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Arboricultural Impact Appraisal and Method Statement

95 Stanhope Road Killara, NSW

Prepared for Lourdes Retirement Village

2 June 2021

by Andrew Scales
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Summary

The proposed development is to demolish a number of single and two story buildings and replace them with a number of multi story buildings and a single story chapel. The proposed development also involves the rearrangement of some of the surrounding roadways and associated services. I have inspected all the trees that could be affected and list their details in Appendix 2. Based on this information, I provided guidance to project architect on the constraints these trees impose on the use of the site.

Eighty-five high category trees and one hundred and forty-eight low category trees will be lost because of this proposal. However, sixty-nine of the low category trees are exempt from Ku-Ring-Gai Council's Tree Preservation Order and a comprehensive landscaping scheme to mitigate these losses is proposed that will include the planting of new trees.

The proposed changes may adversely affect a further seventy-nine high category trees and sixty-seven low category trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal is expected to have a high impact on the contribution of trees to local amenity or character.

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1. INTRODUCTION

- 1.1 **Instruction:** I am instructed by Stockland to inspect the tree population at 95 Stanhope Road, Killara and to provide an arboricultural report to accompany a development application. This report investigates the impact of the proposed development on trees and provides the following guidelines for appropriate tree management and protective measures:
 - a schedule of the relevant trees to include basic data and a condition assessment:
 - an appraisal of the impact of the proposal on trees and any resulting impact that has on local character and amenity;
 - a preliminary arboricultural method statement setting out appropriate protective measures and management for trees to be retained
- 1.2 Purpose of this report: This report provides an analysis of the impact of the development proposal on trees with additional guidance on appropriate management and protective measures. Its primary purpose is for the council to review the tree information in support of the planning submission and use as the basis for issuing a planning consent or engaging in further discussions towards that end. Within this planning process, it will be available for inspection by people other than tree experts, so the information is presented to be helpful to those without a detailed knowledge of the subject.
- 1.3 **Qualifications and experience:** I have based this report on my site observations and the provided information, and I have come to conclusions in the light of my experience. I have experience and qualifications in arboriculture and include a summary in Appendix 1.
- 1.4 **Documents and information provided:** Stockland provided me with copies of the following documents:
 - Survey Plan, Dwg No. 21388 (Sheet S1 to S11), by Norton Survey Partners dated 22 April 2015;
 - Feasibility Plan by Plus Architecture dated 25 May 2021.
- 1.5 Scope of this report: This report is only concerned with three hundred and seventy-nine trees located within and adjacent to the subject site. It takes no account of other trees, shrubs or groundcovers within the site unless stated otherwise. It includes a preliminary assessment based on the site visit and the documents provided, listed in 1.4 above.



2. THE LAYOUT DESIGN

2.1 Tree AZ method of tree assessment: The TreeAZ assessment method determines the worthiness of trees in the planning process. TreeAZ is based on a systematic method of assessing whether individual trees are important and how much weight they should be given in management considerations. Simplistically, trees assessed as potentially important are categorised as 'A' and those assessed as less important are categorised as 'Z'. Further explanation of TreeAZ can be found in Appendix 3.

In the context of new development, all the Z trees are discounted as a material constraint in layout design. All the A trees are potentially important and they dictate the design constraints. This relatively simple constraints information is suitable for use by the architect to optimise the retention of the best trees in the context of other material considerations.

2.2 Site visit and collection of data

- 2.2.1 Site visit: I carried out an unaccompanied site visit on 2 June 2015 and 24 May 2021. All my observations were from ground level and I estimated all dimensions unless otherwise indicated. Aerial inspections, root or soil analysis, exploratory root trenching and internal diagnostic testing was not undertaken as part of this assessment. I did not have access to trees on other private properties and have confined observations of them to what was visible from within the property. The weather at the time of inspection was clear and dry with good visibility.
- 2.2.2 **Brief site description:** 95 Stanhope Road is located in the residential suburb of Killara (refer figure 1). The site is on the southern side of the road and surrounded by residential development. The property consists of the existing Lourdes Retirement Village that is currently occupied. A variety of ornamental, coniferous and local indigenous trees are scattered throughout the site and around the site boundaries.

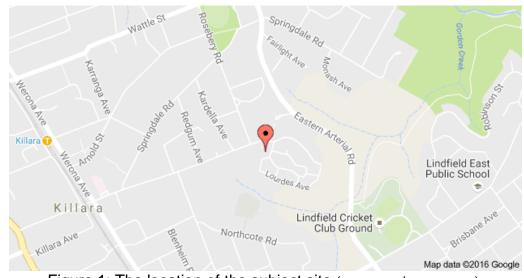


Figure 1: The location of the subject site (www.googlemaps.com).



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- 2.2.3 Collection of basic data: I inspected each tree and have collected information on species, height, diameter, maturity and potential for contribution to amenity in a development context. I have recorded this information in the tree schedule included, with explanatory notes, in Appendix 2. Each tree was then allocated to one of four categories (AA, A, Z or ZZ), which reflected its suitability as a material constraint on development.
- 2.2.4 **Identification and location of the trees:** I have illustrated the locations of the significant trees on the Tree Management Plan (Plan TMP01) included as Appendix 8. This plan is for illustrative purposes only and it should not be used for directly scaling measurements.
- 2.2.5 **Advanced interpretation of data:** Australian Standard *Protection of trees on development sites* (AS4970-2009), recommends that the trunk diameter measurement for each tree is used to calculate the tree protection zone (TPZ), which can then be interpreted to identify the design constraints and, once a layout has been consented, the exclusion zone is to be protected by barriers.
- 2.2.6 **Plan updates:** During my site visit, I noted five trees (Trees 121, 175, 176, 200 and 236) that were not shown on the land survey. I have illustrated their approximate locations on plan TMP01 but these positions have not been accurately surveyed. I do not consider that this has affected the conclusions of this report but if their locations are considered important, they should be accurately surveyed. Additionally, a number of trees were no longer present on site and have been removed from the plan.
- 2.3 The use of the tree information in layout design: Following my inspection of the trees, the information listed in Appendix 2 was used to provide constraints guidance based on the locations of all the A trees. All the Z trees were discounted because they were not considered worthy of being a material constraint. This guidance identified two zones of constraint based on the following considerations:
 - The tree protection zone (TPZ) is an area where ground disturbance must be carefully controlled. The TPZ was established according to the recommendations set out in AS4970-2009 and is the radial offset distance of twelve (x12) times the trunk diameter. In principle, a maximum encroachment of 10% is acceptable within the TPZ and a high level of care is needed during any activities that are authorised within it if important trees are to be successfully retained.
 - The structural root zone (SRZ) is a radial distance from the centre of a tree's trunk, where it is likely that structural, woody roots would be encountered. The distance is calculated on trunk flare diameter at ground level. The SRZ may also be influenced by natural or built structures, such as rocks and footings. The SRZ only needs to be calculated when major encroachment (>10%) into a TPZ is proposed.

