



## Stage 1: - Preliminary Tree Survey Report 91-95 Canning Highway, East Fremantle, Western Australia November 2021

Prepared for:



Phillip Gnech Director P: (08) 9385 0504 M: 0417 990 223 <u>phillip@bfp.net.au</u>

Prepared by: Alex Bodenstaff & Rob Bodenstaff November 2021 alex@arborcentre.com.au rob@arborcentre.com.au

Reference Number: Q004170

Arbor Centre PTY LTD 731 Welshpool Road East, Wattle Grove 6107 Phone: - (08) 9359 9300 ~ <u>enquiries@arborcentre.com.au</u> ~ <u>www.arborcentre.com.au</u>

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## **Table of Contents**

Та	ble of (	Contents	. 2			
1.	1. Purpose of this Report					
2.	Ba	ckground	. 4			
	2.1	Brief	. 4			
	2.2	Arboricultural Inspection	. 4			
	2.3	Limitations of this Report	. 4			
	2.4	Achieving Successful Tree Retention	. 5			
3.	Su	mmary of Arboricultural Survey & Assessment	6			
	3.1	Tree Species Diversity	. 6			
	3.2	Tree Age and Useful Life Expectancy (ULE)	. 6			
	3.3	Tree Health	. 6			
	3.4	Tree Structure	. 7			
	3.5	Protection of Trees during Construction	. 7			
	3.6	Preliminary Recommendations	. 8			
3.6.1 Retain (Conditional) x 5 Trees						
	3.6	.2 Marked for Removal by Others x 19 Trees	. 8			
	3.6	.3 Retain; develop and implement tree retention specifications x 3 Trees	. 8			
4.	Ov	erview of Australian Standards AS 4970 & AS 4373	9			
	4.1	AS 4970 'Protection of Trees on Development Sites' 2009	. 9			
	4.2	AS 4373 'Pruning of Amenity Trees' 2007	10			
5.	Pre	liminary Tree Preservation Considerations	11			
	5.1	Introduction	11			
	5.2	Tree Preservation Considerations	11			
6.	Co	nclusions	14			
7.	Re	commendations	16			
	7.1	Site and Tree Geo Location Validation	16			
	7.2	Timely Design Reviews and Associated Arboricultural Inputs	16			
	7.3	Develop Site Specific Tree Specifications	16			
	7.4	Ongoing Arboricultural Supervision, Regular Inspections, and Reporting	16			
8.	Ret	ferences & Reading	17			
Ap	pendi	x A – Tree Location Image 1	18			
Ap	pendi	x B – Table of Results and Field Definitions 1	19			
	Field Definitions					
Health and Structure Definitions						
Table of Results						
Ap	pendix	c C – Site Images	24			
Ap	pendi	C D – Tree Protection Notes for Incorporation into Construction Drawings	26			



## 1. Purpose of this Report

To survey and inspect the x 27 trees (as specified within/adjacent the proposed development) located within 91-95 Canning Highway in East Fremantle, Western Australia, to benchmark current health and structural status and identify preliminary management considerations in light of the proposed construction and landscaping to occur (refer Figure 1 and Appendix A for detail).



Figure 1. Satellite image showing approximate area assessed within The Proposed Development, located at 91-95 Canning Highway, East Fremantle, Western Australia. Image Source – www.NearMap.com , Image date 23rd October 2021



## 2. Background

#### 2.1 Brief

At the request of Builtform Projects, Arbor Centre has been engaged to undertake an Arboricultural inspection and review of the trees identified for retention within the proposed development of 91-95 Canning Highway, East Fremantle, Western Australia.

Arbor Centres brief was to attend site to obtain and provide the following information: -

- Identify genus, species and common name for each of the trees
- Comment on current health, structure & age of the identified trees
- Obtain height, canopy spread and trunk diameter measurements
- Provide Tree Protection Zone (TPZ) radii for each tree
- Provide Mature Tree Transplant viability for each tree
- Compile general information relevant for the individual specimens including if further specialist input may be required
- Conclusions and Recommendations.

#### 2.2 Arboricultural Inspection

Arbor Centre undertook an Arboricultural assessment of the x 27 trees situated within the site on 24<sup>th</sup> of November 2021. The assessment was a visual inspection undertaken from ground level and did not incorporate any form of below ground or aerial inspection of the trees.

