June 22, 2016

Allerding & Associates
125 Hamersley Road
Subiaco WA 6008

Attn: [redacted]

RE: Preliminary Tree Survey Assessment; Lot 55, Helena Valley Road

Dear [redacted]

Further to your request, the following is a brief summary of my assessment of the trees on Lot 55 Helena Valley Road, Helena Valley.

Should you have any queries regarding the findings of this report, or if I can be of any further assistance in the management of the identified trees, please do not hesitate to contact me.

Yours sincerely

[redacted]

[redacted]

[redacted]

Tech. Arbor A

Preliminary Assessment of Trees; Lot 55 Helena Valley Road, Helena Valley

Prepared For

Allerding & Associates

Prepared By

ARBOR logic

Contents

1. Particulars to the Assessment

1.1 Terms Used

The following terms have been used in this report:

'Site'	meaning the identified area of Lot 55 Helena Valley Road, Helena Valley that was included in this particular assessment
'Tree'	meaning any tree identified on Site and included in the assessment
'AS 4970'	meaning Australian Standards guideline 4970 (2009); Protection of trees on development sites
'AS 4373'	meaning Australian Standards guideline 4373 (2007); Pruning of amenity trees
'TPZ'	meaning Tree Protection Zone; the area where the majority of the given Tree's root mass is considered likely to be found, and the area that is recommended to be protected during any development or landscape activity
'Plan'	meaning Richard Hammond Architect drawing number 01 Rev 00

1.2 Limitations and Particulars of this Assessment

The information and opinions provided in this document are based on the findings from the visual observations of the Trees on the Site during the inspections undertaken June 10, 2016.

All observations of all of the Trees were undertaken from ground level.

All Trees with a main stem trunk diameter ≥25cm in diameter were included in this assessment. Trees with a main stem (trunk) diameter <25cm in diameter were not included in this assessment UNLESS they were considered to be a very good specimen of their given species and worthy of consideration in the context of retention as part of a development process.

No exploratory excavations were undertaken as part of this particular assessment to verify the actual root spread of any given Tree.

As such the allocation of TPZ for each Tree has at this stage been based on AS 4970 guidelines, with some amendments being made for the physical size and canopy dimensions of the Tree, its condition, the known root zone morphology of its given species in the sort of soil profile considered to be typical to this area of Western Australia.

2. Scope of Works

At the request of Allerding & Associates, I have been commissioned to undertake an inspection of all of the Trees found in Lot 55 Helena Valley Road, Helena Valley .

The purpose of the inspection was to:

- Undertake an inspection of all of the trees within the identified area.
- Provide information in regards to the species of each identified tree, its current physical attributes (height, main stem calliper, canopy width, health condition, and structural condition), recommended zone of protection, and any comments deemed pertinent to the identified tree.
- Provide any broad-brush purposeful and practical recommendations for any design and construction implications that may apply for the identified trees.

3. Tree Assessment Methodology

3.1 Methodology of the Assessment

All of the Trees identified on the Site were visually inspected from ground level.

3.2 Health Condition

The overall health of each Tree was adjudged from an inspection of its leaf, overall percentage of leaf mass present in the canopy of the Tree, and the presence (or absence) of any pest or disease factor that could have an effect on the overall health of the Tree.

3.3 Structural Condition

The structural integrity of each Tree was determined from a visual inspection of its main stem, primary (and secondary) branch unions to determine the presence of any areas considered to be a structural 'defect' or 'imperfection' such as unions with included bark, swelling, or noticeable splitting at them.

Symptoms of decay, growth patterns and defects are identified and assessed as to their potential to cause whole tree, part tree or branch failure, and where considered necessary further investigation by way of the use of sounding techniques was utilised to determine the presence and general extent of any areas of cavity or associated decay within a tree's main stem structure.

The Tree's root plate area was also inspected to identify any visible signs of root plate, movement, cracking or heave from which a determination of the in-ground stability of the Tree can be ascertained. It is however important to note that there are limitations in verifying the in-ground stability of a tree based on a 'one-off' cursory visual observation; particularly in a forest type habitat where ground cover and leaf litter prevent or limit visual observations, and particularly if the inspection is undertaken during a period of 'fine' weather with little to no wind; as was the case over the period of this assessment.

3.4 Known Species Traits

Species suitability for use in an urban area and if the identified specimen is of a species that can be subject to the sudden branch failure phenomenon or is known to be potentially problematic in terms of self-sowing (weed) issues, was also considered as part of the assessment process.

With regards to any future development the known natural species traits of the given tree and its ability to cope with disturbances to its root zone that typically occur as part of a development process, as well as its ability to cope with the new parameters that are commonly created by an urban development (i.e. decreased soil oxygen due to compaction, increased un-seasonal watering from irrigation, increased pollution, increased radiated heat/light from urban infrastructure (roads, walls, buildings etc.) are all also taken into consideration.