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3. ARBORICULTURAL IMPACT APPRAISAL

3.1 Summary of the impact on trees: I have assessed the impact of the proposal on trees by the extent of disturbance in TPZs and the encroachment of structures into the SRZ (as set out briefly in 2.3 above and more extensively in Appendix 2). All the trees that may be affected by the development proposal are listed in Table 1

Table 1: Summary of existing trees and trees that may be affected by development

	D	Imp	ortant trees	Unimportant tre	es
Impact	Reason	AA	Α	Z	ZZ
Retained trees that may be affected through disturbance to TPZs	Removal of existing surfacing/structures/ landscaping and/or installation of new surfacing/structures/ landscaping	26, 280, 320, 322, 323, 325, 361, 363, 371, 372, 374, 375, 376, 377, 378, 379, 385, 387,	22, 27, 28, 29, 30, 47, 60, 102, 105, 121, 164, 165, 172, 175, 176, 182, 183, 189, 196, 201, 202, 231, 263, 264, 265, 266, 268, 269, 272, 273, 286, 288, 300, 309, 310, 311, 313, 314, 319, 332, 337, 338, 340, 349, 350, 352, 355, 356, 357, 358, 364, 366, 368, 369, 373, 380, 386, 390, 391, 392	23, 24, 37, 38, 39, 104, 166, 177, 178, 179, 180, 181, 185, 186, 190, 192, 193, 194, 195, 200, 271, 274, 275, 299, 301, 306, 307, 308, 315, 316, 317, 318, 321, 324, 330, 331, 334, 335, 336, 339, 342, 343, 345, 348, 351, 353, 354, 359, 365, 367, 370, 382, 383, 384, 393, 394	270, 282, 305, 312, 333, 341, 346, 347, 362, 381, 388
Trees to be removed	Building and driveway construction and/or level variations within TPZ	67, 103, 244, 326, 360	1, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 25, 32, 33, 34, 41, 42, 43, 46, 56, 57, 59, 72, 74, 77, 78, 79, 80, 81, 82, 83, 89, 90, 106, 107, 108, 110, 111, 114, 115, 116, 117, 118, 123, 124, 125, 127, 128, 131, 138, 141, 142, 144, 162, 170, 174, 204, 205, 212, 218, 232, 245, 252, 256, 262, 276, 283, 284, 289, 291, 296, 297, 327, 328	2, 35, 40, 45, 48, 49, 50, 51, 52, 53, 54, 55, 61, 62, 63, 64, 65, 66, 68, 69, 70, 71, 73, 75, 84, 85, 88, 94, 95, 96, 97, 98, 101, 109, 112, 113, 120, 126, 129, 130, 132, 133, 134, 136, 137, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 167, 168, 169, 171, 173, 188, 197, 198, 199, 203, 206, 207, 208, 209, 210, 211, 213, 214, 215, 216, 217, 219, 220, 222, 223, 224, 228, 229, 233, 234, 236, 237, 238, 239, 240, 241, 242, 243, 246, 247, 248, 249, 250, 253, 254, 255, 257, 258, 259, 260, 261, 278, 279, 290, 292, 293, 294, 295, 298, 302, 303, 304	15, 31, 44, 76, 87, 91, 92, 100, 187, 191, 221, 225, 226, 227, 235, 251, 285, 287

3.2 **Detailed impact appraisal**

3.2.1 Category AA and A trees to be lost: The proposed development will necessitate the removal of eighty-five high category trees. These trees will be directly or indirectly impacted by the proposed works and are considered moderate to high significance with good health and condition. In order to

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- compensate for loss of amenity, consideration should be given to replacement planting within the site.
- 3.2.2 Category AA and A trees that could potentially be adversely affected through TPZ disturbance: Seventy-nine category A and AA trees could potentially be adversely affected through disturbance to their TPZs as follows:
 - Trees 22, 47, 60, 102, 105, 121, 164, 165, 172, 175, 176, 189, 196, 201, 202, 231, 263, 264, 268, 269, 272, 273, 280, 286, 288, 323, 325, 332, 337, 338, 352, 358 and 368: These are important trees with a high potential to contribute to amenity so any adverse impacts on them should be minimised. The proposed demolition and construction works will come within close proximity to these and will cause harm if not carried out with care. I have reviewed the situation carefully and my experience is that these trees could be successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.
 - The remainder of the high category trees are positioned away from the proposed development. Although, the changes may cause harm if not carried out with care, I have reviewed the situation carefully and my experience is that these trees could be successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.
- 3.2.3 **Low category trees to be retained:** Sixty-seven low category trees remain outside the works areas and can be retained successfully retained without any adverse effects if appropriate protective measures are properly specified and controlled through a detailed arboricultural method statement.
- 3.2.4 Low category trees to be removed: The proposed development will necessitate the removal of one hundred and forty-eight trees of low and very low retention value. None of these trees are considered significant or worthy of special measures to ensure their preservation. It should be noted that Trees 2, 15, 23, 35, 49, 50, 51, 76, 85, 87, 88, 91, 92, 93, 94, 98, 99, 100, 130, 132, 134, 143, 145–161, 171, 188, 191, 207, 209, 210, 214, 215, 216, 217, 220–228, 234, 235, 247, 250, 251, 254, 255, 260, 270, 293, 330 and 331 are exempt from Ku-Ring-Gai Council's Tree Preservation Order.
- 3.3 **Proposals to mitigate any impact**
- 3.3.1 **Protection of retained trees:** The successful retention of trees within the site will depend on the quality of the protection and the administrative procedures to ensure protective measures remain in place throughout the development. An effective way of doing this is through an arboricultural method statement that can be specifically referred to in the planning condition. An arboricultural method statement for this site is set out in detail in Section 4.

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- 3.3.2 **New planting:** In the context of the loss of trees, a comprehensive new landscaping scheme is proposed including semi-mature trees to be planted within available areas in prominent locations. The new trees should have the potential to reach a significant height without excessive inconvenience and be sustainable into the long term, significantly improving the potential of the site to contribute to local amenity and character.
- 3.3.3 Summary of the impact on local amenity: Eighty-five high category trees and one hundred and forty-eight low category trees will be lost because of this proposal. However, sixty-nine of the low category trees are exempt from Ku-Ring-Gai Council's Tree Preservation Order and a comprehensive landscaping scheme to mitigate these losses is proposed that will include the planting of new trees. The proposed changes may adversely affect a further seventy-nine high category trees and sixty-seven low category trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the arboricultural method statement included in this report, the development proposal is expected to have a high impact on the contribution of trees to local amenity or character.

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4. ARBORICULTURAL METHOD STATEMENT

4.1 Introduction

- 4.1.1 **Terms of reference:** The impact appraisal in Section 3 identified the potential impacts on trees caused by proposed development. Section 4 is an arboricultural method statement setting out management and protection details that <u>must</u> be implemented to secure successful tree retention. It has evolved from Australian Standard AS4970-2009 *Protection of trees on development sites*.
- 4.1.2 **Plan TMP01:** Plan TMP01 in Appendix 8 is illustrative and based entirely on provided information. This plan should only be used for dealing with the tree issues and all scaled measurements <u>must</u> be checked against the original submission documents. The precise location of all protective measures <u>must</u> be confirmed at the pre-commencement meeting before any demolition or construction activity starts. Its base is the existing land survey, which has the proposed layout superimposed so the two can be easily compared. It shows the existing trees numbered, with high categories (A) highlighted in green triangles and low categories (Z) highlighted in blue rectangles. It also shows the locations of the proposed protective measures.

