value Permit not required for removal
Tree 12	Heavily leaning gum in direction of childcare centre - safety issue
Tree 13	Low WOR value Permit not required for removal
Tree 15	Low WOR value Permit not required for removal



2

1





Tree 4



Tree 5



Trunk canker on Tree 5





Tree 6 – the past stem failure is arrowed.



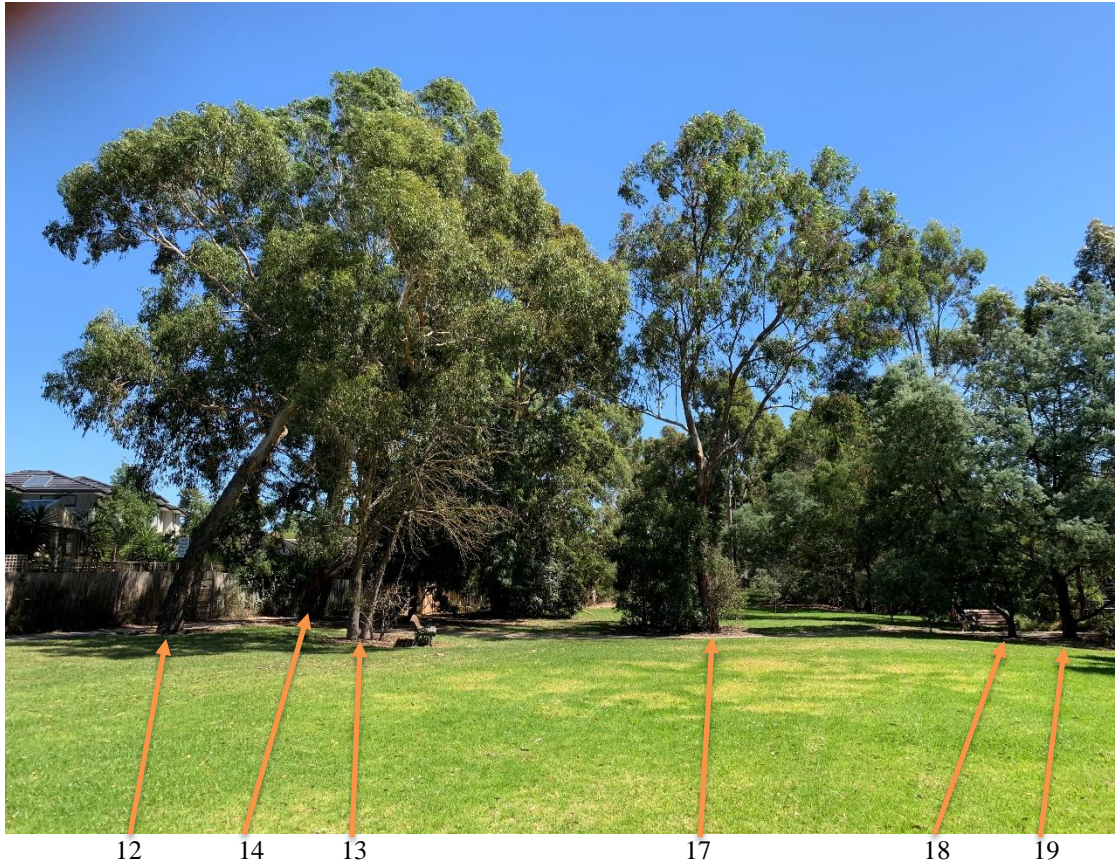
11

12

9

8

10





17

16



21

20



Clump 22



23

Notes on Terminology

In order to understand the column headings of the tables of data, I have provided the following explanations:

DBH diameter of trunk over bark at breast height. In a number of cases where the tree has forked into multiple trunks below breast height (1.3-1.5m) the diameter is measured below the fork and an estimate is made for the single trunk equivalent at breast height, or else figures for each of the individual stems can be given.

