Assessment of Trees; Western verge of Railway Street opposite North Cottesloe Primary School

Prepared For

Town of Cottesloe

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 area of the Western verge along Railway Street opposite North Cottesloe Primary School that was included in the assessment

'Tree' meaning any tree identified on the Site

'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

'SRZ' meaning 'Structural Root Zone'; the where the where the majority of the Tree's larger in-ground supportive root mass is considered likely to be found.

'Initial Inspection' meaning the initial assessment of the Trees on the Site that was undertaken by Arbor logic in February 2018

'Plan Provided' meaning the plans of the current proposed design provided; drawing numbers SK300 and SK301

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 initially undertaken February 26, 2018 and then subsequently undertaken March 26, 2019.

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

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

1. Re-inspect of all Trees in the area identified.
2. Provide up-dated information on each Tree where considered necessary 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 (i.e. any hazards, defects, issues etc.).
3. Review the Plans Provided and identify any Trees that may be impacted by the proposed works.
4. Provide any broad-brush purposeful and practical considerations and recommendations as part of the development process.

3. Methodology of the Assessment

All of the identified Trees and areas of trees were visually inspected from ground level in accordance with visual tree assessment ("VTA") methods and principles.

The VTA method is based on the sciences of tree biology, physiology, tree structure, and tree bio-mechanics. It is a method widely used by arborists worldwide to identify visible signs on trees that indicate any health or potential structural issues that in turn could increase the risks associated with the given tree.

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.

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.

With regards to any future development the known natural species traits of the given tree and its 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.

The Tree's species 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.

3. Methodology of the Assessment

The Trees were also assessed using the principles of SULE; "Safe-Useful-Life-Expectancy"[1].

SULE is a system that can be used to provide an indication of the length of time an individual tree can be retained with an acceptable level of risk based on the information available at the time of inspection.

It is a snapshot in time of the potential an individual tree has for survival in the eyes of the assessor based on the tree's current health and structural condition, and the known typical life span of specimens of its given species for the given area/situation.

There are many factors that can affect SULE of a tree such as:

- Obvious past influences.
- Health and vitality and presence of any pest or disease pathogen.
- Estimated age in relation to expected life expectancy for the species.
- Structural defects which may influence the potential life expectancy for the species.
- Remedial work which may be necessary to allow retention in the existing situation.
- 'Rootable' soil volume for the area in which it is situated.
- Environment and climate factors.

As such, at best the SULE for any given tree can only be estimated within a 'range' of years, with the following ranges typically used; Long Term (>40 years), Medium Term (15-40 years), Short Term (5-15 years), and Limited (<5yrs)

[1] SULE: Its use and status into the new millennium; J Barrell; 2001

4. Summary of the Key Findings of the Assessment

4.1 No of Trees Identified

83 Trees were identified in the area inspected. Attachment 1 of this report provides a guide to their location.

4.2 Species Identified

26 different species were identified on the Site across 12 different plant Genera, and 8 plant Family.

The majority of the species identified were noted to be West Australian native species.

All of the species identified on the Site were considered to be very common species for the Perth metropolitan area, and most were considered suitable for their given situation.

Table 1; List of species Identified on Site

Species	No of	Origin	Family
Bald Island Marlock (*Eucalyptus conferruminata*)	1	WA native	Myrtaceae
Bottlebrush Dawson River Weeper (*Callistemon* 'Dawson River Weeper')	6	Aus native	Myrtaceae
Bottlebrush Kings Park Special (*Callistemon* 'Kings Park Special')	6	Aus native	Myrtaceae
Bracelet Honey Myrtle (*Melaleuca armillaris*)	1	Aus native	Myrtaceae
Coojong (*Acacia saligna*)	6	WA native	Fabaceae
Coral Gum (*Eucalyptus torquata*)	1	WA native	Myrtaceae
Firewood Banksia (*Banksia menziesii*)	2	WA native	Proteaceae
Geraldton Wax (*Chamaelaucium uncinatum*)	1	WA native	Myrtaceae
Grass Tree (*Xanthorrhoea preissii*)	13	WA native	Xanthorrhoeoideae
Jarrah (*Eucalyptus marginata*)	2	WA native	Myrtaceae
Limestone Marlock (*Eucalyptus decipiens*)	1	WA native	Myrtaceae
Norfolk Island Pine (*Araucaria heterophylla*)	10	Aus native	Araucariaceae
Northern River Red Gum (*Eucalyptus camaldulensis 'Obtusa'*)	3	Aus native	Myrtaceae
Red Flowering Gum (*Corymbia ficifolia*)	1	WA native	Myrtaceae
River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	1	Aus native	Myrtaceae
River Sheoak (*Casuarina cunninghamiana*)	1	Aus native	Myrtaceae
River Yate (*Eucalyptus macrandra*)	3	WA native	Myrtaceae
Rose Gum (*Eucalyptus grandis*)	1	Aus native	Myrtaceae
Rottnest Island Pine (*Callitris preissii*)	4	WA native	Cupressaceae
Rottnest Island Tea Tree (*Melaleuca lanceolata*)	4	WA native	Myrtaceae
Showy Honey Myrtle (*Melaleuca nesophila*)	1	WA native	Myrtaceae
Spotted Gum (*Corymbia maculata*)	1	Aus native	Myrtaceae
Swamp Sheoak (*Casuarina obesa*)	4	WA native	Casuarinaceae
Tamarisk (*Tamarix aphylla*)	2	Exotic	Tamaricaceae
Tuart (*Eucalyptus gomphocephala*)	1	WA native	Myrtaceae
West Australian Peppermint (*Agonis flexuosa*)	6	WA native	Myrtaceae

None of the tree species identified are considered to be (or are known to be classed as) an endangered species, or found on the Environment Protection and Biodiversity Conservation Act 1999.

One of the tree species identified is known to be a declared weed species[2]; Tamarisk (*Tamarix aphylla*); status s22(2).

[2] Reference; Declared Plant Species in Western Australia (Department of Agriculture and Food, Western Australia 2008)

4. Summary of the Key Findings of the Assessment

The Northern River Red Gum (Eucalyptus camaldulensis 'Obtusa') is generally considered to be a higher risk species in terms of their propensity for branch failure compared to the majority of other species of tree.

4.3 Health Condition

The majority of the Trees looked to be remaining in good health or better at this time and no major change looks to have occurred since the Last Inspection.

One dead tree was noted on the Site and a small number of other Trees show indications of a declining health which looks to be due to their probable age and typical life span of their given species.

I could see no visible evidence of any 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 and any tree health issues looks to be associated with environment factors and/or the age of the given tree and the typical natural life span of their given species expected when found in their given situation.

4.4 Structural Condition

The majority of the Trees continue to show 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.

A small number of the Trees were noted to have very low spreading canopy form. Whilst this is not necessarily considered to be of any issue in terms of their structural integrity, this type of canopy form can become a limiting factor to tree retention particularly if canopies need to be raised excessively to provide clearances over road and/or footpaths.

All of the Trees looked to be remaining root stable at the time of inspection.

4.5 SULE

The majority of the Trees were still considered to have either a medium or a long SULE remaining; given the majority are species that are generally considered to be long-lived species when remaining in good health.