4.2 Tree protection with fencing and ground protection

- 4.2.1 **Protection fencing:** Tree protection fencing must comply with AS4970 (section 4.3) recommendations. An illustrative guide is included as Appendix 4. The approximate location of the barriers and the TPZs is illustrated on plan TMP01. The precise location of the fencing must be agreed with the project Arborist before any development activity starts.
- 4.2.2 Ground protection: Any TPZs outside the protective fencing must be covered in ground protection based on AS4970 recommendations until there is no risk of damage from the demolition and construction activity. An illustrative specification for this ground protection is included as Appendix 5. On this site, it must be installed near retained trees as illustrated on plan TMP01 before any demolition and construction starts.
- 4.3 **Precautions when working in TPZs:** Any work in TPZs must be done with care as set out in Appendix 6. On this site, special precautions must be taken near the trees that are in close proximity to the development of the buildings and new roadways as illustrated on plan TMP01 and summarised below:
 - Removal of existing surfacing/structures and replacement with new surfacing/structures: Retained trees may be adversely affected by the demolition and construction works or the installation of a small area of new surfacing. Any adverse impact must be minimised by following the guidance set out in Appendix 6.

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- Installation of new soft landscaping: All landscaping activity within TPZs has the potential to cause severe damage and any adverse impact must be minimised by following the guidance set out in Section 7 of Appendix 6.
- Installation of new services or upgrading of existing services: It is often difficult to clearly establish the detail of services until the construction is in progress. Where possible, it is proposed to use the existing services into the site and keep all new services outside TPZs. However, where existing services within TPZs require upgrading or new services have to be installed in TPZs, great care must be taken to minimise any disturbance. Trenchless installation should be the preferred option but if that is not feasible, any excavation must be carried out by hand according to the guidelines set out in Section 6 of Appendix 6. If services do need to be installed within TPZs, consultation must be obtained from the project Arborist and/or council before any works are carried out.
- Damage to street trees: Any damage to street trees as a result of
 erection of hoardings, scaffolding or due to the loading/unloading of
 vehicles adjacent the site must be immediately reported to the Council's
 Street Tree Contract Coordinator, in order to determine the appropriate
 action for maintaining the health and structural integrity of any damaged
 street tree.

4.4 Other tree related works

- 4.4.1 **Site storage, cement mixing and washing points:** All site storage areas, cement mixing and washing points for equipment and vehicles must be outside TPZs unless otherwise agreed with the project Arborist and/or council. Where there is a risk of polluted water run off into TPZs, heavy-duty plastic sheeting and sandbags must be used to contain spillages and prevent contamination.
- 4.4.2 **Pruning:** Any pruning that is required to accommodate hoardings, scaffolding or to accommodate the unloading/loading of vehicles and has been approved by Council shall be carried out by a qualified Arborist (AQF3) and must be in accordance with AS4373 Australian Standards 'Pruning of Amenity Trees'.

4.5 Programme of tree protection and supervision

4.5.1 **Overview:** Tree protection cannot be reliably implemented without arboricultural input. The nature and extent of that input varies according to the complexity of the issues and the resources available on site. For this site, a summary of the level of arboricultural input that is likely to be required is set out in Appendix 7. The project arborist must be instructed to work within this framework to oversee the implementation of the protective measures and management proposals set out in this arboricultural method statement.

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The framework in Appendix 7 must form the basis for the discharge of planning conditions through site visits by the project arborist. These supervisory actions must be confirmed by formal letters circulated to all relevant parties. These permanent records of each site visit will accumulate to provide the proof of compliance and allow conditions to be discharged as the development progresses. The developer must instruct the project arborist to comply with the supervision requirements set out in this document before any work begins on site.

- 4.5.2 **Phasing of arboricultural input:** Trees can only be properly budgeted for and factored into the developing work programmes if the overall project management takes full account of tree issues once consent is confirmed. The project arborist must be involved in the following phases of the project management:
 - 1. Administrative preparation before work starts on site: It is normal for a development proposal to vary considerably from the expectations before consent as the detailed planning of implementation evolves. The early instruction of the project arborist ensures that tree issues are factored into the complexities of site management and can often help ease site pressures through creative approaches to tree protection. Pre-commencement discussions between the project arborist and the developer's team is an effective means of managing the tree issues with difficult constraints.
 - 2. **Pre-commencement site meeting:** A pre-commencement meeting must be held on site before any of the demolition and construction work begins. This must be attended by the site manager and the project arborist. Any clarifications or modifications to the consented details must be recorded and circulated to all parties in writing. This meeting is where the details of the programme of tree protection will be agreed and finalised by all parties, which will then form the basis of any supervision arrangements between the project arborist and the developer.
 - 3. **Site supervision:** Once the site is active, the project arborist must visit at an interval agreed at the pre-commencement site meeting. The supervision arrangement must be sufficiently flexible to allow the supervision of all sensitive works as they occur. The project arborist's initial role is to liaise with developer to ensure that appropriate protective measures are designed and in place before any works start on site. Once the site is working, that role will switch to monitoring compliance with arboricultural conditions and advising on any tree problems that arise or modifications that become necessary.
- 4.6 **Site management:** It is the developer's responsibility to ensure that the details of this arboricultural method statement and any agreed amendments are known and understood by all site personnel. Copies of the agreed documents must be kept on site at all times and the site manager must brief all personnel who could have an impact on trees on the specific tree protection requirements. This must be a part of the site induction procedures and written into appropriate site management documents.

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5. HOW TO USE THIS REPORT

- 5.1 **Limitations:** It is common that the detail of logistical issues such as site storage and the build programme are not finalised until after consent is issued. As this report has been prepared in advance of consent, some of its content may need to be updated as more detailed information becomes available once the post-consent project management starts. Although this document will remain the primary reference in the event of any disputes, some of its content may be superseded by authorised post-consent amendments.
- 5.2 Suggestions for the effective use of this report: Section 4 of this report, including the relevant appendices, is designed as an enforcement reference. It is constructed so the council can directly reference the detail in a planning condition. Referencing the report by name and relating conditions to specific subsections is an effective means of reducing confusion and facilitating enforcement in the event of problems during implementation. More specifically, the following issues should be directly referenced in the conditions for this site:

1.	Pre-commencement meeting	4.5
2.	Protection fence	4.2.1 and Appendix 4
3.	Ground protection	4.2.2 and Appendix 5
4.	Removal of surfacing/structures	4.3 and Appendix 6 (Section 4)
5.	Installation of surfacing/structures	4.3 and Appendices 6 (Section 5)
6.	Services	4.3 and Appendix 6 (Section 6)
7.	Landscaping	4.3 and Appendix 6 (Section 7)
8.	Programming of tree protection	4.5 and Appendix 7
9.	Arboricultural supervision	4.5 and Appendix 7

Each of the above matters shall be supervised by the project arborist and the relevant conditions can only be discharged once that supervision has been confirmed in writing to the relevant parties. The last column of the table in Appendix 7 is to be used so that the various supervision issues can be recorded as they are confirmed by supervision letters. It is intended to act as a summary quick reference to help keep track of the progress of the supervision.