HxS This is the estimated height (H) of the tree and its average crown spread (S).

SULE Safe useful life expectancy in years. Taken in the context that the area is to be developed for residential use, and that sensible distances are maintained between the buildings and the trees, this is the estimate of time that the tree will continue to provide useful amenity without imposing an onerous financial burden in order to maintain relative safety, and avoid excessive nuisance.

Tree Protection Zone (TPZ) According to the Australian Standard AS 4970-2009 'Protection of Trees on Building Sites', the TPZ is the principal means of protecting trees on development sites. It is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.' The radius of the TPZ is calculated by multiplying the DBH by 12. The radius is measured from the centre of the stem at ground level. An area of 10% of the TPZ is deemed acceptable to violate if 10% of the *area* of the TPZ is made up in other directions. *Thus if encroachment is from one side only, encroachment to as close as approximately 8 times the DBH (2/3 the listed TPZ radius) is permissible according to the Standard.*

Where the tree has more than one trunk, the TPZ is deduced by taking the square root of the sum of the squares of each of the DBHs, and multiplying this figure by 12

The TPZs as determined by the AS 4970-2009 approach should be construed as a rough guide. Many factors such as the type of encroachment on the TPZ, species tolerance, age, tree height, presence of spiral grain, soil type, soil depth, tree lean, the existence of onsite structures or root directional impediments, level of wind exposure, irrigation and ongoing tree care and maintenance are each highly influential on the size and success of the TPZ estimation.

Structural Root Zone

According to the Aus Std. AS 4970:2009, the structural root zone is the area of the root plate required for a tree's stability. In order to calculate the indicative radius of such a zone from the trunk centre, according to the Aus Std., one uses the following formula: SRZ radius is $(D \times 50)^{0.42} \times 0.64$, where D is the trunk diameter in metres taken from just above the root buttress. The minimum indicative SRZ radius is 1.5m for any tree, irrespective of how small. A graph is provided in the Aust Std, with a curve depicted relating the SRZ to trunk diameter. Unfortunately, the calculated figures do not match those derived from the graph. The Aust Std. does not mention from where this formula is taken although acknowledges the publication 'Mattheck, C. & Breloer, H. (1994) *The Body Language of Trees* HMSO Publications' in the preface and bibliography. The figures derived from the graph for the indicative SRZs are far greater than those implied from the curve of 95% fit for the results from studies of upturned root plates of windblown and winched over German trees (see Mattheck, C. & Breloer, H. (1994). Furthermore the figures derived from the graph for the indicative SRZs are far greater than what one calculates them to be, using the formula provided by the Standard i.e. $(D \times 50)^{0.42} \times 0.64$. The calculated figures according to the Aust Std. are considerably greater for small and large trunks than those of Mattheck & Breloer.

In reality, the radii calculated whether by graph or using the formula, are much larger than necessary, except in cases such as where the soils are very shallow or where the structural root development is unidirectional or highly asymmetric for some reason, and the excavation is to be within the zone of the roots. **The structural stability generally depends far more on what proportion of the circumference of the tree is to be excavated than the actual distance of excavation from a tree, and this is often not taken into account quite when using the SRZ.**

Tree Origin Categories

Each tree has been classified as to whether it is indigenous (**I**), native to Victoria (**V**), native to Australia (**A**), exotic (**E**) or an environmental weed (**W**).

An indigenous species (**I**) is one that is known to grow naturally in the local area, even if the individual tree has been planted and is from a seed source or provenance foreign to the area.

A species classified **V** is one which has a part or all, even if very small, of its natural range within Victoria, although it may occur outside the state as well. It does not however occur naturally in the local area.

A species classified **A** is native elsewhere in Australia than Victoria. It does not occur naturally in the local area.

A species classified **E** has its natural range occurring outside Australia.

A species classified **W** is a seriously invasive environmental weed.

GALBRAITH & ASSOCIATES

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