Their SULE could however change depending on the extent of changes to their surrounds that occur as a result of development and/or their treatment (protection) during any development works that occur around them.

There are 10 Trees on this Site that look to have limited SULE remaining (<5 years anticipated before they will either be dead or require removal), and a further 9 Trees look to have a Short-Term SULE remaining (between 5 and 15 years anticipated before they will require removal).

4. Summary of the Key Findings of the Assessment

4.6 Suitability for inclusion into an area of development

Retention value of the various tree species and even individual tree specimens will always be open to some personal opinion.

In general trees displaying good health and deemed to have a good aesthetic quality will be generally considered to have a high retention value.

Conversely, dead or declining trees, or tree species known (or considered) to be problematic in terms of having a propensity for branch failures, or ones that could self-seed freely, or one that display low aesthetic traits would typically be considered to have a low retention value.

Whilst all of the Trees on the Site may have high environmental benefits, as part of ascertaining the suitability for inclusion into a development other aspects of each tree must be considered; primarily its structural form and suitability for inclusion into an urbanised area with high volumes of potential targets (such as people, structures etc.), and its potential to cope with changes to its soil and surrounding environment that typically occur as part of a development process.

Based on the findings of the assessment:

- **17 Trees were considered to have a 'High' retention value**. These Trees are considered to be the better quality Trees on this Site and have good aesthetic form and provide good (visual) amenity for the area in which they are situated. Of these Trees:
    - 9 are large mature Norfolk Island Pine that look to provide high aesthetic amenity and a prominent feature for the area where they are situated.
    - 8 are old Grass Tree specimens considered to be well in excess of 100 years old. These Trees would be transplantable if required.

- **28 Trees were considered to have a 'Medium' retention value.** These Trees are generally considered to be reasonably good (i.e. typical) specimens of their given species and would be suitable for retention in the context of what is proposed providing design can accommodate their protection requirements.

- **33 Trees are considered to have a 'Low' retention value** in the context of a development process. Of these Trees
    - 15 of these look to be juvenile trees that would be readily replaceable with limited loss of canopy cover,
    - 5 have structural form that looks likely to cause issues longer term
    - 4 are species that is generally considered to have a very short live span (i.e. <10 years)
    - 3 are trees of a higher risk species for urbanised areas,
    - 4 have canopy form that may limit their potential for retention in the context of what is proposed, and
    - 2 are a declared weed species

4. Summary of the Key Findings of the Assessment

- **Five Trees are considered to have a 'Very Low' retention value** and would be recommended to be removed as part of any development process of the Site. Of these Trees:
    - 1 looks to be mostly dead,
    - 2 look to have limited life span remaining, and
    - 2 look to be regrowth from the stumps of previously removed trees

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

4.7 Other Notable Observations about the Site considered pertinent to the Trees

The existing Road looks to be higher than the majority of the area where the Trees are situated by so some level of cut/fill may be possible without impacting the majority of the Trees depending on the final alignment of any new road pavement constructed and any site specific retaining or engineering requirements.

Drainage outlet for the Road was noted between Trees #27 and #28. At this time it is suspected that the installation of the drainage pipes and associated infrastructure may have resulted in some degree of previous root zone disturbance and/or loss of root mass to occur to these Trees.

Based on historical aerial imagery of the Site, the current existing footpath and car park area look to have been constructed after the line of Norfolk Island Pine had been planted and established. At this time it is suspected that the construction of the footpath and/or car park area may have resulted in some degree of previous root zone disturbance and/or loss of root mass to occur to those particular Trees (Trees #1, #7, #23 and #24).

5. Table of the Key Findings of the Assessment

The following pages provide further information on the Trees identified during this assessment.

Explanation of Fields of Information in the Table

Tree ID. Provides an identification number for the identified Tree corresponding to its tree tag number on Site

Species Provides the botanical and most commonly used species name of the Tree.

Height Provides the height of the Tree (in metres) to the nearest metre.

DBH (Trunk Calliper) Provides the diameter of the Tree's main stem (trunk) in centimetres, and generally measured at 1.4 metres above ground level as per the industry standard. Should lower canopy formation start below 1.4 metres above ground level, the DBH is estimated at the point below the furcation of its main stem. In instances where the tree has multiple main stem structures, the DBH of all has been provided.

Estimated Canopy Spread Provides an estimated spread of the Tree's canopy; provided in metres diameter. Both north-south and east – west canopy dimensions have been provided.

Health Condition Provides a view of the Tree's health/vigour condition at the time of inspection based on a number of predetermined criteria.

Health Rating	Explanation
Excellent	Shows to have typical foliage condition and amount of foliage mass for a specimen of the species. May have a minor amount of deadwood, but no signs of any pest or disease factor that may affect its health.
Good	Shows to have typical foliage condition. Canopy foliage may be slightly chlorotic, or it may have a slightly higher percentage of deadwood than usual, or exhibit signs of being affected by environmental conditions. May have a minor pest or disease present that could start to affect its health.
Fair	Shows to have a relatively high percentage of deadwood than considered typical for a specimen of the given species and/or a low volume of live canopy leaf mass for a specimen of the given species. Apical sections of the canopy (may also be) dead. Signs of a pest or disease factor evident.
Poor	Canopy mass and foliage condition shows to be in a poor state for a specimen of the species. Has a high percentage of deadwood material in its canopy and a low volume of live canopy mass (typically <20%).
Dead	Shows to have either no live tissue within its structure, or at best has <5% live foliage mass remaining in its canopy.

5. Table of Information on the individual Trees identified during the Assessment

Structural Form Provides a view of the Tree's structural form at the time of inspection based on a number of predetermined criteria.

Structure Rating	Explanation
Good	Shows typical structural form for a specimen of the species. Branch unions show typical form at the point of attachment. May have a small number of minor structural defects; but are within the scope of tree surgery management to rectify. Shows to be root-stable.
Acceptable	Shows an acceptable form, but may have a number of structural defects present i.e. bi-furcation (but with no major swelling or movement), or areas of stem cavities, but structure remains within the scope of management at this stage; albeit with a higher risk/management requirement. Can include previously lopped trees that are known to have good points of attachment of any regrowth that occurs.
Questionable /Undesirable	Shows an undesirable structure for a specimen of the species. Structural condition likely to cause future issues in regards to the potential for branch or even complete tree failure to occur. Generally includes previously lopped trees, trees with large areas of cavity and/or associated decay that may be starting to affect its structural integrity, trees with bi-furcated unions with notable included bark and swelling that are considered to have an increased potential to fail.
Poor	Major structural defects evident. May have very large stem cavities, extensive termite damage, or noticeable movement in main stem, branch unions or root plate area.

Age Class Provides the age class of the given Tree.

SULE Provides an opinion of the 'safe-useful-life-expectancy' of the given Tree (range in years)

Image Provides and image of the Tree

Comments Provides any additional information (seen as relevant in the context of this report) to the Tree. Comments are (generally) self-explanatory.

An explanation of arboricultural terms has been provided as an attachment to this document.

TPZ Meaning the Tree's protection zone; the area where the majority of the given Tree's root mass is considered likely to be found.