6. OTHER CONSIDERATIONS

- Trees subject to statutory controls: The subject trees (excluding Trees 2, 15, 23, 35, 49, 50, 51, 76, 85, 87, 88, 91, 92, 93, 94, 98, 99, 100, 130, 132, 134, 143, 145–161, 171, 188, 191, 207, 209, 210, 214, 215, 216, 217, 220–228, 234, 235, 247, 250, 251, 254, 255, 260, 270, 293, 330 and 331) are legally protected under Ku-ring-gai Council's Tree Preservation Order, it will be necessary to consult the council before any pruning or removal works other than certain exemptions can be carried out. The works specified above are necessary for reasonable management and should be acceptable to the council. However, tree owners should appreciate that the council may take an alternative point of view and have the option to refuse consent.
- 6.2 **Trees outside the property:** Trees located in the adjacent properties effectively out of the control of the owners of 95 Stanhope Road, Killara. It will not be possible to easily carry out the recommended works without the full cooperation of the tree owners. The implications of non-cooperation require legal interpretation and are beyond the scope of this report.

7. BIBLIOGRAPHY

7.1 List of references:

Australian Standard AS4373-2007 *Pruning of Amenity Trees*. Standards Australia.

Australian Standard AS4970-2009 *Protection of trees on development sites*. Standards Australia.

Barrell, J (2009) <u>Draft for Practical Tree AZ</u> version 9.02 A+NZ Barrel Tree Consultancy, Bridge House, Ringwood BH24 1EX

Brooker, M. Kleinig, D (1999) <u>Field guide to eucalypts – South eastern Aust.</u> Blooming Books, Hawthorn Vic.

Matheny, N.P. & Clark, J.R. (1998) <u>Trees & Development: A Technical Guide to Preservation of Trees During Land Development</u>
International Society of Arboriculture, Savoy, Illinois.

Mattheck, Dr. Claus R., Breloer, Helge (1995) <u>The Body Language of Trees - A Handbook for Failure Analysis</u>;

The Stationery Office, London. England.

Robinson, L (1994) <u>Field Guide to the Native Plants of Sydney</u> Kangaroo Press, Kenthurst NSW

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8. DISCLAIMER

8.1 Limitations on use of this report:

This report is to be utilized in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, and directly attached to that submission, report or presentation.

ASSUMPTIONS

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible: however, Naturally Trees can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

- Information contained in this report covers only those trees that were examined and reflects the condition of those trees at time of inspection: and
- The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Yours sincerely

Andrew Scales
Dip. Horticulture

Dip. Arboriculture AQF5

Brief qualifications and experience of Andrew Scales

1. Qualifications:

Associate Diploma Horticulture	Northern Sydney Institute of TAFE	1998
Certificate in Tree Surgery	Northern Sydney Institute of TAFE	1998
Diploma of Horticulture (Arboriculture)	Northern Sydney Institute of TAFE	2006
Diploma of Arboriculture AQF5	Northern Sydney Institute of TAFE	2019

2. Practical experience: Being involved in the arboricultural/horticultural industry for in excess of 20 years, I have developed skills and expertise recognized in the industry. Involvement in the construction industry and tertiary studies has provided me with a good knowledge of tree requirements within construction sites.

As director of Naturally Trees, in this year alone I have undertaken hundreds of arboricultural consultancy projects and have been engaged by a range of clients to undertake tree assessments. I have gained a wide range of practical tree knowledge through tree removal and pruning works.

3. Continuing professional development:

Visual Tree Assessment (Prof. Dr. Claus Mattheck)	Northern Sydney Institute of TAFE 2001
Wood Decay in Trees (F.W.M.R.Schwarze)	Northern Sydney Institute of TAFE 2004
Visual Tree Assessment (Prof. Dr. Claus Mattheck)	Carlton Hotel, Parramatta NSW 2004
Tree A-Z / Report Writing (Jeremy Barrell)	Northern Sydney Institute of TAFE 2006
Up by Roots – Healthy Soils and Trees in the Built Environment (James Urban)	The Sebel Parramatta NSW 2008
Tree Injection for Insect Control (Statement of Attainment)	Northern Sydney Institute of TAFE 2008
Quantified Tree Risk Assessment (QTRA) Registered Licensee #1655	South Western Sydney Institute TAFE 2011
Practitioners Guide to Visual Tree Assessment	South Western Sydney Institute TAFE 2011
Quantified Tree Risk Assessment (QTRA) Registered Licensee #1655	Richmond College NSW TAFE 2014
VALID Approach to Likelihood of Failure (David Evans)	Centennial Park NSW 2017

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Tree schedule

NOTE: Colour annotation is AA & A trees with green background; Z & ZZ trees with blue background; trees to be removed in red text.