The known root zone morphology of the species was taken into consideration when allocating the recommended TPZ for each of the identified trees. Note: Whilst some reference and acknowledgment is given to the guidelines set down in AS 4970, the TPZ for each Tree has been based on the known typical root zone morphology for specimens of their species, the condition of the given Tree, and the known tolerance to root zone disturbance of the given species.

4. Summary of Key Findings of the Assessment

4.1 No of Trees Identified

A total of 72 individual Trees were identified during the assessment.

Attachment 1 of this report provides an aerial view of the Site with a guide to their location overlaid.

4.2 Species Identified

12 different species were identified on this Site, including species native (endemic) to this area of Western Australia as well as a number of eastern states native tree species and introduced 'exotic' species of Tree.

Table 1; List of species identified on Site

Species	No of	Origin
Almond (Prunus dulcis)	1	Exotic
Broadleaved Paperbark (Melaleuca quinquenervia)	1	Aus native
Flooded Gum (Eucalyptus rudis)	1	WA native
Jarrah (Eucalyptus marginata)	5	WA native
Lemon Scented Gum (Corymbia citriodora)	1	Aus native
Manchurian Pear (Pyrus ussuriensis)	3	Exotic
Mango (Magnifera indica)	2	Exotic
Marri (Corymbia calophylla)	39	WA native
River Red Gum (Eucalyptus camaldulensis 'Camaldulensis')	14	Aus native
Rose Gum (Eucalyptus grandis)	2	Aus native
South Australian Yellow Gum (Eucalyptus leucoxylon 'Rosea')	2	Aus native
Spotted Gum (Corymbia maculata)	1	Aus native

Marri were the most common species identified on this Site.

4.3 Health Condition

Majority of the Trees showed good health based on the condition and volume of leaf mass present.

Marri Canker (*Quambalaria coyrecup*) was noted in a number of the Marri (*Corymbia calophylla*), and looks to be impacting their health to varying extents. This is a common fungal disease for the Perth metropolitan area and can (but not always) lead to the decline and subsequent demise of Marri and Red Flowering Gum specimens. Other species within the *Corymbia* and *Eucalyptus* genus appear to remain unaffected by this fungal pathogen to date

I could see no visible evidence of any other pest or disease pathogen that could have a major impact to the health of the Trees on this Site at the time of my inspection.

4.4 Structural Condition

The majority of the trees showed to have (what is considered to be) typical structural forms for specimens of their given species.

Whilst a number of the Trees showed to have what are considered to be 'structural defects' such as bi-furcated unions with signs of swelling and included bark (which are considered to potentially have an increased likelihood for failure than other forms of branch unions) for the most part any structural defect or imperfections were not considered to be of any major concern at this time.

4. Summary of Key Findings of the Assessment

A number of the Trees within the Western Power easement area looked to have been previously height reduced (topped). The resultant regrowth showed to have reasonably good form at their point of attachment at this time, although the structural form and integrity of these Trees is considered likely to be a cause of future issues and concerns longer term; particularly if 'targets' (people, structures etc.) are to be introduced into their fall zone as part of the development of the area around them.

4.5 Suitability for inclusion into an area of Development

The majority of the identified Trees were considered suitable for retention and inclusion into an area of development.

Retention of some of the Trees will however be somewhat dependent on aspects of detailed design and what potential targets (people, structures etc.) will be introduced into the fall zone of the Trees as part of development in view of the risk management responsibilities that are generally associated with tree; particularly the Trees that have been previously topped.

Nine of the Trees on this Site were considered to be good specimens of their species and were considered to have a high retention value.

Attachment 2 of this report provides an aerial view of the Site with the retention value of each Tree overlaid and colour coded for ease of reference.

4.6 Potential Transplants

Four of the species identified on the Site are known to be a species that can be transplanted with the right degree of preparation and aftercare, and in total this included seven individual Trees.

Of these Trees only the Manchurian Pear and Mango were considered worthwhile transplanting should any budgets and time frame constraints for the development allow.

The Mango will likely require 6-9 months of root zone preparation before being relocated.

The Manchurian Pear will likely require 3-6 months of root zone preparation before being relocated.

It will be important that the preparation time frame includes at least one growing season.

Relocation would ideally occur during cooler periods of the year (i.e. winter).

4.7 Table of Comments on Each of the Trees

The following pages provide further comments on each of the Trees identified during the course of this assessment.