#### 2.3 Limitations of this Report

The information contained within this Stage 1 Arboricultural Report is not intended, or suitable to be used as a final *'Tree Management Plan'* for the trees proposed to be retained. But rather, is to provide guidance on how the subject trees currently present; and to provide considerations and recommendations on how best to protect, manage and retain the trees throughout the proposed development project and over the longer term.

Further to the above, this assessment and report does not attempt to predict or quantify potential tree failures. The partial or complete failure of trees and/or tree parts is a natural part of any environment and may be influenced by a wide range of factors, including (but not limited to); tree age and condition, quality



of previous remedial and Arboricultural works afforded; abrupt changes to the local growing environment, prior root zone incursion/impacts and high winds or other extreme climatic events.

#### 2.4 Achieving Successful Tree Retention

It is important to recognise early in the planning stage of a project that mature trees can and have been successfully retained into projects within the Perth Metropolitan area.

In order for successful tree retention to be achieved, appropriate and timely Arboricultural inputs are required into (but may not be limited to): -

- Developing tree sensitive designs and works methodology
- Providing tree and project specific Tree Management Specifications into documentation that is applicable to implementation prior to, during and potentially post project completion and;
- Undertaking ongoing tree monitoring and (where required) implementing Arboricultural remediation works.



A total of 27 trees were assessed and inspected within the site. Each of the specified trees were visually inspected from ground level to assess and record the species; tree height and canopy spread; trunk diameter; age status; ULE, current tree health and structure and observations/comments relevant for the individual specimen - refer *Appendix B Table of Results* for detail.

### 3.1 Tree Species Diversity

The majority of the tree population within the area assessed contained 74% endemic West Australian species, 19% of the trees assessed being Australian east coast natives and 7% introduced species were assessed within the area of assessment.

A total of x 9 different species were assessed in the area at the time of inspection, 74% of the tree population was made up of x 3 species a summary of these species as follows: -

- Eucalyptus camaldulensis var. camaldulensis (River Red Gum) x 12 (44%)
- Melia azedarach (Cape Lilac) x 4 (15%)
- Agonis flexuosa (WA Weeping Peppermint) x 4 (15%)
- Other species x 7 (26%)

## 3.2 Tree Age and Useful Life Expectancy (ULE)

Of the 27 trees; 93% were assessed as mature, and 7% classified as semi mature at the time of inspection.

The majority of trees (48%) were assessed to have an estimated useful life expectancy (ULE) of 10 - 40 years; 41% had a ULE of 40+ years; and 11% between 5-10 years at the time of inspection.

### 3.3 Tree Health

The Majority of trees assessed displayed Good to Acceptable health status (85%). At the time of assessment, approximately 7.5% of trees onsite displayed Questionable Health, and 7.5% were classified as displaying Poor Health.

The signs/symptoms of reduced tree health observed may be attributed (but may not limited) to -

 Previous root loss/root zone impact (proximity trenching/excavations; demolition of previous structures; below ground service installations, changes to soil level; mechanical damage/root scalping; maintenance of firebreaks and walk paths; mechanical damage/root scalping that occurred as part of civils and road construction etc.)



- The combination of excavations in close proximity to root zones (refer above point) and a lack of timely remedial work (that would have limited tree decline and stress)
- Mechanical damage to the trees conductive tissue (vehicle/machinery impacts; poor prior pruning practices; bird or fauna damage etc.)
- Competition and canopy suppression (lack of available above and below ground growing space)
- Environmental influences (poor seasonal rainfall, possible storm damage etc.)
- The influence of pests and/or disease
- Natural senescence (old age)
- Potential soil issues (i.e., nutritional deficiencies or toxicities or the presence of a soil borne disease etc.)
- Seasonal water table fluctuations
- Potential pH (Potential Hydrogen) and/or EC (Electrical Conductivity) and/or nutritional toxicities of both the soil and or ground water.

**Note:** - Consideration needs to be given to the sensitive nature and aversion of endemic trees to root zone impact and disturbance and that obvious canopy decline can manifest many years after the event.