No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
1	Cedrus deodara	12	9	500	6	80%	М	Nil	Grass	Nil	M	A1
2	Acer negundo	4	3	200	2.4	70%	S	Topped	Garden bed	Adjacent building	L	Z 3
4	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	M	A1
5	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	М	A1
7	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Co-dominant	Garden bed	Nil	M	A1
8	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	M	A1
9	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	M	A1
10	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	M	A1
11	Phoenix canariensis	8	5	500	6	90%	М	Nil	Garden bed	Nil	M	A1
12	Phoenix canariensis	8	5	500	6	90%	М	Nil	Garden bed	Nil	М	A1
13	Phoenix canariensis	8	5	500	6	90%	М	Nil	Garden bed	Nil	M	A1
14	Phoenix canariensis	8	5	500	6	90%	М	Nil	Garden bed	Nil	М	A1
15	Acer negundo	4	3	100	1.2	60%	S	Nil	Garden bed	Nil	L	ZZ1
16	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	M	A1
17	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	М	A1
18	Araucaria heterophylla	12	5	300	3.6	80%	S	Nil	Garden bed	Nil	M	A1
19	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	M	A1
20	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	M	A1
21	Melaleuca quinquenervia	14	7	350	4.2	80%	М	Nil	Garden bed	Nil	М	A1
22	Araucaria heterophylla	20	9	500	6	80%	М	Nil	Garden bed	Nil	Н	A1
23	Gordonia axillaris	4	4	100	1.2	70%	М	Nil	Grass	Nil	L	Z 1
24	Liquidambar styraciflua	26	26	1200	14.4	80%	М	Lopped crown, Large epicormic growth	Grass	LV wires	Н	Z 9
25	Corymbia gummifera	12	5	300	3.6	70%	S	Nil	Garden bed	Nil	M	A 1
26	Araucaria heterophylla	28	10	700	8.4	80%	М	Nil	Grass	Nil	Н	AA1
27	Magnolia grandiflora	9	8	500	6	80%	М	Nil	Garden bed	Nil	М	A 1
28	Syncarpia glomulifera	16	14	400	4.8	90%	М	Four similar trees	Garden bed	Nil	М	A1
29	Phoenix canariensis	8	5	500	3	90%	М	Nil	Garden bed	Nil	М	A 1
30	Araucaria heterophylla	20	9	500	6	80%	М	Nil	Garden bed	Nil	Н	A1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
31	Cupressus sp.	18	9	700	8.4	50%	0	Major failure, Leaning	Garden bed	LV wires	M	ZZ9
32	Corymbia gummifera	8	5	300	3.6	80%	М	Nil	Grass	Nil	L	A1
33	Melaleuca linariifolia	8	6	300	3.6	80%	М	Nil	Grass	Nil	L	A1
34	Corymbia gummifera	9	5	300	3.6	80%	М	Nil	Grass	Nil	L	A1
35	Olea europaea	5	6	250	3	80%	M	Nil	Garden bed	Nil	L	Z3
37	Jacaranda mimosifolia	4	4	200	2.4	60%	S	Lopped under powerlines	Grass	LV wires	L	ZZ9
38	Acacia baileyana	4	3	150	1.8	50%	S	Lopped under powerlines, Borer	Grass	LV wires	L	ZZ9
39	Corymbia gummifera	7	8	300	3.6	70%	М	Lopped under powerlines	Grass	LV wires	M	Z10
40	Eucalyptus robusta	8	7	300	3.6	70%	M	Nil	Grass	Nil	L	Z10
41	Melaleuca linariifolia	8	6	300	3.6	80%	M	Nil	Grass	Nil	L	A1
42	Eucalyptus robusta	8	7	300	3.6	70%	M	Nil	Grass	Nil	L	A1
43	Melaleuca linariifolia	8	6	300	3.6	80%	М	Nil	Grass	Nil	L	A1
44	Syncarpia glomulifera	10	6	350	4.2	70%	M	Lopped central leader	Grass	Nil	M	ZZ9
45	Pittosporum undulatum	5	5	250	3	70%	М	Nil	Grass	Nil	L	Z 1
46	Syncarpia glomulifera	12	10	400	4.8	80%	М	Nil	Grass	Underground services	М	A1
47	Syncarpia glomulifera	10	8	350	4.2	70%	М	Nil	Grass	Nil	M	A1
48	Jacaranda mimosifolia	5	3	100	1.2	70%	S	Nil	Garden bed	Nil	L	Z 1
49	Syagrus romanzoffiana	9	3	300	3.6	80%	М	Nil	Garden bed	Nil	M	Z10
50	Syagrus romanzoffiana	9	3	300	3.6	80%	М	Nil	Garden bed	Nil	M	Z10
51	Syagrus romanzoffiana	9	3	300	3.6	80%	М	Nil	Garden bed	Nil	M	Z10
52	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
53	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
54	Melaleuca quinquenervia	6	3	200	2.4	80%	S	Nil	Garden bed	Nil	L	Z 1
55	Acer palmatum	5	6	250	3	90%	M	Nil	Garden bed	Nil	L	Z 1
56	Jacaranda mimosifolia	12	9	350	4.2	80%	M	Nil	Grass	Nil	M	A1
57	Jacaranda mimosifolia	10	7	300	3.6	80%	М	Nil	Grass	Nil	M	A 1
59	Araucaria heterophylla	14	6	350	4.2	80%	М	Nil	Grass	Nil	M	A 1
60	Liquidambar styraciflua	16	12	400	4.8	80%	М	Nil	Grass	Nil	M	A 1
61	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
62	Allocasuarina torulosa	6	5	300	3.6	80%	М	Nil	Garden bed	Nil	L	Z 1
63	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
64	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
65	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
66	Pittosporum undulatum	7	5	250	3	70%	М	Nil	Garden bed	Nil	L	Z 1
67	Eucalyptus pilularis	20	20	600	7.2	80%	M	Nil	Garden bed	Nil	Н	AA1
68	Syzygium paniculatum	7	5	250	3	80%	S	Nil	Garden bed	Adjacent structure	М	Z 1
69	Syzygium paniculatum	7	5	250	3	80%	S	Nil	Garden bed	Adjacent structure	М	Z 1
70	Syzygium paniculatum	7	5	250	3	80%	S	Nil	Garden bed	Adjacent structure	М	Z 1
71	Syzygium paniculatum	7	5	250	3	80%	S	Nil	Garden bed	Adjacent structure	М	Z 1
72	Cupressus sp.	14	9	400	4.8	80%	М	Co-dominant	Garden bed	Adjacent structure	М	A1
73	Phoenix canariensis	6	4	600	7.2	90%	М	Nil	Garden bed	Nil	L	Z 1
74	Corymbia citriodora	12	6	300	3.6	80%	M	Nil	Garden bed	Nil	L	Α
75	Melaleuca stypheliodes	7	5	250	3	70%	М	Nil	Garden bed	Nil	L	Z 1
76	Pittosporum undulatum	3	3	100	1.2	50%	S	Borer, Failures throughout canopy	Garden bed	Nil	L	ZZ10
77	Lophostemon confertus	10	5	300	3.6	80%	М	Nil	Steep slope	Nil	М	A1
78	Eucalyptus pilularis	12	6	300	3.6	80%	М	Nil	Steep slope	Nil	М	A1
79	Angophora costata	14	7	350	4.2	80%	М	Nil	Steep slope	Nil	М	A1
80	Angophora costata	14	7	350	4.2	80%	М	Nil	Steep slope	Nil	М	A1
81	Corymbia citriodora	10	6	300	3.6	80%	М	Nil	Garden bed	Nil	L	A1
82	Sapium sebiferum	7	7	400	4.8	80%	М	Nil	Garden bed	Nil	М	A1
83	Jacaranda mimosifolia	10	9	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
84	Jacaranda mimosifolia	8	5	250	3	70%	М	Nil	Garden bed	Nil	L	Z 10
85	Camellia sp.	3	3	100	1.2	80%	S	Nil	Garden bed	Nil	L	Z 1
87	Brugmansia sp.	3	3	100	1.2	80%	М	Nil	Garden bed	Nil	L	ZZ1
88	Melaleuca quinquenervia	8	5	250	3	80%	S	Nil	Garden bed	Adjacent building	L	Z 10
89	Melaleuca quinquenervia	12	8	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
90	Phoenix canariensis	8	7	600	7.2	90%	М	Nil	Grass	Nil	М	A1
91	Callistemon sp.	2	2	100	1.2	40%	S	Topped	Grass	Nil	L	ZZ1
92	Callistemon sp.	2	2	100	1.2	40%	S	Nil	Grass	Nil	L	ZZ1
93	Prunus sp.	3	3	100	1.2	70%	М	Nil	Grass	Nil	L	ZZ1
94	Callistemon sp.	4	4	150	1.8	80%	М	Nil	Garden bed	Nil	L	Z 1
95	Robinia pseudoacacia	9	9	300	3.6	70%	М	Co-dominant, Topped upper canopy	Grass	Nil	М	Z9
96	Callistemon sp.	5	4	150	1.8	80%	M	Nil	Garden bed	Nil	L	Z1