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
47	Marri (*Corymbia calophylla*)	6	30	6-8	4-6	mature	Excellent	Good		Good specimen. Evidence of Marri Canker but looks to be having limited affect on its health at this time. Squat form. Close to/straddles boundary	No	3.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
48	Marri (*Corymbia calophylla*)	13	40, 25	6-8	6-8	mature	Good	Good		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker but looks to be having limited affect on its health at this time. Co-dominant leader from near ground level. Close to/straddles boundary	No	4	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
49	Marri (*Corymbia calophylla*)	14	65	6-8	6-8	mature	Fair	Good		Canopy condition suggests it may have limited life span remaining. Evidence of Marri Canker and looks to be affecting the health of parts of the tree to some extent. Section of its canopy are dead. Close to/straddles boundary	No	6.5	Low	Looks to be in WP Easement. Retention viable subject to landscape design
50	Marri (*Corymbia calophylla*)	13	55	8-10	10-12	mature	Excellent	Good		Reasonably good specimen. Evidence of Marri Canker but looks to be having limited affect on its health at this time. Close to/straddles boundary	No	5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
51	Marri (*Corymbia calophylla*)	16	50, 45	8-10	6-8	mature	Good	Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Multi-stemmed from ground level . Straddles boundary; may have been impacted by recent Lot development. Could also be impacted by future works. Fill over half of its TPZ	No	5	Medium	Looks to possibly within existing sales office area. Retention subject to location within proposed design and any changes proposed to this area
52	Marri (*Corymbia calophylla*)	16	55 x2, 53	8-10	10-12	mature	Good	Acceptable		Large mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Main stem furcates into three. Union looks to be ok at this time. Straddles boundary; may have been impacted by recent Lot development. Could also be impacted by future works. Fill over half of its TPZ	No	5.5	Medium	Looks to possibly within existing sales office area. Retention subject to location within proposed design and any changes proposed to this area
53	Marri (*Corymbia calophylla*)	12	30	2-4	2-4	Semi-mature	Good	Good		Ok specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Part of a row of smaller trees along boundary. Situated outside boundary but could be impacted by works	No	3	Low	Looks to possibly within existing sales office area. Retention subject to location within proposed design and any changes proposed to this area

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
54	Marri (*Corymbia calophylla*)	18	95	16-18	10-12	mature	Good	Good		Large mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Situated outside boundary but could be impacted by works	No	9.5	**High**	Looks to possibly within Community Garden area. Retention subject to location within proposed design
287	Marri (*Corymbia calophylla*)	4.5	25	2-4	2-4	Semi-mature	Fair	Acceptable - Good		Ok specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker; possibly starting to affect its health. Canopy is relatively one sided due to proximity of adjacent tree	No	2.5	Low	Close to Lot boundary. Retention subject to detailed design of Lot development
288	Marri (*Corymbia calophylla*)	13	30	4-6	4-6	Semi-mature	Good	Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Situated in adjacent property but close to boundary so may be impacted by works. Not tagged!	No	3	Medium	Close to Lot boundary. Retention subject to detailed design of Lot development
289	Marri (*Corymbia calophylla*)	13	45	8-10	6-8	mature	Good	Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Situated in adjacent property but close to boundary so may be impacted by works. Not tagged!	No	4.5	Medium	Close to Lot boundary. Retention subject to detailed design of Lot development
290	Marri (*Corymbia calophylla*)	14	55	8-10	8-10	mature	Excellent	Good		Good mature specimen. Evidence of Marri Canker but looks to be having limited affect on its health at this time. Situated in adjacent property but close to boundary so may be impacted by works. Not tagged!	No	5.5	**High**	Close to Lot boundary. Retention subject to detailed design of Lot development
291	Marri (*Corymbia calophylla*)	10	35	4-6	4-6	Semi-mature	Good	Acceptable - Good		Ok specimen. Main stem bi-furcates and evidence of included bark at the union. Evidence of Marri Canker; possibly starting to affect its health	No	3.5	Low	Looks to be in proposed Lot. Retention unlikely based on current design
292	Marri (*Corymbia calophylla*)	11	30 x2	4-6	4-6	Semi-mature	Good	Acceptable - Good		Ok specimen. Main stem bi-furcates but union looks to be Ok at this stage. Evidence of Marri Canker but no impact at this time	No	3	Medium	Looks to be in proposed Lot. Retention unlikely based on current design