#### 3.4 Tree Structure

The majority of the trees that were assessed have developed a Good to Acceptable structure (41%). Several structural issues were observed within the surveyed tree population including rubbing/crossing stems, deadwood in canopies; branch failures, narrow points of attachment and bark inclusions, canopy suppression, habitat hollows etc., however; these issues are generally considered manageable within the scope of an ongoing, proactive tree management program.

A number of the trees assessed displayed questionable (41%) to poor (18%) above ground structural form and will require further discussion with Arbor Centre in order to develop appropriate long term tree management approaches or implement a remove and replace program – please refer *Appendix B* – *Table of Results Observations and Comments* for individual requirements.

#### 3.5 Protection of Trees during Construction

Specialist Arboricultural input will be required to determine & incorporate protection and remedial measures into the specifications of the development; construction methodologies and measures to be actioned during project activities as well as, quantifying unexpected damage as it occurs, to prescribe offset measures.



This will ensure that measures to minimize tree root and canopy impact can be included into the project documentation and implemented during construction – *refer Section 4. Overview of Australian Standards AS 4970 & AS 4373; Section 5 Preliminary Tree Preservation Considerations for further detail.* 

#### 3.6 Preliminary Recommendations

#### 3.6.1 Retain (Conditional) x 5 Trees

x 5 trees have been identified as requiring further Arboricultural investigations to:

- Validate preliminary observations and/or;
- Discuss observations made at the time of inspection; and
- Subsequently provide more definitive recommendations regarding the nature of Arboricultural works and time frames that may apply (refer Appendix B Table of Results for further detail).

Investigations may include rootzone and soil profile assessments to assess growing media and to determine possible remediation that may be required.

#### 3.6.2 Marked for Removal by Others x 19 Trees

x 19 of the assessed trees have been identified as Marked for Removal by Others due to being within the building envelope and not included on the plans. Consideration should be given to the utilisation of branch and log sections and timber for habitat and /or dune protection – refer *Appendix B* – *Table of Results* for further detail.

#### 3.6.3 Retain; develop and implement tree retention specifications x 3 Trees

The remaining x 3 trees have been identified as worthy of retention (or relocation) subject to being afforded the appropriate tree protection measures during the development process.

Specialist Arboricultural input will be required for all trees that are considered for retention; to determine & incorporate protection and remedial measures into the final design specifications of the proposed development; construction methodologies and measures to be actioned prior to and during project activities.

This will ensure that measures to minimize tree root and canopy impact on specimens identified for retention can be included into the project specifications and documentation and; implemented during construction – *refer Point 4. Overview of Australian Standards AS 4970 & AS 4373; Section 5 Preliminary Tree Preservation Considerations* for further detail.



#### 4.1 AS 4970 'Protection of Trees on Development Sites' 2009

To successfully incorporate trees into the urban environment, careful consideration, planning and protection should be afforded to both above and below ground parts of the tree - leaves, branches, stems of the above ground parts and below ground, absorbing roots and structural roots.

The operations and activities associated with the construction and development process can have adverse effects on tree health and stability. Those activities that can potentially impact on the tree(s) will require remedial measures to be taken prior to, during and post development to ensure that all reasonable measures are taken to offset such damage.

Damage to tree roots is often irreversible and a common cause of tree decline and/or death following the construction and development phase. The implementation of a Tree Protection process will help lessen the impact that proposed development will have on the root zone (resulting from grade changes, excavations, soil compaction, mechanical damage etc...) and enable timely remedial action to help the tree to retain enough root mass for the continuation of natural growth and development.

Australian Standards have created AS 4970 'Protection of Trees on Development Sites' 2009 that addresses many of the issues that construction and development can have on trees and specifies a process on how to avoid unnecessary damage and outlines guidance only on measures to protect tree welfare during the construction and development phase.

It is important to recognise that the TPZ's identified in this report are simply an indicative measurement of a boundary around the tree beyond which disturbance is considered inconsequential and is unrestricted. However, the main purpose is that the works proposed within the indicative boundaries have been assessed, modified (where applicable) and approved by a suitably qualified person (minimum) Australian Qualification Framework Level 5 Arborist (AQF 5 – *Diploma in Arboriculture*).

Where encroachment (building, construction, excavation, landscaping or otherwise) into the Tree Protection Zone is required, Arboricultural input will be necessary to assess the extent of potential impact that may occur and if required, provide Arboricultural measures that can be taken to enable modification of the TPZ and allow root zone encroachment to occur.