97	Callistemon sp.	5	4	150	1.8	80%	M	Nil	Garden bed	Nil	L	Z1
98	Callistemon sp.	4	4	150	1.8	80%	М	Nil	Garden bed	Nil	L	Z 1
99	Callistemon sp.	2	2	100	1.2	40%	S	Topped	Grass	Nil	 L	ZZ1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
100	Callistemon sp.	2	2	100	1.2	40%	S	Topped	Grass	Nil	L	ZZ1
101	Sapium sebiferum	9	7	250	3	80%	M	Nil	Grass	Nil	L	Z 10
102	Cupressus sp.	12	10	400	4.8	80%	М	Nil	Garden bed	Nil	М	A1
103	Angophora costata	22	16	400	4.8	80%	M	Nil	Natural ground	Nil	Н	AA1
104	Acer palmatum	3	4	100	1.2	80%	М	Nil	Garden bed	Nil	L	Z 1
105	Melaleuca quinquenervia	8	8	350	4.2	90%	М	Nil	Garden bed	Nil	M	A 1
106	Melaleuca armillaris	9	8	250	3	80%	M	Nil	Garden bed	Nil	M	A1
107	Melaleuca quinquenervia	12	8	400	4.8	80%	M	Nil	Garden bed	Nil	M	A1
108	Corymbia maculata	18	14	450	5.4	90%	М	Nil	Garden bed	Adjacent building	Н	A1
109	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
110	Casuarina cunninghamiana	20	16	600	7.2	80%	М	Nil	Garden bed	Nil	Н	A1
111	Melaleuca quinquenervia	10	6	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
112	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
113	Melaleuca quinquenervia	7	4	250	3	80%	S	Nil	Garden bed	Nil	L	Z 1
114	Corymbia maculata	24	14	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A1
115	Eucalyptus pilularis	26	12	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A1
116	Eucalyptus pilularis	26	12	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A1
117	Melaleuca quinquenervia	10	6	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
118	Eucalyptus pilularis	20	15	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A1
120	Jacaranda mimosifolia	12	8	250	3	80%	М	Co-dominant base	Gravel	Nil	М	Z9
121	Banksia integrifolia	12	7	300	3.6	90%	М	Nil	Garden bed	Nil	М	A1
123	Araucaria heterophylla	14	7	300	3.6	80%	S	Nil	Garden bed	Nil	М	A1
124	Angophora costata	20	12	450	5.4	70%	М	Nil	Garden bed	Nil	Н	A1
125	Grevillea robusta	22	10	500	6	80%	М	Nil	Garden bed	Nil	Н	A1
126	Leptospermum petersonii	8	6	300	3.6	80%	М	Nil	Garden bed	Nil	М	Z 10
127	Lophostemon confertus	18	14	500	6	90%	М	Nil	Garden bed	Adjacent building	Н	A1
128	Lophostemon confertus	18	14	450	5.4	90%	М	Nil	Garden bed	Adjacent building	Н	A1
129	Pittosporum undulatum	7	5	250	3	60%	М	Borer	Garden bed	Nil	L	Z 1
130	Prunus sp.	4	3	100	1.2	80%	М	Nil	Garden bed	Nil	L	Z 1
131	Corymbia gummifera	16	9	350	4.2	80%	М	Nil	Garden bed	Nil	М	A 1
132	Schefflera actinophylla	5	3	100	1.2	80%	S	Nil	Garden bed	Adjacent building	L	Z 3
133	Cupressus sp.	7	3	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
134	Magnolia × soulangeana	3	3	100	1.2	70%	M	Nil	Garden bed	Nil	L	Z 1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class		Defects	Location	Services	Significance	Tree AZ
136	Callistemon sp.	5	5	100	1.2	70%	M	Nil		Grass	Nil	L	Z 1
137	Prunus sp.	5	4	200	2.4	70%	М	Nil		Garden bed	Nil	М	Z 3
138	Angophora costata	10	10	450	5.4	90%	M	Nil		Garden bed	Adjacent structure	М	A1
139	Allocasuarina torulosa	10	6	300	3.6	70%	М	Nil		Garden bed	Adjacent building	М	Z 10
140	Callistemon sp.	5	3	100	1.2	70%	М	Nil		Garden bed	Nil	L	Z 1
141	Melaleuca armillaris	8	6	250	3	80%	М	Nil		Garden bed	Nil	М	A 1
142	Melaleuca armillaris	8	6	250	3	80%	М	Nil		Garden bed	Nil	М	A 1
143	Camellia sp.	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
144	Eucalyptus haemastoma	8	6	300	3.6	80%	М	Nil		Garden bed	Nil	М	A 1
145	Schefflera actinophylla	3	3	100	1.2	80%	S	Nil		Garden bed	Nil	L	Z 1
146	Schefflera actinophylla	3	3	100	1.2	80%	S	Nil		Garden bed	Nil	L	Z 1
147	Cotoneaster sp.	5	7	150	1.8	80%	М	Nil		Garden bed	Nil	L	Z 3
148	Callistemon sp.	4	3	100	1.2	70%	М	Nil		Garden bed	Nil	L	Z 1
149	Buckinghamia celsissima	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
150	Buckinghamia celsissima	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
151	Buckinghamia celsissima	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
152	Buckinghamia celsissima	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
153	Buckinghamia celsissima	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
154	Buckinghamia celsissima	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
155	Buckinghamia celsissima	3	3	100	1.2	90%	S	Nil		Garden bed	Nil	L	Z 1
156	Camellia sp.	3	3	100	1.2	90%	М	Nil		Garden bed	Nil	L	Z 1
157	Prunus sp.	3	3	100	1.2	90%	М	Nil		Garden bed	Nil	L	Z 1
158	Camellia sp.	3	3	100	1.2	90%	М	Nil		Garden bed	Nil	L	Z 1
159	Camellia sp.	3	3	100	1.2	90%	М	Nil		Garden bed	Nil	L	Z 1
160	Duranta repens	3	3	100	1.2	90%	М	Nil		Garden bed	Nil	L	Z 1
161	Hibiscus sp.	2	2	100	1.2	60%	М	Nil		Garden bed	Nil	L	Z 1
162	Melaleuca quinquenervia	16	10	500	6	80%	М	Co-dominant		Grass	Adjacent building	Н	A 1
163	Melaleuca quinquenervia	10	7	250	3	70%	М	Nil		Grass	Nil	L	Z 10
164	Melaleuca quinquenervia	16	10	500	6	80%	М	Nil		Grass	Adjacent building	Н	A 1
165	Melaleuca quinquenervia	16	10	500	6	80%	М	Nil		Grass	Adjacent building	Н	A 1
166	Melaleuca quinquenervia	7	3	200	2.4	80%	S	Nil		Grass	Nil	L	Z 1
167	Archontophoenix alexandrae	7	3	200	2.4	90%	М	Nil		Garden bed	Nil	L	Z1
168	Archontophoenix alexandrae	7	3	200	2.4	90%	М	Nil		Garden bed	Nil	L	Z 1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
169	Ulmus glabra	5	5	150	1.8	60%	M	Lopped, Epicormic growth	Garden bed	Adjacent structure	L	Z9
170	Melaleuca quinquenervia	9	5	300	3.6	80%	M	Nil	Garden bed	Nil	M	A1
171	Cyathea cooperi	4	3	100	1.2	90%	M	Nil	Garden bed	Nil	L	Z 1
172	Melaleuca quinquenervia	9	5	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
173	Eucalyptus piperita	18	16	450	5.4	80%	М	Cambium damage, Borer throughout base	Natural ground	Nil	Н	Z 9
174	Angophora costata	20	16	400	4.8	80%	М	Nil	Natural ground	Nil	Н	A1
175	Casuarina cunninghamiana	16	9	450	5.4	80%	М	Nil	Garden bed	Adjacent structure	Н	A1
176	Casuarina cunninghamiana	16	9	450	5.4	80%	М	Nil	Garden bed	Adjacent structure	Н	A 1
177	Melaleuca armillaris	8	4	100	1.2	70%	М	Nil	Garden bed	Nil	L	Z10
178	Pittosporum undulatum	8	6	250	3	70%	М	Nil	Garden bed	Nil	L	Z10
179	Melia azedarach	7	4	200	2.4	70%	М	Nil	Garden bed	Nil	L	Z 1
180	Pittosporum undulatum	6	5	100	1.2	70%	S	Nil	Garden bed	Nil	L	Z 1
181	Pittosporum undulatum	6	5	100	1.2	70%	S	Nil	Garden bed	Nil	L	Z 1
182	Acacia elata	18	9	400	4.8	80%	М	Nil	Garden bed	Nil	Н	A1