Any works required in this zone are considered likely to have some potential to impact the Tree.

Retention Value Provides an overall 'opinion' on the quality of the Tree and its suitability for retention as part of the development.

This opinion rating has been colour-coded for ease of reference.

High
Medium
Low
Very Low

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
1	Norfolk Island Pine (*Araucaria heterophylla*)	25	53	4--5	4--5	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time.	6.4	**High;** prominent aesthetics	Approx. 3m from existing footpath (proposed kerbline) Lower than footpath level. Impact to root zone needs to be verified by way of exploratory excavations
2	Rottnest Island Pine (*Callitris preissii*)	2	10	1--2	1--2	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Readily replaceable if required.	1.5	Low; replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impact by the works
3	Rottnest Island Pine (*Callitris preissii*)	2	10	1--2	1--2	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable if required.	1.5	Low; replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impact by the works
4	Rottnest Island Pine (*Callitris preissii*)	2	10	1--2	1--2	Fair	Good	Semi-mature	Short-term (5-15 yrs)		Canopy condition suggests possibly limited life remaining. Readily replaceable if required.	1.5	Low; replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impact by the works

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				N-S	E-W									
5	Bottlebrush Dawson River Weeper (*Callistemon* 'Dawson River Weeper')	1	5	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Readily replaceable if required.	1.5	Low; replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impact by the works but may well get damaged during construction anyway due to its small size
6	Bottlebrush Dawson River Weeper (*Callistemon* 'Dawson River Weeper')	1	5	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable if required.	1.5	Low; replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impact by the works but may well get damaged during construction anyway due to its small size
7	Norfolk Island Pine (*Araucaria heterophylla*)	19	39	4--5	4--5	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition	4.7	**High;** prominent aesthetics	Approx. 1.5m from existing footpath.(proposed kerbline) Lower than footpath level. Impact to root zone needs to be verified by way of exploratory excavations
8	Red Flowering Gum (*Corymbia ficifolia*)	2	5	0.5-1	1--2	Excellent	Good	Juvenile	Medium term (15-40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Looks to be a hybrid variety.	1.5	Low; replaceable at this size/age	May be in the way of the footpath

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
9	Bottlebrush Kings Park Special (*Callistemon* 'Kings Park Special')	2.5	10	1--2	1--2	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time.	1.5	Low; replaceable at this size/age	May be in the way of the footpath
10	Coojong (*Acacia saligna*)	3.5	12	2--3	3--4	Excellent	Good	Semi-mature	Limited (<5 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Looks to be self-sown. Typically very short lived species	1.5	Low; typically short lived species	Looks unlikely to be impacted based on the Plan Provided
11	Northern River Red Gum (*Eucalyptus camaldulensis 'Obtusa'*)	10	61	9--10	9--10	Excellent	Undesirable	Mature	Short-term (5-15 yrs)		Ok specimen. Evidence of numerous previous branch failures. Species tend to have higher propensity for branch failures than most others	7.3	Low; generally considered to be a higher risk species	Looks unlikely to be impacted based on the Plan Provided
12	River Sheoak (*Casuarina cunninghamiana*)	7	24	6--7	6--7	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Possibly self-sown	2.9	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
13	Rottnest Island Tea Tree (*Melaleuca lanceolata*)	3.5	20	8--9	7--8	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. Multi-stemmed from ground level possibly more than one tree. Looks to be a number of trees planted in close proximity that effectively form the one canopy. Sections of its canopy may be able to be removed but suggest treat as one for purposes of protection	canopy spread	Low; ok tree but form may be limiting factor to its retention	Looks to be in the way of the footpath alignment
14	Swamp Sheoak (*Casuarina obesa*)	7.5	34*	6--7	6--7	Excellent	Acceptable	Semi-mature	Long term (>40 yrs)		Ok specimen. Multi-stemmed from ground level possibly more than one tree. Included bark between stems. Ok at this time but likely to cause issues longer term	4.1	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
15	Northern River Red Gum (*Eucalyptus camaldulensis 'Obtusa'*)	17	77	16-18	18-20	Excellent	Questionable	Mature	Short-term (5-15 yrs)		Large mature specimen. Evidence of numerous previous branch failures. Broken branch lodged in the canopy (medium diameter-10-20cm). Possibly cross with Flooded Gum. Species tend to have comparatively high probability for failures than most others. May query retention if Targets are introduced into its Fall Zone	9.2	Low; generally considered to be a higher risk species	Looks unlikely to be impacted based on the Plan Provided
16	Bottlebrush Dawson River Weeper (*Callistemon* 'Dawson River Weeper')	1	2	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Readily replaceable at this size	1.5	Low; replaceable at this size/age	May not necessarily be impact by the works but may well get damaged during construction anyway due to its small size

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				N-S	E-W									
17	Bottlebrush Dawson River Weeper (*Callistemon* 'Dawson River Weeper')	1	2	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable at this size	1.5	Low; replaceable at this size/age	May not necessarily be impact by the works but may well get damaged during construction anyway due to its small size
18	Bottlebrush Dawson River Weeper (*Callistemon* 'Dawson River Weeper')	1	2	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable at this size	1.5	Low; replaceable at this size/age	May not necessarily be impact by the works but may well get damaged during construction anyway due to its small size
19	Swamp Sheoak (*Casuarina obesa*)	7.5	32*	5--6	6--7	Excellent	Acceptable	Semi-mature	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. Included bark between stems. Ok at this time but may cause issues longer term	3.8	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
20	Swamp Sheoak (*Casuarina obesa*)	7	32*	5--6	4--5	Excellent	Acceptable	Semi-mature	Medium term (15-40 yrs)		Reasonably good specimen. Bark wound noted on main stem. Co-dominant leader from near ground level. Included bark between stems. Ok at this time but may cause issues longer term	3.8	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
21	Tamarisk (*Tamarix aphylla*)	13	68	10--11	10--11	Excellent	Good	Mature	Medium term (15-40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Low canopy western side	8.2	Low; declared weed species	Looks unlikely to be impacted based on the Plan Provided
22	Rottnest Island Tea Tree (*Melaleuca lanceolata*)	6	32, 32, 31, 30	15-16	15-16	Excellent	Good	Mature	Medium term (15-40 yrs)		Good specimen. Good aesthetic form/value. Multi-stemmed from ground level. Looks to be two trees in close proximity that effectively form the one canopy. Low canopy may be limiting factor to its retention, although some low canopy may be able to be raised to some degree	canopy spread	Low; ok tree but form may be limiting factor to its retention	Section of its canopy will need to be removed/raised to accommodate footpath but not expected to have a major impact to the Tree
23	Norfolk Island Pine (*Araucaria heterophylla*)	14	39	4--5	6--7	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition.	4.7	High; prominent aesthetics	Footpath 1.9m away tree (proposed kerbline). Impact to root zone needs to be verified by way of exploratory excavations
24	Norfolk Island Pine (*Araucaria heterophylla*)	20	48	5--6	7--8	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition. Canopy is relatively one sided due to powerline clearance pruning	5.8	High; prominent aesthetics	Footpath 1.7m away tree (proposed kerbline). Impact to root zone needs to be verified by way of exploratory excavations for both Road and footpath