In addition to the above and as recognised in the Australian Standard, all tree preservation recommendations need to appreciate the individual tree characteristics, tolerances that the species possess, the site-specific soil type(s), and other environmental conditions or circumstances that are specific to the site.

#### 4.2 AS 4373 'Pruning of Amenity Trees' 2007

AS 4373 '*Pruning of Amenity Trees*' 2007 has been developed to provide a guide on tree pruning procedures and practices to limit poor or deleterious type pruning being unnecessarily inflicted onto amenity trees.

The result of incorrect pruning of a tree is often irreversible, can negatively impact its health and structure and create unnecessary hazards within and surrounding the trees.

Correct tree pruning practices can reduce the likelihood of branch failures, limit pest and disease infestations, improve site safety and tree amenity, encourage sound structural development and extend tree longevity.

Any pruning works undertaken to the assessed trees should be specified by a (minimum) Australian Qualification Framework Level 5 Arborist (AQF 5 – *Diploma in Arboriculture*); comply with the Australian Standards AS 4373 '*Pruning of Amenity Trees*' 2007 and be undertaken by suitably trained and qualified Arborists with a minimum AQF Certificate 3 in Arboriculture under the supervision of the Arbor Centre.

References: AS 4373 2007, AS 4970 2009



#### 5.1 Introduction

Root zone impacts (and associated root loss) can negatively affect tree health (and stability) many years after the event, it is essential for tree success that tree protection and remedial measures are factored into design refinements and works methodologies and appropriately implemented and that specific remedial measures are actioned and appropriately supervised, to ensure the potential longevity of retained trees can be realised.

Below is an outline of the matters that will need to be addressed as part of developing and implementing a Tree Retention Plan for the specimens proposed to be retrained into the proposed development at 91-95 Canning Highway, East Fremantle.

#### 5.2 Tree Preservation Considerations

 Refinement and further specialist Arboricultural input will be required in determining forward works/demolition and construction methodologies (and specifications) prior to finalising and implementing a design; to ensure minimal tree root and canopy impact can be designed into the project.

**Note**: A, collaborative review of proposed designs and works methodologies with Arbor Centre and other relevant parties is recommended to develop and implement modifications and refinements where required to reach a successful, tree sensitive outcome for the project.

- Avoiding disturbance/ incursion into the Tree Protection Zone (TPZ) projections and that where
  encroachment into the TPZ area is unavoidable, Arbor Centre to provide inputs into appropriate
  works methodologies and/or remedial measures prior to any incursion occurring. Further, there
  may be a requirement for Arbor Centre to be present during the proposed works to assess tree
  impacts and prescribe and/or undertake necessary remedial works.
- The implementation of tree specific Tree Protection Zones (TPZ's) and the erection of approved protective fencing and identification signage to be installed prior to the commencement of the works period at the delineation of the TPZs (refer point 4 *Overview of Australian Standards AS* 4373 & AS 4970 for a high-level overview of the tree retention process).



- Any below ground services and infrastructure that are proposed to travel through/encroach within the identified TPZs i.e., basements, crossovers, below ground infrastructure, pipe works, footings, water, power, gas, telecommunications, irrigation etc.., is to be relocated/diverted to outside of the TPZ projection(s). This should be undertaken in conjunction with Arbor Centre to identify where new service alignments are best located to minimise impact on the subject trees - including methodologies associated with their installation.
- Where scheduled works cannot reasonably be diverted outside the TPZ, Arboricultural input(s)/approval and Arboricultural supervision will be required to quantify potential root loss, limit unnecessary root damage/impact, and/or provide possible remedial measures necessary to offset potential root loss. Works include but are not limited to;
  - Clearing/Demolition and site stripping
  - $\circ \quad \text{Civils works} \\$
  - o Below ground service installation/upgrades
  - o Any soil level changes (cut and/or fill)
  - Any Construction
  - Hard and Soft Landscaping (including irrigation installation).
- Selective pruning of the tree's canopies can help improve structural form and site safety and crown lifting for construction, vehicular or machinery access may be required (to varying degrees)
   – refer point 4 Overview of Australian Standards AS4373 for further detail.
- Pruning of roots (subject to Arbor Centre approval) where proposed works may encroach into the TPZ area(s), will need to be undertaken by, or under the supervision of Arbor Centre.
- Supplementary watering of the trees subject to the amount of potential root loss sustained & seasonal variation\* may be required.