183	Angophora costata	20	18	500	6	90%	М	Nil	Garden bed	Nil	Н	A1
185	Melia azedarach	10	7	300	3.6	70%	М	Nil	Garden bed	Nil	М	Z10
186	Allocasuarina torulosa	8	5	250	3	70%	М	Nil	Garden bed	Nil	L	Z10
187	Ficus benjamina	5	3	200	2.4	50%	М	Lopped, Epicormic growth	Garden bed	Adjacent building	L	ZZ9
188	Prunus sp.	3	3	100	1.2	80%	М	Nil	Grass	Nil	L	Z 1
189	Melaleuca quinquenervia	18	14	600	7.2	80%	М	Nil	Garden bed	Adjacent driveway	Н	A1
190	Cupressus sp.	8	5	200	2.4	70%	М	Co-dominant	Garden bed	Adjacent driveway	L	Z10
191	Callistemon sp.	2	2	100	1.2	70%	М	Nil	Garden bed	Nil	L	ZZ1
192	Macadamia sp.	5	4	100	1.2	90%	М	Nil	Grass	Nil	L	Z 1
193	Melaleuca quinquenervia	10	6	350	4.2	80%	М	Lopped at 2m, Epicormic growth only	Garden bed	Nil	М	Z 9
194	Melaleuca quinquenervia	10	6	350	4.2	80%	М	Lopped at 2m, Epicormic growth only	Garden bed	Nil	М	Z 9
195	Melaleuca quinquenervia	10	6	350	4.2	80%	М	Lopped at 2m, Epicormic growth only	Garden bed	Nil	М	Z 9
196	Melaleuca quinquenervia	8	5	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
197	Melaleuca quinquenervia	10	6	350	4.2	80%	М	Lopped at 2m, Epicormic growth only	Garden bed	Nil	M	Z 9
198	Melaleuca quinquenervia	6	4	150	1.8	70%	М	Nil	Garden bed	Nil	L	Z 1
199	Melaleuca quinquenervia	6	4	150	1.8	70%	М	Nil	Garden bed	Nil	L	Z 1
200	Melaleuca quinquenervia	6	4	150	1.8	70%	М	Nil	Garden bed	Nil	L	Z 1
201	Melaleuca quinquenervia	16	9	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A 1
202	Melaleuca quinquenervia	16	9	400	4.8	80%	М	Nil	Garden bed	Nil	Н	A1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
203	Casuarina cunninghamiana	14	6	250	3	80%	М	Nil	Garden bed	Nil	M	Z10
204	Melaleuca quinquenervia	16	9	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A1
205	Melaleuca quinquenervia	16	9	400	4.8	80%	M	Nil	Garden bed	Nil	Н	A1
206	Acer palmatum	5	6	150	1.8	80%	М	Nil	Garden bed	Nil	L	Z 1
207	Unknown shrub	4	4	100	1.2	70%	M	Co-dominant	Garden bed	Nil	L	Z 1
208	Callistemon sp.	6	6	200	2.4	70%	M	Nil	Garden bed	Nil	L	Z 1
209	Citrus × sinensis	2	3	100	1.2	80%	M	Nil	Grass	Nil	L	Z 1
210	Citrus × sinensis	2	3	100	1.2	80%	M	Nil	Grass	Nil	L	Z 1
211	Jacaranda mimosifolia	7	7	200	2.4	70%	М	Lopped at 1m, Epicormic growth only	Garden bed	Nil	M	Z 9
212	Melaleuca quinquenervia	14	9	600	7.2	80%	М	Nil	Grass	Adjacent driveway	Н	A1
213	Pittosporum eugenioides 'Variegatum'	6	4	100	1.2	70%	М	Borer	Garden bed	Adjacent building	L	Z4
214	Camellia sp.	5	3	100	1.2	90%	M	Nil	Garden bed	Nil	L	Z1
215	Camellia sp.	3	3	100	1.2	90%	M	Nil	Garden bed	Nil	L	Z1
216	Camellia sp.	3	3	100	1.2	90%	M	Nil	Garden bed	Nil	L	Z 1
217	Camellia sp.	3	3	100	1.2	90%	M	Nil	Garden bed	Nil	L	Z 1
218	Corymbia gummifera	20	14	400	4.8	80%	M	Nil	Garden bed	Adjacent building	Н	A1
219	Alnus jorullensis	12	12	450	5.4	80%	M	Nil	Garden bed	Adjacent structure	M	Z3
220	Tibouchina sp.	4	4	100	1.2	90%	М	Nil	Grass	Nil	L	Z 1
221	Callistemon sp.	2	2	100	1.2	60%	S	Lopped at 2m	Garden bed	Nil	L	ZZ1
222	Callistemon sp.	5	4	100	1.2	80%	М	Nil	Garden bed	Nil	L	Z 1
223	Magnolia × soulangeana	3	4	100	1.2	70%	М	Nil	Garden bed	Nil	L	Z 1
224	Elaeocarpus reticulatus	4	3	100	1.2	80%	S	Nil	Garden bed	Nil	L	Z 1
225	Pittosporum eugenioides 'Variegatum'	2	2	100	1.2	50%	М	Topped	Garden bed	Nil	L	ZZ1
226	Callistemon sp.	2	2	100	1.2	50%	M	Topped	Garden bed	Nil	L	ZZ1
227	Callistemon sp.	2	2	100	1.2	50%	M	Topped	Garden bed	Nil	L	ZZ1
228	Citrus × sinensis	2	3	100	1.2	80%	М	Nil	Grass	Nil	L	Z 1
229	Yucca sp.	5	3	200	2.4	80%	M	Nil	Garden bed	Nil	L	Z 1
231	Angophora costata	20	14	450	5.4	80%	М	Nil	Natural ground	Nil	Н	A 1
232	Lophostemon confertus	12	10	300	3.6	70%	M	Nil	Grass	Nil	M	A1
233	Callistemon sp.	5	4	200	2.4	80%	М	Nil	Garden bed	Nil	L	Z 1
234	Citrus × sinensis	2	3	100	1.2	80%	M	Nil	Grass	Nil	L	Z 1
235	Callistemon sp.	2	2	100	1.2	50%	M	Topped	Garden bed	Nil	L	ZZ1
236	Banksia serrata	5	4	150	1.8	80%	М	Nil	Garden bed	Nil	L	Z 1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
237	Casuarina cunninghamiana	12	8	350	4.2	70%	M	Splits along upper boughs	Garden bed	Adjacent structure	М	Z9
238	Banksia serrata	5	4	150	1.8	80%	M	Nil	Garden bed	Nil	L	Z 1
239	Acacia sp.	5	6	250	3	80%	M	Nil	Garden bed	Nil	L	Z 1
240	Banksia serrata	5	4	150	1.8	80%	M	Nil	Garden bed	Nil	L	Z 1
241	Banksia serrata	7	5	250	3	80%	M	Nil	Garden bed	Nil	L	Z 1
242	Camellia sp.	5	4	100	1.2	90%	M	Nil	Garden bed	Nil	L	Z 1
243	Callistemon sp.	6	5	200	2.4	80%	M	Nil	Garden bed	Nil	M	Z 1
244	Angophora floribunda	22	16	600	7.2	80%	M	Nil	Grass	Adjacent building	Н	AA1
245	Angophora costata	16	14	500	6	80%	M	Nil	Garden bed	Adjacent building	Н	A1
246	Callistemon sp.	4	3	100	1.2	80%	M	Nil	Garden bed	Nil	L	Z 1
247	Grevillea spinosa	3	3	100	1.2	80%	M	Nil	Garden bed	Nil	L	Z 1
248	Cupressus sp.	6	4	150	1.8	80%	M	Nil	Garden bed	Nil	L	Z 1
249	Tibouchina sp.	5	5	100	1.2	90%	M	Nil	Grass	Nil	L	Z 1
250	Acer negundo	5	5	200	2.4	80%	M	Nil	Grass	Adjacent structure	L	Z 1
251	Ficus benjamina	3	3	100	1.2	50%	М	Topped	Garden bed	Nil	L	ZZ9
252	Syzygium paniculatum	12	9	400	4.8	90%	М	Nil	Garden bed	Nil	М	A1
253	Eucalyptus haemastoma	9	12	700	8.4	80%	M	Cambium damage	Garden bed	Adjacent building	М	Z9
254	Acer negundo	9	10	350	4.2	80%	M	Nil	Garden bed	Adjacent structure	М	Z 3
255	Acer negundo	9	10	350	4.2	80%	М	Nil	Garden bed	Adjacent structure	М	Z 3
256	Corymbia gummifera	20	14	500	6	80%	M	Nil	Garden bed	Nil	Н	A1
257	Callistemon sp.	5	5	100	1.2	80%	М	Nil	Garden bed	Adjacent building	L	Z 1
258	Banksia serrata	5	4	150	1.8	80%	М	Nil	Garden bed	Nil	L	Z 1
259	Callistemon sp.	6	5	200	2.4	80%	М	Nil	Garden bed	Nil	L	Z 1
260	Citrus × sinensis	2	3	100	1.2	80%	М	Nil	Grass	Nil	L	Z 1
261	Callistemon sp.	6	5	200	2.4	80%	M	Nil	Garden bed	Nil	L	Z 1
262	Corymbia gummifera	22	12	400	4.8	80%	M	Nil	Garden bed	Nil	Н	A1
263	Lophostemon confertus	22	14	450	5.4	80%	М	Nil	Grass	Nil	Н	A1
264	Lophostemon confertus	20	10	300	3.6	80%	М	Nil	Grass	Adjacent driveway	М	A1
265	Liquidambar styraciflua	18	14	450	5.4	90%	М	Nil	Garden bed	Adjacent structure	Н	A1
266	Liquidambar styraciflua	14	10	400	4.8	80%	М	Nil	Grass	Nil	М	A1
268	Jacaranda mimosifolia	10	9	250	3	80%	М	Co-dominant	Grass	Nil	М	A1
269	Eucalyptus haemastoma	22	14	600	7.2	80%	М	One dead bough, should be ok	Garden bed	Nil	Н	A 1
270	Cinnamomum camphora	8	8	300	3.6	70%	М	Lopped under powerlines, Epicormic growth	Garden bed	LV wires	М	ZZ9