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
293	Marri (*Corymbia calophylla*)	10	35	4-6	4-6	Semi-mature	Good	Acceptable - Good		Main stem bi-furcates but union looks to be Ok at this stage. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker	No	3.5	Medium	Close to Lot boundary. Retention subject to detailed design of Lot development
294	Marri (*Corymbia calophylla*)	10	30	4-6	4-6	Semi-mature	Fair	Good		Ok specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker relatively sparse	No	3	Low	Looks to be in proposed Lot. Retention unlikely based on current design
295	Marri (*Corymbia calophylla*)	10	40	6-8	6-8	Semi-mature	Good	Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker	No	4	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
296	Flooded Gum (*Eucalyptus rudis*)	10	40	4-6	4-6	Semi-mature	Excellent	Good		Good semi-mature specimen. .	No	4	Medium	Close to Lot boundary. Retention subject to detailed design of Lot development
297	Jarrah (*Eucalyptus marginata*)	14	185	10-12	10-12	mature	Excellent	Acceptable		Large mature specimen. Area of decay and cavity noted but not of a major concern at this time. Possibly 200yrs plus	No	10	**High**	Looks to be in proposed Lot. Retention unlikely based on current design
298	Almond (Prunus dulcis)	4	40	2-4	2-4	Post-mature	Fair	Poor (potentially Hazardous)		Canopy condition suggests it may have limited life span remaining. Area of decay and cavity noted and could be impacting structural integrity of the tree to some degree.	No	4	Very Low	Looks to be in proposed Lot. Retention unlikely based on current design
299	Marri (*Corymbia calophylla*)	11	35	4-6	4-6	Semi-mature	Good	Good		Reasonably good specimen. Evidence of Marri Canker but looks to be having limited affect on its health at this time.	No	3.5	Medium	Looks to be in proposed Lot. Retention unlikely based on current design

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
300	Marri (*Corymbia calophylla*)	9	35, 25	8-10	6-8	mature	Good	Acceptable - Good		Ok specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Co-dominant leader from near ground level. Canopy is relatively one sided (west) due to proximity of adjacent tree. Some surface disturbance noted over root zone area. Suggest ok to retain but only if adjacent tree is retained; otherwise suggest remove	No	3.5	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
301	Marri (*Corymbia calophylla*)	9	30	6-8	4-6	mature	Good	Acceptable		Ok specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Canopy is one sided (south) due to proximity of adjacent tree. Some surface disturbance noted over root zone area. Suggest ok to retain if adjacent tree is also retained; otherwise remove	No	3	Low	Looks to be in proposed Lot. Retention unlikely based on current design
302	Jarrah (Eucalyptus marginata)	14	75	10-12	8-10	mature	Good	Good		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Area of decay and cavity noted but not of a major concern at this time. in base of main stem. Some disturbance noted over root zone area	No	7.5	**High**	Looks to be in proposed Lot. Retention unlikely based on current design
303	Marri (*Corymbia calophylla*)	16	80	10-12	10-12	mature	Good	Acceptable		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Main stem bi-furcates and evidence of included bark and swelling at the union. Union looks to be ok at this time but may cause issues longer term. Some disturbance noted over root zone area	No	8	Medium	Looks to be in Road pavement area. Retention may be viable subject to detailed design of area within its TPZ
304	Marri (*Corymbia calophylla*)	15	60, 40	8-10	10-12	mature	Good	Acceptable		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Multi-stemmed from ground level. Some disturbance noted over root zone area	No	6	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
305	Marri (*Corymbia calophylla*)	15	35, 20	4-6	4-6	mature	Good	Acceptable		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Main stem bi-furcates but union looks to be Ok at this stage. Some disturbance noted over root zone area	No	6	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
306	Marri (*Corymbia calophylla*)	17	90	12-14	14-16	mature	Good	Acceptable		Large mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Area of decay noted but not of a major concern at this time. Some disturbance noted over root zone area	No	9.5	**High**	Looks to be in car park pavement area. Retention **may** be viable subject to detailed design of area within its TPZ

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
307	Broadleaved Paperbark (*Melaleuca quinquenervia*)	11	25	2-4	2-4	Semi-mature	Excellent	Good		Good semi-mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form.	No	2.5	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
308	Manchurian Pear (*Pyrus ussuriensis*)	5	15	2-4	2-4	Semi-mature	Excellent	Good		Good specimen. Good aesthetic form/value. Worth salvaging should budgets and time frame allow	Yes	2.5	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
309	Manchurian Pear (*Pyrus ussuriensis*)	4.5	10	2-4	2-4	Semi-mature	Excellent	Good		Good specimen. Good aesthetic form/value. Worth salvaging should budgets and time frame allow. Not tagged due to size!	Yes	2.5	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
310	Manchurian Pear (*Pyrus ussuriensis*)	4.5	10	2-4	2-4	Semi-mature	Excellent	Good		Good specimen. Good aesthetic form/value. Worth salvaging should budgets and time frame allow. Not tagged due to size!	Yes	2.5	Medium	Looks to be in proposed Lot. Retention unlikely based on current design
311	Mango (*Magnifera indica*)	7	35	6-8	6-8	mature	Excellent	Good		Very good specimen of its species. Good aesthetic form/value. Worth salvaging should budgets and time frame allow	Yes	2.5	**High**	Possibly within Community Garden area. Retention subject to location within proposed design
312	Marri (*Corymbia calophylla*)	10	35	4-6	4-6	Semi-mature	Good	Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker	No	3.5	Medium	Looks to possibly within Community Garden area. Retention subject to location within proposed design
313	Mango (*Magnifera indica*)	7	30	6-8	6-8	mature	Excellent	Good		Very good specimen of its species. Good aesthetic form/value. Worth salvaging should budgets and time frame allow. Matches other Mango (#311)	Yes	3	**High**	Looks to be within existing sales office area. Retention looks viable at this time subject to any changes to this area