**\*Note:** Timing of works around the tree(s) could have significant implications regarding irrigation rates and frequencies and the associated level of maintenance required i.e., active growing periods within warmer months as opposed to slower growth periods in winter.

• Potential remedial measures for both canopy and root zone (i.e., soil wetting agents and liquid organic soil drenching, root coring, aeration layers, etc.) being subject to Arboricultural approval.



- Installation of surface protection and/or trunk and branch protective measures may need to be considered for the site (where identified by Arbor Centre and if required) to enable vehicle/machinery movement within the TPZ.
- The Tree Protection Zones are to be retained for the duration of the construction period and are
  not to be modified without prior approval from Arbor Centre. Contractors are to be made aware
  of the Tree Protection Zone within the site's works area, and that no works are to occur within
  this area without prior approval from Arbor Centre.
- Restricted activities within the TPZs are to be specified in construction documentation & drawings and subject to prior approval by the Arbor Centre through the development and construction phases as identified. The TPZs are to be treated as a "No Go" zones and provision for such activities will need to be facilitated elsewhere on site.

For example: -

- Traversing and/or Parking of plant machinery or vehicles (where root protection measures have not been implemented);
- Storage for construction or deleterious materials (where root protection measures have not been implemented);
- Mechanical removal of vegetation;
- Unprotected vehicle refuelling;
- o Preparation of chemicals and concrete washout;
- Areas to dump construction and general waste;
- Wash down or cleaning of any kind;
- Locations for site offices or toilets;
- o Excavation and dewatering activities; and
- $\circ$   $\,$  Or any other activity that may harm or injure the tree above or below ground.
- Regular Arboricultural inspections &/or supervision during the construction/works period will be critical in ensuring tree welfare is preserved.



References: AS 4373 2007, AS 4970 2009, Harris et. Al 2004

## 6. Conclusions

The trees surveyed for this report currently provide valued environmental, habitat, aesthetic and amenity benefits for the 91-95 Canning Highway, East Fremantle development site and the local area. The benefits of these services can be expected to increase as urbanisation of the local area continues.

With mature trees becoming increasingly rare in the urban environment (largely due to infill developments), and the many decades it takes to replace existing canopy, it would be reasonable for high priority being given to their retention within the proposed design (where possible).

Achieving the successful preservation & protection of the assessed trees will require specialist and timely Arboricultural input into the development of construction specifications and drawings.

Consideration needs to be given to the sensitive nature and aversion of endemic trees to root zone impact and disturbance. Due to the nature of tree growth and function and the ability of many trees to store and reuse resources in times of stress; it is possible for there to be a significant time delay between injury to a tree's root system occurring and visible decline in the tree canopy becoming evident.

Further consultation with Arbor Centre is recommended regarding:

- The finalisation of a tree sensitive design for the project
- Identifying and quantifying the impacts of the type of works being proposed around the trees and their associated methodologies
- Practical measures that could be applied to mitigate or otherwise limit construction impact during and after the construction and development phases
- The development of <u>Tree Retention Specifications</u> for the project that inform contractors and supervisors on how to factor site specific work methods into their costings.
- Ongoing monitoring and reporting requirements for the duration of the project.

Consideration needs to be given to the specialised nature of the tree management works contained within this report which; if undertaken or specified incorrectly, they may have a negative effect on tree health and/or structure. It is imperative that only arboricultural organisations with staff suitably qualified and experienced in tree management and/or tree preservation are engaged in monitoring, maintaining, and managing the trees into the future.

Any further recommendations made should be specified by an (minimum) Australian Qualification Framework Level 5 Arborist (AQF 5 – *Diploma in Arboriculture*); in keeping with the Australian Standards



AS 4970 '*Protection of Trees on Development Sites*' 2009 & AS 4373 'Pruning of Amenity Trees' 2007 and be approved prior to commencement by the Arbor Centre.

Trees are dynamic, ever-changing organisms. Regular Arboricultural inspections should be undertaken in an ongoing capacity, by the Arbor Centre to assess, identify and report any change or tree related problems that may cause issues in and around the trees assessed for this project.