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
25	Bottlebrush Kings Park Special (*Callistemon* 'Kings Park Special')	5	14	3--4	3--4	Excellent	Acceptable	Early-mature	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from ground level possibly more than one tree. Section of its canopy has previously been removed	1.7	Medium; ok tree no issues or concerns at this time	May be impacted by footpath
26	Tuart (*Eucalyptus gomphocephala*)	15	55	13-14	11--12	Excellent	Acceptable	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Swelling at the union. Union looks to be ok at this time but may cause future issue. Very low canopy western side can be raised if required	6.6	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
27	Norfolk Island Pine (*Araucaria heterophylla*)	26	77	9--10	13-14	Excellent	Good	Early-mature	Long term (>40 yrs)		Good specimen. No issues or major concerns visible at this time. Canopy is relatively one sided due to past pruning for powerline clearance requirements	9.2	**High;** prominent aesthetics	Drainage culvert approximately 4m south, inspection lid approximately 4.5m SE. Proposed kerbline 1.9m from Tree. Impact to root zone needs to be verified by way of exploratory excavations for both Road and footpath
28	Norfolk Island Pine (*Araucaria heterophylla*)	23	66	9--10	9--10	Excellent	Good	Early-mature	Long term (>40 yrs)		Good specimen. Good aesthetic form/value. No issues or major concerns visible at this time. Canopy is relatively one sided due to past pruning for powerline clearance requirements	7.9	**High;** prominent aesthetics	Drainage culvert approximately 7m north. Proposed kerbline 2.3m from Tree. Impact to root zone needs to be verified by way of exploratory excavations for both Road and footpath

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
29	River Yate (*Eucalyptus macrandra*)	8.5	33, 20, 15, 14	11--12	10--11	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Ok specimen. Multi-stemmed from ground level. Low canopy spread particularly western side	4.0	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
30	Bottlebrush Kings Park Special (*Callistemon* 'Kings Park Special')	5	27*	5--6	6--7	Excellent	Good	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Main stem furcates into three. Union looks to be ok at this time but may cause future issue. Low canopy spread particularly southern and western sides may be limiting factor	3.2	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
31	Bottlebrush Dawson River Weeper (*Callistemon* 'Dawson River Weeper')	4.5	12*	3--4	2--3	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time.	1.5	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
32	River Yate (*Eucalyptus macrandra*)	4	17*	3--4	4--5	Good	Acceptable	Mature	Short-term (5-15 yrs)		Ok specimen. Canopy is one sided due to proximity of adjacent tree. Canopy is slightly sparse & suggests decline. Low canopy western side may be limiting factor	2.0	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
33	River Yate (*Eucalyptus macrandra*)	6	17	4--5	4--5	Good	Acceptable	Mature	Short-term (5-15 yrs)		Ok specimen. Area of decay. Not of a major concern at this time. Canopy is one sided due to proximity of adjacent tree. Decay may start to impact its structural integrity within the next 5 or so years	2.0	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
34	Geraldton Wax (*Chamaelaucium uncinatum*)	2	23*	3--4	3--4	Mostly dead	Acceptable	Mature	Limited (<5 yrs)		Mostly dead tree.	n/a	Very Low; mostly dead	In footpath alignment
35	Norfolk Island Pine (*Araucaria heterophylla*)	20	51	9--10	6--7	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy ever-so slightly sparse. Remaining leaf still good. Canopy is relatively one sided due to past pruning for powerline clearance requirements	6.1	High; prominent aesthetics	Proposed kerbline 2.1m from Tree. Impact to root zone needs to be verified by way of exploratory excavations
36	Norfolk Island Pine (*Araucaria heterophylla*)	17	45	9--10	6--7	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition. Canopy is relatively one sided due to past pruning for powerline clearance requirements	5.4	High; prominent aesthetics	Proposed kerbline 2.2m from Tree. Impact to root zone needs to be verified by way of exploratory excavations

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
37	Bald Island Marlock (*Eucalyptus conferruminata*)	7.5	37*	5--6	7--8	Good	Good	Mature	Short-term (5-15 yrs)		Area of decay. Not of a major concern at this time. Main stem bi-furcates. Union looks to be Ok at this stage. Canopy is one sided west due to proximity of adjacent tree. Canopy is slightly sparse. Species can be prone to issues of decay and termites	4.4	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
38	Grass Tree (*Xanthorrhoea preissii*)	1.5	30	1--2	1--2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. No issues or major concerns visible at this time.	2.0	Medium; ok tree but replaceable /transplantable at this size if required	Looks unlikely to be impacted based on the Plan Provided
39	Rottnest Island Tea Tree (*Melaleuca lanceolata*)	8	36, 23	8--9	8--9	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Co-dominant leader from near ground level. Was multi-stemmed but one side has previously been removed. Effectively forms the one canopy with the adjacent tree	4.3	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
40	Rottnest Island Tea Tree (*Melaleuca lanceolata*)	8	29, 22, 16	8--9	7--8	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. No issues or major concerns visible at this time. Effectively forms the one canopy with the adjacent tree	3.5	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
41	West Australian Peppermint (*Agonis flexuosa*)	7	42	5--6	7--8	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue.	5.0	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
42	Grass Tree (*Xanthorrhoea preissii*)	3	38	1--2	1--2	Good	Good	Mature	Long term (>40 yrs)		Large mature specimen. Very old	2.0	**High;** old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
43	Norfolk Island Pine (*Araucaria heterophylla*)	20	46	5--6	5--6	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition. Canopy is relatively one sided due to past pruning for powerline clearance requirements	5.5	**High;** prominent aesthetics	Proposed kerbline 3.7m from Tree, footpath 2.8m from the Tree. Should be marginal impact but needs to be verified by way of exploratory excavations
44	West Australian Peppermint (*Agonis flexuosa*)	4.5	17	4--5	4--5	Excellent	Acceptable	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Union looks to be ok at this time but may cause future issue. Branch unions with included bark. Readily replaceable at this size	2.0	Low; replaceable at this size/age	Will need to be removed to accommodate design

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
45	West Australian Peppermint (*Agonis flexuosa*)	4	15	3--4	3--4	Excellent	Acceptable	Juvenile	Long term (>40 yrs)		Ok specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue. Readily replaceable at this size	1.8	Low; replaceable at this size/age	Will need to be removed to accommodate design
46	Firewood Banksia (*Banksia menziesii*)	2	10	2--3	2--3	Excellent	Acceptable	Juvenile	Medium term (15-40 yrs)		Reasonably good specimen. Grown on a lean but not considered an issue at this time. Readily replaceable at this size	1.5	Low; replaceable at this size/age	Will need to be removed to accommodate design
47	Rose Gum (*Eucalyptus grandis*)	4.5	25*	1--2	1--2	Excellent	Undesirable	Juvenile	Limited (<5 yrs)		Looks to be regrowth off/around an old stump/original tree. Likely to cause issues with overhead powerlines	1.5	Very Low; stump regrowth	Will need to be removed to accommodate design
48	Spotted Gum (*Corymbia maculata*)	3.5	5	0.5-1	0.5-1	Excellent	Good	Juvenile	Limited (<5 yrs)		Ok specimen. Readily replaceable at this size. Likely to cause issues with overhead powerlines	1.5	Low; replaceable at this size/age	Will need to be removed to accommodate design