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
314	Marri (*Corymbia calophylla*)	15	65	12-14	10-12	mature	Fair	Acceptable - Good		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Main stem bi-furcates and evidence of included bark and swelling at the union. Union looks to be ok at this time but may cause issues longer term. Evidence of Marri Canker	No	6.5	Medium	Looks to be in car park pavement area. Retention **may** be viable subject to detailed design of area within its TPZ
315	Rose Gum (*Eucalyptus grandis*)	25	80	10-12	16-18	mature	Excellent	Acceptable - Good		Large mature specimen. . Bark wounds at union typical to that caused by birds; ok at this time but may cause issues longer term. Some disturbance noted over root zone area. Some larger deadwood noted. Question retention other than in low Target area	No	8	Low	Looks to be in car park pavement area. Retention **may** be viable subject to detailed design of area within its TPZ
316	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	20	75	8-10	10-12	mature	Good	Good		Main stem bi-furcates but union looks to be Ok at this stage. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Some disturbance noted over root zone area. Minor amount of larger deadwood noted	No	7.5	Medium	Looks to be in car park pavement area. Retention **may** be viable subject to detailed design of area within its TPZ
317	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	20	50	6-8	4-6	mature	Good	Acceptable		Ok specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Very leggy canopy form. Would question retention if adjacent trees are removed. Some disturbance noted over root zone area	No	5	Low	Looks to be in car park pavement area. Retention **may** be viable subject to detailed design of area within its TPZ
318	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	20	55	4-6	42714	mature	Good	Acceptable - Good		Has grown on a lean but not considered to be of any issue at this time with its in-ground stability. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Would question retention if adjacent trees are removed. Some disturbance noted over root zone area	No	5.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
319	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	21	75	18-20	12-14	mature	Excellent	Good		Large mature specimen. Good aesthetic form/value. Some disturbance noted over root zone area	No	7.5	**High**	Looks to be in WP Easement. Retention viable subject to landscape design
320	Marri (*Corymbia calophylla*)	23	50	4-6	6-8	mature	Good	Good		Large mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Upright canopy form. Some disturbance noted over root zone area	No	5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
321	Marri (*Corymbia calophylla*)	13	25	4-6	6-8	Semi-mature	Good	Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker	No	2.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
322	Marri (*Corymbia calophylla*)	14	40, 30	4-6	6-8	mature	Good	Good		Main stem bi-furcates but union looks to be Ok at this stage. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker	No	4	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
323	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	17	60	8-10	12-14	mature	Good	Acceptable		Ok mature specimen. Previously lopped but union of regrowth . Canopy is slightly sparse but what leaf mass is present shows good condition and form. Topped for powerlines and will remain an ongoing management requirement	No	6	Low	Looks to be in WP Easement. Retention viable subject to landscape design
324	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	16	45	6-8	6-8	mature	Good	Acceptable		Ok mature specimen. Previously lopped but union of regrowth . Canopy is slightly sparse but what leaf mass is present shows good condition and form. Topped for powerlines and will remain an ongoing management requirement	No	4.5	Low	Looks to be in WP Easement. Retention viable subject to landscape design
325	Marri (*Corymbia calophylla*)	15	55	10-12	10-12	mature	Good	Good		Good mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker. Minor amount of larger deadwood noted	No	5.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
326	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	18	55	10-12	10-12	mature	Excellent	Good		Good mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. May need to be topped for powerlines unfortunately	No	5.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
327	Marri (*Corymbia calophylla*)	9	30	4-6	4-6	Semi-mature	Good	Acceptable		Ok specimen. Has grown on a lean but not considered to be of any issue at this time with its in-ground stability. Suppressed slightly by the adjacent tree	No	3	Low	Looks to be in WP Easement. Retention viable subject to landscape design