## 7. Recommendations

#### 7.1 Site and Tree Geo Location Validation

Validation of the sites survey data should be undertaken to ground truth location of trees in relation to the proposed structures and works. This will ensure that any issues regarding alignments in conflict with TPZs are addressed in the design stages for the project.

#### 7.2 Timely Design Reviews and Associated Arboricultural Inputs

That timely Arboricultural reviews and refinement of the proposed design and work methodology(s) is undertaken by Arbor Centre (in collaboration with other parties), to develop and implement tree sensitive designs for existing tree retention and new tree installations. This particularly applies to the development of the following (but is not limited to):

- Basement alignment (adjacent trees AC0006, AC0008 AC0012)
- Landscape works in creating 'the embankment' (adjacent trees AC0008 AC0012)
- Decking works (beneath tree AC0006)
- Path construction along the north-eastern boundary (adjacent trees AC0004, AC0006, AC0008 – AC0012)

### 7.3 Develop Site Specific Tree Specifications

That Tree and Site-specific retention specifications (for new and existing trees) be developed by Arbor Centre for any proposed construction and implemented on ground to the necessary standards throughout the duration of the project.

#### 7.4 Ongoing Arboricultural Supervision, Regular Inspections, and Reporting

Ongoing Arboricultural Supervision, regular inspections and reporting throughout the construction phase should form part of the project brief for tenderers. Lines of reporting to be confirmed with Arbor Centre prior to the release of tender documentation.



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Figure 2: Tree location Image. Image Source – www.nearmaps.com , Image date 23rd October 2021

Note: Tree locations are an approximate and for reference purposes only (the GIS coordinates are to be used as a <u>quide only</u> to verifying location and tree specific information). The GIS Data is deemed reliable but provided "as is" without warranty of any representation of accuracy, timeliness, reliability or completeness. The map documents do not represent a legal survey of the land and are for graphical purposes only. Use of the Data for any purpose should be with acknowledgment of the limitations of the Data, including the fact that the Data is dynamic and is in a constant state of maintenance, correction, and update.



#### **Field Definitions**

Arbor Centre Tree ID Number - States Arbor Centre's individual tree identification number for this project.

Species Identification - States the genus, species and common name for each tree.

**Age Status**: - States the estimated age at the time of assessment. (Juvenile, Semi Mature, Mature, Post Mature).

Tree Height - Measured in meters taken from ground level to the highest point of the trees canopy.

Canopy Spread - Measured in meters taken at the widest points of the trees canopy.

**Useful Life Expectancy:** - Provides estimation of the individual trees remaining Useful Life Expectancy (ULE) (0 Dead, <5 Years, 5 – 10 years, 10 – 40 years, or 40+).

**Tree Health**: - States the health of the tree at the time of assessment. (Good, Acceptable, Questionable, Poor, Dead). Refer *Health and Structure Definitions* below for further explanation.

**Canopy Structure:** - States the structure of the tree at the time of assessment. (Good, Acceptable, Questionable, Poor) Refer *Health and Structure Definitions* below for further explanation.

**Trunk Diameter** - Accurate measurement of trunk diameter in millimetres. Measured at 1.4 meters above ground level for single stemmed trees; immediately below bifurcation in co-dominant stemmed trees or at ground level for multi stemmed trees.

**Tree Protection Zone (TPZ) Radius**: - Minimum root zone required to be protected during construction, development or during any activities that may encroach into the zone which may cause harm or injure the tree and its parts. Measured in meters, as a <u>radius</u> from centre of trunk. Calculated as: x12 DBH. *Note:* - *TPZ is to not be <2 meters and not >15 meters or measured to the extent of canopy, whichever is greater.* As per Australian Standards AS 4970 "Protection of trees on development sites" 2009.

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Able to be Transplanted: - Yes, No or Yes but not recommended

Minimum Transplant Preparation Time: - Minimum time required prior to relocation

**Observations & Comments:** - Provides general information relevant for the individual specimen.

**Preliminary Recommendation:** - Provides preliminary recommendations for the assessed specimens Consider Removal, Retain, or Retain (Conditional - seek further Arboricultural advice), considering the proposed development for the site

Longitude & Latitude: - Provides X & Y location coordinates for the individual tree.