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
49	Firewood Banksia (*Banksia menziesii*)	1.5	5	1--2	1--2	Excellent	Good	Juvenile	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from ground level. Readily replaceable at this size	1.5	Low; replaceable at this size/age	Looks unlikely to be impacted based on the Plan Provided
50	Grass Tree (*Xanthorrhoea preissii*)	1	30, 30	2--3	2--3	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Multi-stemmed from ground level possibly more than one tree.	2.0	Medium; ok tree but replaceable /transplantable at this size if required	Looks unlikely to be impacted based on the Plan Provided
51	Bracelet Honey Myrtle (*Melaleuca armillaris*)	4.5	25, 20, 18, 18	15-16	12--13	Good	Good	Mature	Short-term (5-15 yrs)		Large mature specimen. Multi-stemmed from ground level. Section of canopy is dead. Remainder still good at this time. Very low spreading canopy may be limiting factor to its retention	canopy spread	Low; ok tree but form may be limiting factor to its retention	A large section of its canopy will need to be removed/raised to accommodate footpath so retention of the Tree may become questionable pending results of pruning
52	Norfolk Island Pine (*Araucaria heterophylla*)	10	28	3--4	3--4	Excellent	Good	Semi-mature	Medium term (15-40 yrs)		Reasonably good specimen. Bark wound noted on main stem. Looks to be developing a co-dominant leader. Replaceable at this size if necessary	3.4	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
53	Grass Tree (*Xanthorrhoea preissii*)	1.5	36	1--2	1--2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Multiple heads. Transplantable if required	2.0	High; old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
54	Grass Tree (*Xanthorrhoea preissii*)	1	34	1--2	1--2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Grown on a lean but not considered an issue at this time. Transplantable if required	2.0	High; old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
55	Grass Tree (*Xanthorrhoea preissii*)	2	42	1--2	1--2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Old. Transplantable if required	2.0	High; old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
56	West Australian Peppermint (*Agonis flexuosa*)	7	42	4--5	5--6	Excellent	Acceptable	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue. Borer holes noted which may impact its SULE	5.0	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
57	West Australian Peppermint (*Agonis flexuosa*)	7	27	4--5	4--5	Excellent	Acceptable	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue. Co-dominant leader/sucker from near ground level	3.2	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
58	Grass Tree (*Xanthorrhoea preissii*)	1.5	35, 35	1--2	2--3	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Multi-stemmed from ground level possibly more than one tree. Transplantable if required	2.0	High; old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
59	Bottlebrush Kings Park Special (*Callistemon* 'Kings Park Special')	4	20*	3--4	4--5	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem furcates into three. Union looks to be ok at this time but may cause future issue. Broken branch in canopy. Low canopy may be limiting factor to its retention	2.4	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
60	Bottlebrush Kings Park Special (*Callistemon* 'Kings Park Special')	4.5	24*	3--4	4--5	Excellent	Acceptable	Early-mature	Medium term (15-40 yrs)		Reasonably good specimen. Canopy is one sided due to proximity of adjacent tree. Original main stem has previously snapped. Low canopy may be limiting factor to its retention	2.9	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
61	Grass Tree (*Xanthorrhoea preissii*)	1.5	35	1--2	1--2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Transplantable if required	2.0	**High;** old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
62	Grass Tree (*Xanthorrhoea preissii*)	2	40	2--3	2--3	Excellent	Good	Mature	Long term (>40 yrs)		Very good specimen of its species. Old. Multiple heads. Transplantable if required	2.0	**High;** old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
63	Northern River Red Gum (*Eucalyptus camaldulensis 'Obtusa'*)	9.5	34	9--10	11--12	Excellent	Good	Early-mature	Short-term (5-15 yrs)		Ok specimen. Grown on a lean but not considered an issue at this time. Possibly cross with Flooded Gum. Canopy is relatively one sided east. Ok at this time but species tend to have comparatively high probability for failures than most others	4.1	Low; generally considered to be a higher risk species	Looks unlikely to be impacted based on the Plan Provided
64	West Australian Peppermint (*Agonis flexuosa*)	9	63	7--8	7--8	Excellent	Good	Early-mature	Long term (>40 yrs)		Good specimen. Main stem furcates into three. Union looks to be ok at this time but may cause future issue.	7.6	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
65	Grass Tree (*Xanthorrhoea preissii*)	0.5	26	1--2	1--2	Excellent	Acceptable	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Grown on a lean parallel to the ground but not considered an issue at this time. Multiple heads. Possibly not transplantable due to form	2.0	Medium; ok tree but replaceable /transplantable at this size if required	Looks unlikely to be impacted based on the Plan Provided
66	Grass Tree (*Xanthorrhoea preissii*)	1	26	1--2	1--2	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Transplantable if required	2.0	Medium; ok tree but replaceable /transplantable at this size if required	Looks unlikely to be impacted based on the Plan Provided
67	Coojong (*Acacia saligna*)	4.5	18	2--3	2--3	Poor	Acceptable	Post-mature	Limited (<5 yrs)		Canopy condition suggests possibly limited life remaining. Typically very short lived species	2.2	Very Low; typically short lived species	Looks unlikely to be impacted based on the Plan Provided
68	Coojong (*Acacia saligna*)	4.5	25	3--4	3--4	Fair	Acceptable	Post-mature	Limited (<5 yrs)		Canopy is slightly sparse & suggests decline. Main stem bi-furcates. Union looks to be Ok at this stage. Canopy is one sided east. Typically very short lived species	3.0	Very Low; typically short lived species	Looks to be in the alignment of the proposed footpath

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
69	Limestone Marlock (*Eucalyptus decipiens*)	4	35*	6--7	6--7	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Ok specimen. Multi-stemmed from near ground level. Low spreading canopy form may be limiting factor verify species	4.2	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
70	Rottnest Island Pine (*Callitris preissii*)	5	32, 15*	3--4	5--6	Excellent	Acceptable	Mature	Short-term (5-15 yrs)		Ok specimen. Multi-stemmed from ground level. Section of its canopy has previously snapped. Low canopy eastern side may be limiting factor	3.8	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
71	Bottlebrush Kings Park Special (*Callistemon* 'Kings Park Special')	4.5	27	6--7	5--6	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Splitting branch noted. Low canopy southern and eastern side may be limiting factor	3.2	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
72	Coojong (*Acacia saligna*)	6	33	6--7	10--11	Fair	Good	Post-mature	Limited (<5 yrs)		Large mature specimen. Canopy is slightly sparse & suggests decline. Typically very short lived species	4.0	Low; typically short lived species	Looks unlikely to be impacted based on the Plan Provided