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
328	Marri (*Corymbia calophylla*)	18	60	10-12	10-12	mature	Good	Good		Good mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. May need to be topped for powerlines unfortunately at some stage but looks to be ok at this time	No	6	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
329	Marri (*Corymbia calophylla*)	18	40	4-6	4-6	mature	Excellent	Good		Good mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. May need to be topped for powerlines unfortunately at some stage but looks to be ok at this time. Minor amount of larger deadwood noted	No	4	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
330	Marri (*Corymbia calophylla*)	12	40	4-6	4-6	mature	Good	Acceptable - Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Canopy is relatively one sided (east) due to proximity of adjacent tree. Evidence of Marri Canker	No	4	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
331	Marri (*Corymbia calophylla*)	17	80	8-10	12-14	mature	Fair	Good		Large mature specimen. Canopy is slightly sparse and suggests that it may be starting to decline in health/vigour. Evidence of Marri Canker which may be starting to affect its health. Some larger deadwood noted. Possibly termites	No	8	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
332	Jarrah (*Eucalyptus marginata*)	13	40	4-6	6-8	mature	Good	Good		Good mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form.	No	4	**High**	Looks to be in WP Easement. Retention viable subject to landscape design
333	Marri (*Corymbia calophylla*)	12	40	4-6	4-6	mature	Good	Good		Good mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker which may be starting to affect its health. Situated outside boundary but may be impacted by works depending on design	No	4	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
334	Marri (*Corymbia calophylla*)	13	45	4-6	4-6	mature	Good	Good		Good mature specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form. Evidence of Marri Canker which may be starting to affect its health. May need to be topped for powerlines at some stage but ok at this time	No	4.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
335	Jarrah (*Eucalyptus marginata*)	8	25, 12	4-6	4-6	Semi-mature	Excellent	Acceptable - Good		Reasonably good specimen. Multi-stemmed from ground level.	No	2.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
336	Spotted Gum (*Corymbia maculata*)	18	40	6-8	6-8	Semi-mature	Excellent	Acceptable		Ok mature specimen. Previously lopped but union of regrowth . . Likely to need to be topped for powerlines periodically	No	4	Low	Looks to be in WP Easement. Retention viable subject to landscape design
337	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	15	55	10-12	10-12	mature	Good	Acceptable		Ok mature specimen. Previously lopped but union of regrowth . Has grown on a lean but not considered to be of any issue at this time with its in-ground stability. Likely to need to be topped for powerlines periodically	No	5.5	Low	Looks to be in WP Easement. Retention viable subject to landscape design
338	Jarrah (*Eucalyptus marginata*)	9	30	4-6	4-6	Semi-mature	Good	Good		Good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form.	No	3	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
339	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	9	30	8-10	4-6	Semi-mature	Good	Acceptable		Ok specimen. Has grown on a lean. Not considered to be of any issue at this time with its in-ground stability but may cause issues longer term.	No	3	Low	Looks to be in WP Easement. Retention viable subject to landscape design
340	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	17	85	12-14	12-14	mature	Excellent	Acceptable - Good		Has grown on a lean but not considered to be of any issue at this time with its in-ground stability. Main stem bi-furcates but union looks to be Ok at this stage. Minor amount of larger deadwood noted	No	8.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
341	South Australian Yellow Gum (*Eucalyptus leucoxylon 'Rosea'*)	13	35, 20	6-8	6-8	mature	Good	Acceptable - Good		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Multi-stemmed from near ground level.	No	3.5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
342	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	16	50	4-6	6-8	mature	Good	Acceptable - Good		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Has grown on a lean but not considered to be of any issue at this time with its in-ground stability. May need to be topped for powerlines at some stage but looks to be ok at this time	No	5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
343	Lemon Scented Gum (*Corymbia citriodora*)	15	45	8-10	8-10	mature	Good	Undesirable		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Previously lopped specimen and unions of regrowth suggest they could be a cause of concern and increased potential for failure. Will need to be re-topped for powerlines at some stage but structure likely to cause issues longer term so question retention	No	4.5	Low	Looks to be in WP Easement. Retention viable subject to landscape design
344	Rose Gum (*Eucalyptus grandis*)	19	80	14-16	18-20	mature	Excellent	Undesirable		Large mature specimen. Previously lopped specimen and unions of regrowth suggest they could be a cause of concern and increased potential for failure. Will need to be re-topped for powerlines at some stage but structure likely to cause issues longer term so question retention	No	8	Low	Looks to be in WP Easement. Retention viable subject to landscape design
345	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	15	60, 55	8-10	12-14	mature	Excellent	Acceptable - Good		Main stem bi-furcates but union looks to be Ok at this stage. Has grown on a lean but not considered to be of any issue at this time with its in-ground stability. Canopy is slightly sparse but what leaf mass is present shows good condition/form. May need to be topped for powerlines at some stage but ok at this time	No	6	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
346	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	16	60	6-8	6-8	mature	Excellent	Acceptable		Ok mature specimen. Previously lopped but union of regrowth . . Will need to be re-topped for powerlines at some stage but structure likely to cause issues longer term so possibly question retention depending on landscape design	No	6	Low	Looks to be in WP Easement. Retention viable subject to landscape design
347	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	16	70	10-12	8-10	mature	Excellent	Acceptable		Ok mature specimen. Previously lopped but union of regrowth . Main stem bi-furcates but union looks to be Ok at this stage. Will need to be re-topped for powerlines at some stage but structure likely to cause issues longer term so possibly question retention depending on landscape design	No	6.5	Low	Looks to be in WP Easement. Retention viable subject to landscape design
348	South Australian Yellow Gum (*Eucalyptus leucoxylon 'Rosea'*)	10	30	4-6	4-6	mature	Good	Good		Reasonably good specimen. Canopy is slightly sparse but what leaf mass is present shows good condition and form.	No	3	Medium	Looks to be in WP Easement. Retention viable subject to landscape design