#### Health and Structure Definitions

Tree Health	Definition						
Good	Tree displays typical foliage size, colouration and density for a specimen of the species. Seasonal stem elongation and wound wood response also appears typical. A build-up of seasonal deadwood may be present.						
Acceptable	Tree displays typical foliage size and colouration. Canopy mass may be slightly thin or have more than typical amount of deadwood present within canopy. Seasonal stem elongation and wound wood response may be inhibited. Tree may be displaying a response to recently changed environs.						
Questionable	Tree displays less than typical foliage size, colouration and density for a specimen of the species. Large sections of deadwood may be evident in upper canopy. Seasonal stem elongation and wound wood response may be suppressed. Retention of the tree requires remedial works in order for the specimen to become "Acceptable".						
Poor	Tree canopy indicates decline. Tree displays less than 30% live canopy mass and will be problematic to long term retention. Beginning of spiral of decline. Remedial works unlikely to improve tree health.						
Dead	Tree has no living conductive tissue within its main stem.						

Tree Structure	Definition						
Good	Primary framework has structure that is typical of the species at its stage of maturity. Secondary (and beyond) branch attachments are typical of the species. The tree may have inconsequential/minor imperfections.						
Acceptable	Primary framework has structure that is typical of the species at its stage of maturity, but which presents defects that may need to be monitored. Secondary (and beyond) branch attachment are typical of the species, but presents structural defects that may require remedial work within the scope of ongoing maintenance. Can include storm damaged and Lopped trees that have developed acceptable branch attachment (subject to species).						
Questionable	Primary and secondary framework has evidence of its structural integrity being compromised (i.e.: Storm damage, deleterious pruning, breaks, cracks, fractures, included bark, major decay, poor branch taper etc.). Retention of the tree requires remedial works in order for the specimen to become "Acceptable".						
Poor	Tree displays significant structural defects that will be problematic to long term retention. i.e.: extensive stem cavities, split/broken unions. Remedial works unlikely to improve form.						

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iseful Life Canopy cpectancy Tree Health Structure (ULE)	se Canopy Useful Life Canopy jht Spread Expectancy Tree Health Structure ) (m) (ULE)
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- 10 years Questionable Questionab	5 5-10 years Questionable Questionab
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- 10 years Questionable Questionabl	5 5 - 10 years Questionable Questionabl
1-40 years Acceptable Acceptab	5 10 - 40 years Acceptable Acceptab
10 + years Good Goo	3 25 40+years Good Goo
10 + years Acceptable P	5 8 40 + years Acceptable P
10 + years Good Accel	) 15 40 + years Good Accel
10 + years Acceptable Accel	4 40 + years Acceptable Acce
1-40 years Poor Questi	9 10 - 40 years Poor Questi
10 + years Good Acce	5 15 40+years Good Acce
)-40 years Poor Quest	4 10 - 40 years Poor Quest
10 + years Good Acc	2 10 40 + years Good Aco
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10 + years Good Accept	5 15 40 + years Good Accept
l0 + years Good Goo	7 40 + years Good Goo
10 + years Acceptable Poo	5 10 40 + years Acceptable Poo

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Page 1 of 2

APPENDIX B: - Table of Results 91-95 Canning Highway, East Fremantle Tree Survey November 2021