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
73	River Red Gum (*Eucalyptus camaldulensis 'Camaldulensis'*)	6.5	35*	2--3	2--3	Excellent	Undesirable	Juvenile	Limited (<5 yrs)		Looks to be regrowth off/around an old stump/original tree. Likely to cause issues with overhead powerline	1.5	Very Low; stump regrowth	Will need to be removed to accommodate design
74	Grass Tree (*Xanthorrhoea preissii*)	1.5	35	1--2	1--2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Old. Multiple heads. Transplantable if required	2.0	High; old specimen. Transplantable if required	Will need to be removed to accommodate design
75	Grass Tree (*Xanthorrhoea preissii*)	0.5	30*	1--2	1--2	Excellent	Good	Early-mature	Long term (>40 yrs)		Good specimen. Multiple heads. Transplantable if required	1.5	Medium; ok tree but replaceable /transplantable at this size if required	Will need to be removed to accommodate design
76	Coojong (*Acacia saligna*)	2.5	20*	3--4	3--4	Excellent	Good	Mature	Limited (<5 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. Typically very short lived species	2.4	Low; typically short lived species	Will need to be removed to accommodate design

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
77	Coojong (*Acacia saligna*)	3.5	25*	3--4	6--7	Excellent	Good	Mature	Limited (<5 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. Typically very short lived species	3.0	Low; typically short lived species	Will need to be removed to accommodate design
78	Tamarisk (*Tamarix aphylla*)	14	42	9--10	10--11	Excellent	Good	Mature	Medium term (15-40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from near ground level. Declared weed species	5.0	Low; declared weed species	Looks to be in the alignment of the proposed footpath
79	Swamp Sheoak (*Casuarina glauca*)	7	14	3--4	3--4	Excellent	Acceptable	Semi-mature	Medium term (15-40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from near ground level	2.8	Medium; ok tree no issues or concerns at this time	May not be impacted by works
80	Coral Gum (*Eucalyptus torquata*)	4.5	23	3--4	5--6	Excellent	Acceptable	Early-mature	Medium term (15-40 yrs)		Ok specimen. No issues or concerns visible at this time. Grown on an angle but looks to be ok at this time	1.7	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided

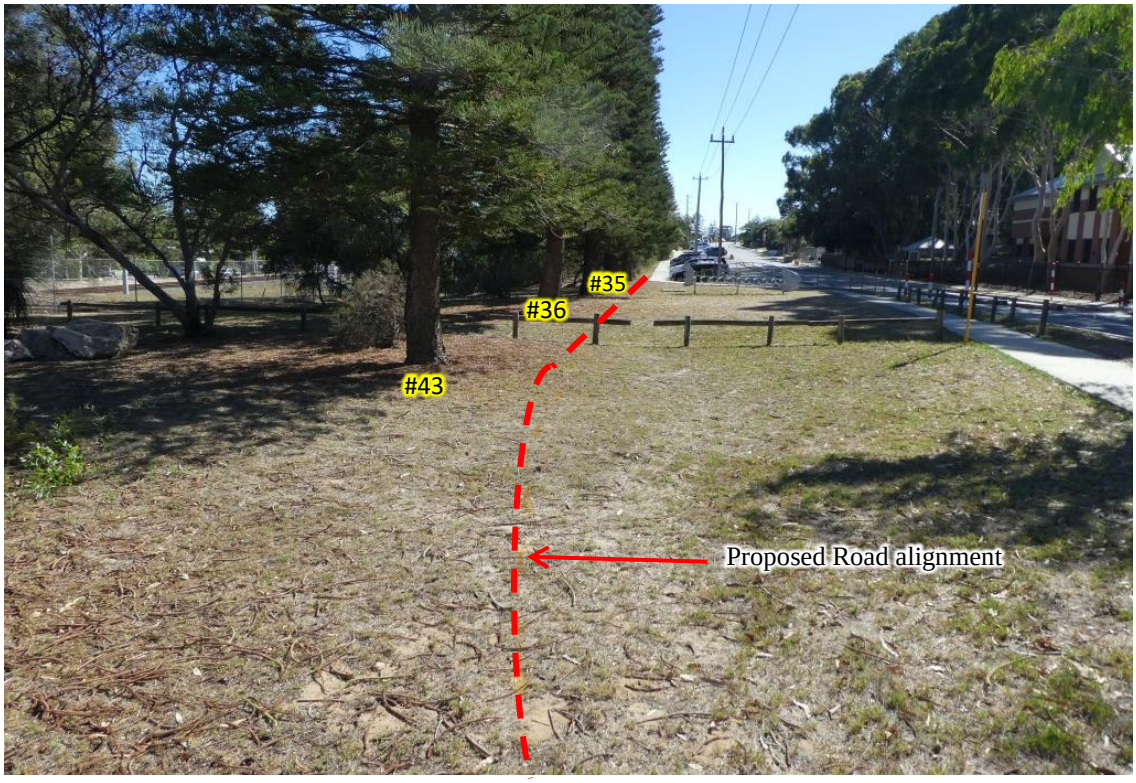
Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
81	Jarrah (*Eucalyptus marginata*)	5	19	4--5	4--5	Good	Good	Semi-mature	Long term (>40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from ground level possibly more than one tree	2.3	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
82	Jarrah (*Eucalyptus marginata*)	6	23	4--5	4--5	Good	Good	Semi-mature	Long term (>40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from ground level possibly more than one tree	2.8	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
83	Showy Honey Myrtle (*Melaleuca nesophila*)	3.5	21	5--6	6--7	Excellent	Good	Early-mature	Medium term (15-40 yrs)		Ok specimen. No issues or concerns visible at this time. Widespread canopy form	2.5	Low; shrub species	Looks to be in the alignment of the proposed footpath

6. Potential Impact from Development and Further Considerations

6.1 Road Construction

6.1.1 Based on the Plan provided Trees #44,-#48, and #73 - #77 will need to be removed to accommodate the proposed design. All of these Trees are small and look to only have been planted a few years ago. Two of these Trees are Grass Tree and could be transplanted if required as part of Site clearing works.

6.1.2 Potentially significant impact from the construction of the Road looks likely to occur to Trees #1, #7, #23, #24, #27, #28, #35, #36, and #43; particularly Trees #27, #28, #35, #36, and #43 given the proximity of the proposed road pavement and level of excavation anticipated to be required.



Trees #1, #7, #23 and #24 may have already been subject to some degree of root zone disturbance and possibly loss of root mass when the current existing car parking area was installed, so impact to these Trees may actually be less than to the others.

6.1.3 Full impact to these Trees will however be very much dependent on the level of root mass required to be removed to accommodate the depth of excavation required as part of construction.

6.1.4 **Recommendations**

At this time:

a) Some exploratory excavation works are recommended to be undertaken to verify the actual root spread from each of these Tree along the alignment of the proposed excavation for the Road; from which a more informed opinion on the potential impact to the Trees can then be provided.

   This is recommended to be undertaken by way of vacuum excavation to open a 100mm wide slot trench to the depth of any 'box-out'/excavation required to enable viewing of any roots that are present.

6. Potential Impact from Development and Further Considerations

b) Delineation of any underground services also needs to be verified to ascertain what other excavations may need to occur in the vicinity of these Trees as part of the construction process.

6.2 Footpath Construction

6.2.1. Seven Trees look likely to be required to be removed, along with a number of other smaller tree and shrub specimens that look to have been recently planted into the Site.

This includes; Trees #13 (small low spreading Rottnest Island Tea-Tree), #25 (small Bottlebrush), #34 (dead Geraldton Wax), #68 (Coojong with limited life span remaining), #78 (Tamarisk declared weed species) and #83 (a low spreading Showy Honey Myrtle).