Tree ID	Species	Approx. Height (metres)	Approx. DBH (cm)	Canopy Spread (metres diameter) N-S	E-W	Age Class	Health	Structure	Image	Comments	Potential Transplant	TPZ (metres radius)	Retention Value	Design Comment
349	Marri (*Corymbia calophylla*)	18	50	8-10	8-10	mature	Good	Acceptable		Canopy is slightly sparse but what leaf mass is present shows good condition and form. Main stem bi-furcates but union looks to be Ok at this stage. Evidence of Marri Canker but looks to be having minimal impact at this time	No	5	Medium	Looks to be in WP Easement. Retention viable subject to landscape design
350	Marri (*Corymbia calophylla*)	8	35	6-8	6-8	Semi-mature	Good	Acceptable		Ok specimen. Has grown on a lean but not considered to be of any issue at this time with its in-ground stability. Evidence of Marri Canker but looks to be having minimal impact at this time. Canopy is one sided (south) due to proximity of adjacent tree	No	3.5	Low	Looks to be in WP Easement. Retention viable subject to landscape design

5. Potential Impact from Proposed Development

5.1 Potential Impact from Development

Trees #287, #288, #293 and #296 look to be situated close to Lot boundary or in the adjacent property.

Their (successful) retention looks to be subject to aspects of detailed design such as:

- Any remediation requirements for existing site soil as part of development,
- Actual location of Lot boundary in relation to the Trees and their designated TPZ areas, and
- What Lot boundary treatments are proposed to be installed.

Note: Particular care will also be required so to minimise disturbance to the TPZ of the Trees in the adjacent property (Trees #289, #290).

Trees #303, #306, #314-#317 all look to be in car park/road pavement area.

Their (successful) retention may be viable subject to detailed design of areas within their designated TPZ; namely:

- Any proposed changes to ground levels,
- Any remediation requirements for existing site soil as part of development ,
- Details of any drainage for the car park/road pavement areas (gully traps, pipes etc.),
- Any other services required to be installed as part of car park construction (i.e. power, water, gas etc.)

Note: Tree #306 is considered to have a high retention value.

Trees #291, 292, #294, #295, #297 - #302, #304, #395, #307-#310 all look to be situated within proposed Lots.

Retention of these Trees does not look to be viable with the current design based on the Plan provided.

Notes: Trees #397, #302 are considered to have a high retention value.
Trees #308, #309, #310 are transplantable if desired/required.
Trees #291, #294, #301 are considered to have a low retention value, and
Tree #298 is considered to have a very low retention value.

Trees #51-#54, #311, #312, #313 all look to be within the existing Sales Office or Community Garden Area. Retention of these Trees looks to be viable subject to details of any changes to their surrounds proposed as part of development.

Note: Trees #54, #311, #313 are considered to have a high retention value.

Trees #47-#50, #318 - #350 all look to be in the Western Power easement area.

Retention of these Trees looks to be viable subject to details of any landscape design; particularly the Trees that have been previously topped as it may be a better longer term management strategy to remove and replace these Trees as part of landscape works.

Note: Trees #319 and #332 are considered to have a high retention value.

6. Protection of Trees as part of Development

6.1 Design Stage

It is difficult to provide any further specific comments for each Tree as to the potential of the impact from the development of this Site at this stage, as much of the impact caused will be very much dependent on the detailed design aspects of any proposed development.

The retention of the existing current ground level and soil profile within a Tree's designated TPZ will however be of paramount and key importance in the success of the retention of any Tree.

Effective tree protection must also begin with good design and specifications, so that protection during the construction/landscape stages of a development will be achievable and practicably possible.

As an initial recommendation:

1. The TPZ of each Tree is strongly recommended to be overlaid onto all drawings and designs of the proposed development where the Tree is proposed to be retained.

   Where encroachments into a designated TPZ are found to be required, further discussion with an experienced independent arboricultural consultant is an important part of the tree protection process.

   This is not to say that some encroachment and development activity would not be permitted to be undertaken within a TPZ area as part of a development process.

   However any encroachment required/proposed will require further input and discussion with the arboricultural consultant as part of any detailed design process to determine what the potential impact on the given Tree will be, and what design modifications or measures may need to be implemented to mitigate any potential negative impact on the given Tree.

   If considered necessary, some exploratory excavation works may also be required to verify actual root spread and determine what impact could occur.

2. Efforts are recommended to be spent on the inclusion of the Trees with high retention value, and the areas of Trees indicated on the overview of the Site provided in this report.