Latitude	-32.04200506	-32.04200877	-32.04200691	-32.04190726	-32.04186641	-32.04181936	-32.04169866	-32.0415693
Longitude	115.7615896	115.7615036	115.7614516	115.7614875	115.7614894	115.7614881	115.761615	115.761641
reliminary Recommendation	larked for Removal by Others	larked for Removal by Others	larked for Removal by Others	larked for Removal by Others	larked for Removal by Others	larked for Removal by Others	larked for Removal by Others	larked for Removal by Others
Observations & Comments	lark included branchistem unions: Bifurcates between ground level and 1m; M ndividual stems measured as 230mm & 140mm	sood Specimen; Advanced lignotubor	:anopy chlorotic (yellowing); Tree on lean - minor; Tree unstable in the ground $_{M}$ minor	anopy suppression - major; Previous failures - major (150mm to 300mm) M	anopy suppression - minor.	kanopy suppression - minor	Veed species - WONS; Stand of 2	ulti stemmed form; Bark induded branch/stem unions, Compromised unions Noughout tree
TPZ Radius (m)	3.24 B	2.28 G	2.16 C	6.60 C	6.60 C	7.20 C	10.80 M	12.00 M
Trunk Diameter (m)	0.270	0.190	0.180	0.550	0.550	0.600	0.900	1.000
Canopy Structure	Poor	Good	Acceptable	Questionable	Questionable	Questionable	Questionable	Poor
Tree Health	Good	Good	Acceptable	Acceptable	Good	Acceptable	Acceptable	Acceptable
Useful Life Expectancy (ULE)	10 - 40 years	40 + years	40 + years	10 - 40 years	10 - 40 years	10 - 40 years	10 - 40 years	5 - 10 years
Canopy Spread (m)	Q	9	9	15	15	15	15	15
Tree Height (m)	5	5	9	12	12	12	7	15
Age	Mature	Mature	Mature	Mature	Mature	Mature	Mature	Mature
Species (& Common Name)	Callistemon 'Kings Park Special' (King's Park Special Bottlebrush)	Eucalyptus platypus var. heterophylla (Coastal Moort)	Eucalyptus lehmannii (Bushy Yate)	Melia azedarach (Cape Lilac)	Melia azedarach (Cape Lilac)	Melia azedarach (Cape Lilac)	Schinus terebinthifolius (Brazilian Pepper)	Melia azedarach (Cape Lilac)
Arbor Centre Tree ID No.	AC0020	AC0021	AC0022	AC0023	AC0024	AC0025	AC0026	AC0027

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# Appendix C – Site Images



Figure 3.

Figure 4.



Figure 5.



Figure 6.



Figure 7.



Figure 8.







Figure 9.

Figure 10.



Figure 11.

Figure 12.



Figure 13.



Figure 14.





# Appendix D – Tree Protection Notes for Incorporation into Construction Drawings

Incorporating the below Tree Protection notes onto demolition, construction, service, landscape etc. Drawings as an immediate tree protection reference point would be beneficial for contractors (and subcontractors) reading drawings specific to their works.

Including (but not limited to);

- THE NOMINATED PROJECT ARBORICULTURIST IS ARBOR CENTRE PTY LTD CONTACT No. 08-9359 9300.
- THE IDENTIFIED TREES ARE TO BE PROTECTED AND PRESERVED IN ACCORDANCE WITH ARBOR CENTRES TREE PROTECTION SPECIFICATION FOR THE DURATION OF WORKS.
- THE TREES ARE TO BE FENCED AND SIGNED AT THE SPECIFIED TPZ DELINEATION IN ACCORDANCE WITH THE ARBORICULTURAL PROTECTION SPECIFICATIONS AND ADVICE FROM ARBOR CENTRE.
- NO UNAUTHORISED ACCESS OR WORKS ARE TO OCCUR WITHIN TPZ AREA WITHOUT PRIOR CONSULTATION AND FORMAL APPROVAL FROM ARBOR CENTRE.
- THE PROJECT ARBORICULTURIST IS TO BE NOTIFIED A MINIMUM OF 5 WORKING DAYS PRIOR TO WORKS PROPOSED WITHIN THE TPZ.
- ANY WORKS WITHIN THE TREE PROTECTION ZONE ARE TO BE CARRIED OUT IN ACCORDANCE WITH ADVICE FROM AND UNDER THE SUPERVISION OF THE ARBOR CENTRE.



If you have any queries or if we can be of further assistance, do not hesitate to call the Arbor Centre office on (08) 9359 9300.

Regards,

J.J

Alex Bodenstaff – Urban Planning Consultant B. Urb&RegPlan. Curtin Uni

On Behlaf of **Rob Bodenstaff – Principal – Arboricultural Consultant** Grad. Cert. Arb Melb. Uni. Adv Dip.Arb & Hort. Murdorch ISA Arb. (AU-0015A)

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#### COMPANY DETAILS:

Arbor Centre PTY LTD (ACN 009 375 311 ~ ABN 97 848 490 214) 731 Welshpool Road East, Wattle Grove 6107 ~ PO Box 23, Forrestfield 6058 Phone: - (08) 9359 9300 ~ enquiries@arborcentre.com.au ~ www.arborcentre.com.au