6.2.2. In addition to these Trees, Tree #8 (a small juvenile Red Flowering Gum) and #9 (a small juvenile Bottlebrush) may also be in the alignment of the proposed footpath.

6.2.3. A section of the canopy of Tree #22 will need to be removed to accommodate the footpath but would not be anticipated to have any major adverse impact to the Tree.

6.2.4. Potentially a large section of Tree #51 (a low spreading Bracelet Honey Myrtle) looks to be required to be removed to allow for construction of the footpath. Pending the results of the pruning, the retention of the remainder of this Tree can then be verified.

6.2.5. Other minor amounts of canopy works may be required on a select few other Trees to provide clearances over the footpath but would not be anticipated to have any major deleterious impact to their health or potential life span.

6.2.6. **Recommendations**

At this time:

a) Levels for the footpath needs to be verified and extent of any 'box-out' required as part of its construction.

b) Delineation of any underground services also needs to be verified to ascertain what other excavations may need to occur in the vicinity of these Trees as part of the construction process.

6.3 Other remaining Trees

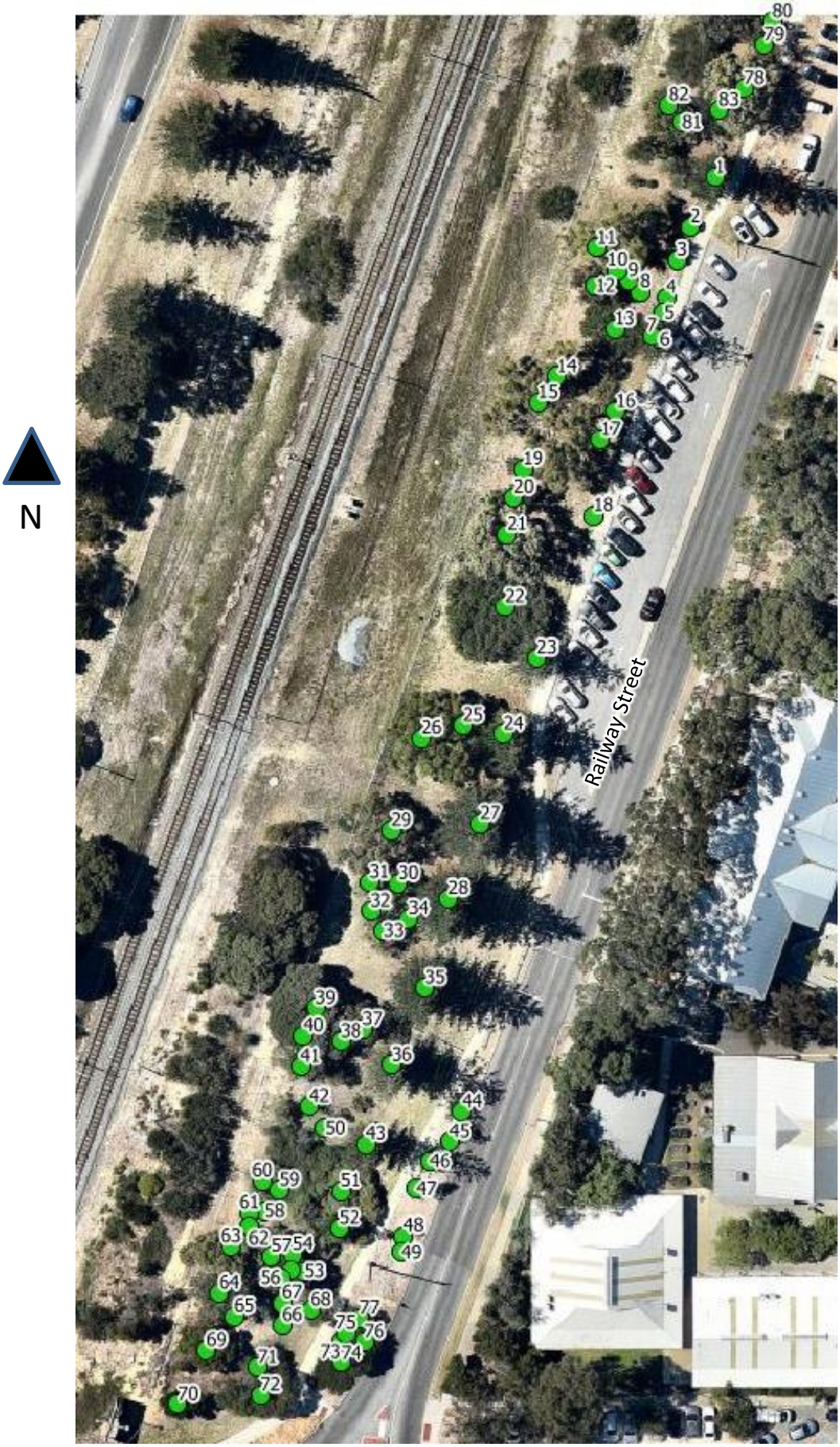
Impact to the remaining Trees identified on the Site looks likely to be minimal at this time based on the Plans Provided although some of the physically smaller Trees may be damaged during the process due to their small size and proximity to the proposed works area.

Even though they may not look to be impacted by the Works, protection of their nominal TPZ areas in accordance with AS 4970 guidelines will still need to be implemented as part of the construction aspect of the development.