Aspects such as resulting levels, delineation of any underground service pipework, drainage, sewerage etc. can all have (potentially) a major impact on a tree's root zone, and in turn its future health and potential lifespan.

During the design process further arboricultural input will likely be required to discuss:

- Current existing ground levels and proposed resulting levels of the various areas of the Site. Note: As previously mentioned, retaining and maintaining current existing ground levels within the designated TPZ of any tree is of paramount importance to the success of tree retention.
- Delineation of <u>any</u> underground services pipework including drainage, sewerage, water, gas, electricity, telecommunications and the like; specifically should they pass through any designated TPZ.
- Location of any drainage near to the Trees and their TPZ.
- Any site remediation requirements within TPZ areas as part of the Site clearing process.

6. Protection of Trees as part of Development

6.2 Physical Protection of Trees during Development

Physical protection measures in accordance with AS 4970 will also be required for any Tree selected for retention; details of any measures to be implemented will be very much dependent on the final detailed design.

It will be of critical importance that the appropriate protection measures are set up and maintained from the outset; i.e. before any Site clearing/demolition works commence.

Implementing tree protection measures after damage has occurred from works is often of little to no value other than affording some protection from further damages occurring.

The TPZ area of the Trees is strongly recommended to be fenced off from the works site for the duration of the works.

The TPZ must not at any time be utilised for the purposes of:

- Traversing and/or parking of plant machinery or vehicles
- Storage for construction or deleterious materials
- Vehicle refuelling
- Storage of surplus fill
- Preparation of chemicals and/or cement products (or within 15 metres of the TPZ)
- Areas to dump construction and general waste
- Wash down or cleaning
- Locations for site offices or toilets
- Or any activity that may harm or injure the tree above or below ground parts

6.3 Canopy Works

Canopy works are likely to be required on a small number of the Trees.

The extent of canopy works on each Tree is however very much dependent on the eventual landscape around the Tree and what potential targets (people, structures etc.) may eventually be within the given Tree's projected fall zone.

At this stage canopy works are likely to be restricted to the removal of any larger diameter deadwood (i.e. any dead branches 50mm or greater in diameter) and/or the raising of canopy's where necessary to provide clearances for future footpaths, structures and/or roads.

Other canopy works may be required pending results of detailed design and what targets will be within the given Tree's projected fall zone.

All canopy works are recommended to be undertaken by suitably qualified and experienced tree surgeons, who possess a minimum qualification of AQF certificate 3 arboriculture, or recognised equivalent qualification.

All canopy pruning works must also comply with Australian Standards 4373; Pruning of Amenity Trees.

Attachments to this Report

Attachment 1; Tree Location Guide

Attachment 2; Tree Location Guide with retention value overlaid

Attachment 3; Company Information & Disclaimer

Attachment 1; Tree Location Guide

Attachment 2; Tree Location Guide (with retention value overlaid)

Key

●	High Retention Value	Tree of particular note due to size, age, condition, species
●	Medium Retention Value	Reasonably good/good Tree
●	Low Retention Value	Trees displaying reduced health and/or questionable structural form but may considered ok for low target areas of POS
●	Very Low Retention Value	Trees with poor structure, possibly limited life span remaining, undesirable species; suggest remove

Attachment 3; Company Information & Disclaimer

Company Name: ARBOR logic

A.C.N.: 107 194 061

A.B.N.: 66 566 369 687

Insurance Details:

General Liability; [redacted]

Professional Indemnity; [redacted]

Personal Protection; [redacted]

Office/Contact Details

[redacted]

Consultant Details

Consultant Contact: [redacted]

MEMBER ISA — J. Royal; 172723

Arboriculture Australia™ — Member No. 1254

QTRA Registered User — Lic. No. 1743

Ph: [redacted]

Mobile: [redacted]

Email: [redacted]

Disclaimer

This Report has been provided in good faith and based upon the material information provided by the Client to Arbor logic, and/or based on the visual inspection of the tree(s) at the time this advice was prepared.

The contents of this Report should be read in full, and at no time shall any part of the Report be referred to unless taken in full context with the remainder of the document.

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- The provision of misleading or incorrect information by the Client or any other party to Arbor logic upon which this advice was prepared.
- This advice being used by the Client or any other party in circumstances or situations other than the specific subject of this advice.
- Failure by the Client to follow this advice.
- The action(s) or inaction(s) of the Client or any other party that gives rise to the loss of, or damage to, the tree(s) that are the subject of this advice.

It is also important to take into consideration that all trees are living organisms and as such there are many variables that can affect their health and structural properties that remain beyond the scope of reasonable management practices or the advice provided in this Report based on the visual inspection of the tree(s).

As such a degree of risk will still remain with any given tree(s) despite the adoption of any best management practices or recommendations made in this Report.