7. Attachments to the Report

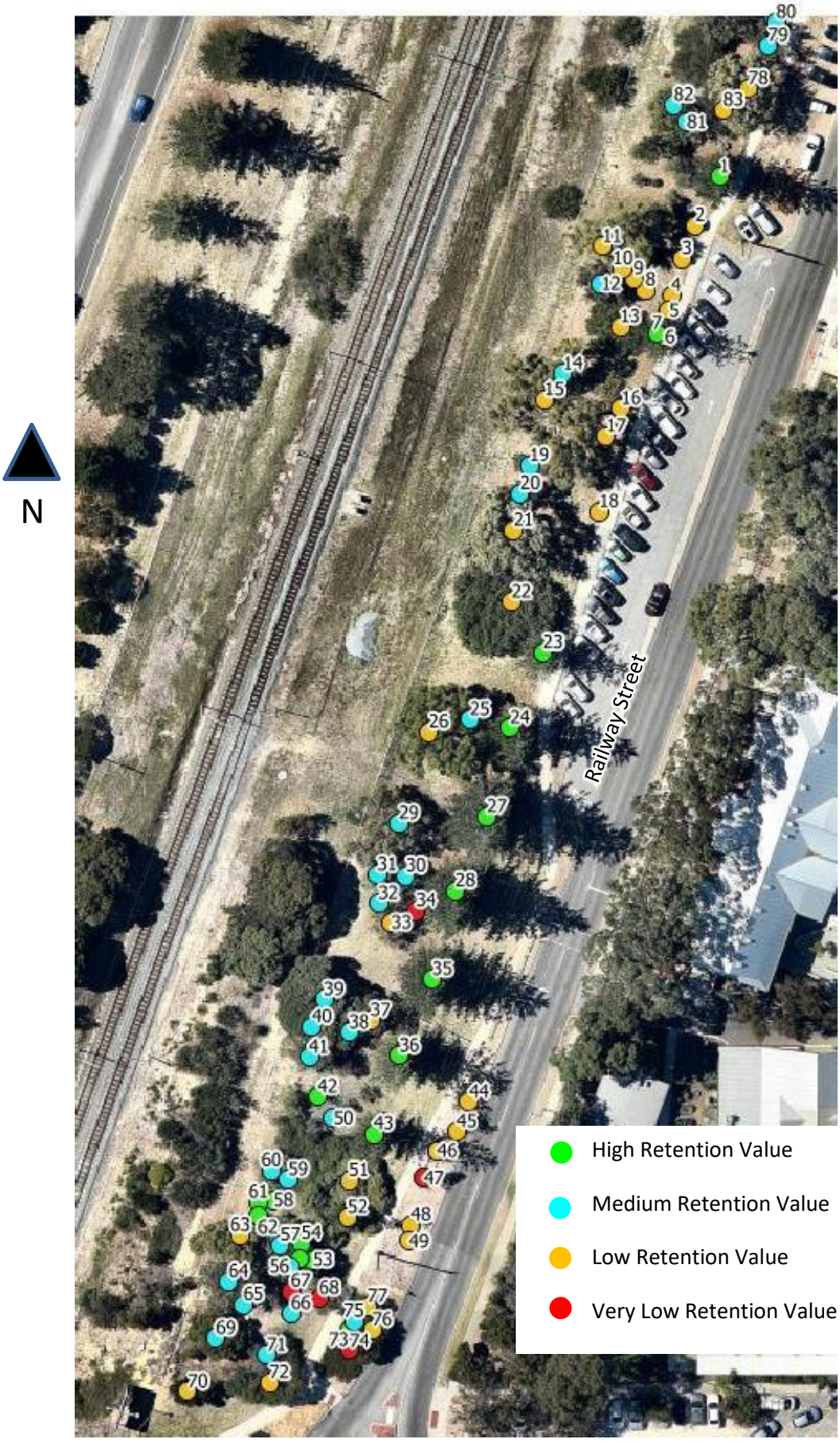
Attachment 1; Tree Location Guide
Attachment 2; Location Guide with Retention Value Overlaid
Attachment 3; Location Guide (not all Trees) Overlaid onto Copy of the Plan Provided
Attachment 4; Company Information & Disclaimer

Attachment 1; Tree Location Guide



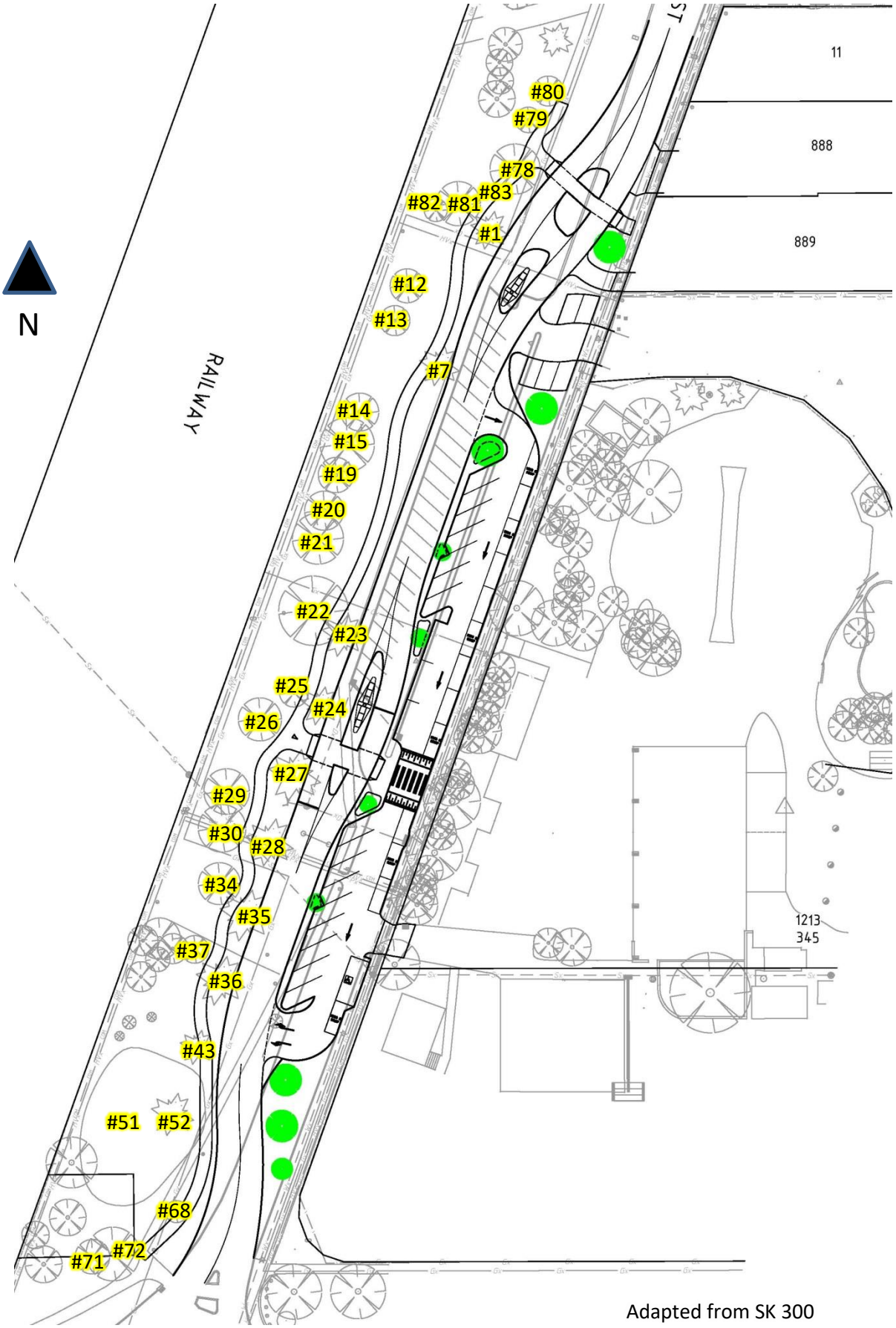
Aerial source from Nearmap.com

Attachment 2; Tree Location Guide with Retention Value Overlaid



Aerial source from Nearmap.com

Attachment 3; Location Guide (not all Trees) Overlaid onto Copy of the Plan Provided



Adapted from SK 300

Attachment 4; Company Information

Company Name:	ARBOR logic
A.C.N.:	107 194 061
A.B.N.:	66 566 369 687

Insurance Details:

General Liability;	QBE	$20 million
Professional Indemnity;	Vero	$10 million
Personal Protection;	Zurich	

Office/Contact Details

Postal Address:	PO Box 1025, Balcatta WA 6914
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Consultant Details

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Arboricultural ASSOCIATION Technician Member TE140

Arboriculture Australia MEMBER Member No. 1254

MEMBER International Society of Arboriculture ISA J. Royal; 172723

QTRA Registered User Lisc. No. 1743

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.