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Process	No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
273 Lophostemon confertus	271	Corymbia gummifera	20	8	350	4.2	70%	М		Garden bed	HV wires	M	Z10
274 Eucalyptus scoparia 8 5 200 2.4 70% M Nil Garden bed Nil L Z10 275 Tristaniopsis laurina 6 4 150 1.8 70% M Nil Garden bed NIV wires L 21 276 Lophostemon confetus 14 10 350 4.2 80% M Co-dominant Garden bed Nil L 21 279 Banksis sarrata 5 3 200 2.4 70% M Nil Garden bed Nil L 21 280 Lophostemon conferus 16 14 450 5.4 80% M Nil Garden bed Nil H A1 282 Lophostemon conferus 10 7 300 3.6 80% M Nil Garden bed Nil H A1 283 Lophostemon conferus 10 7 300 8.6 M Nil <td>272</td> <td>Lophostemon confertus</td> <td>14</td> <td>9</td> <td>300</td> <td>3.6</td> <td>70%</td> <td>М</td> <td>Nil</td> <td>Garden bed</td> <td>HV wires</td> <td>М</td> <td>A1</td>	272	Lophostemon confertus	14	9	300	3.6	70%	М	Nil	Garden bed	HV wires	М	A1
275 Tristantiopasis laurina 6	273	Lophostemon confertus	14	9	300	3.6	70%	М	Nil	Garden bed	HV wires	М	A 1
276 Lophostemon confertus	274	Eucalyptus scoparia	8	5	200	2.4	70%	М	Nil	Garden bed	Nil	L	Z10
278 Banksia serrata 5 3 200 2.4 70% M Nil Garden bed Nil L Z1 279 Banksia serrata 5 3 200 2.4 70% M Nil Garden bed Nil L 21 280 Lophostemor confertus 16 14 450 5.4 80% M Nil Garden bed Nil H A1 282 Eucalyptus botryoides 14 8 250 3 60% M Heavily pruned from powerlines Garden bed HIV Wires M 229 283 Lophostemor confertus 10 7 300 3.6 60% M Nil Garden bed Nil H A1 285 Localos elata 7 5 250 3 30% O Borer Garden bed Nil L 224 286 Eucalyptus sobusta 14 70 300 3.6 80	275	Tristaniopsis laurina	6	4	150	1.8	70%	М	Nil	Garden bed	HV wires	L	Z 1
279 Banksia serrata 5 3 200 2.4 70% M Nil Garden bed Nil L Z1 280 Lophostermon confertus 16 14 450 5.4 80% M Nil Garden bed Nil H A1 282 Lucalyptus botryoides 14 8 250 3 60% M Nil Garden bed HV wires M 229 283 Lophostermon confertus 10 7 300 3.6 80% M Nil Garden bed Nil M A1 284 Lophostermon confertus 18 16 600 7.2 80% M Nil Garden bed Nil H A1 285 Acacia elata 7 5 250 3 30% O Borer Garden bed Nil L ZZZ4 286 Eucalyptus obusta 2 2 14 400 4.8 70% <t< td=""><td>276</td><td>Lophostemon confertus</td><td>14</td><td>10</td><td>350</td><td>4.2</td><td>80%</td><td>М</td><td>Co-dominant</td><td>Garden bed</td><td>Nil</td><td>M</td><td>A1</td></t<>	276	Lophostemon confertus	14	10	350	4.2	80%	М	Co-dominant	Garden bed	Nil	M	A1
280 Lophostemon confertus 16	278	Banksia serrata	5	3	200	2.4	70%	М	Nil	Garden bed	Nil	L	Z 1
282 Eucalyptus botryoides 14 8 250 3 60% M Heavily pruned from powerlines Garden bed HV wires M Z29 283 Lophostemon confertus 10 7 300 3.6 80% M Nil Garden bed Nil M A1 284 Eucalyptus robusta 18 16 600 7.2 80% M Nil Garden bed Nil H A1 285 Acacia elata 7 5 250 3 30% O Borer Garden bed Nil L 224 286 Eucalyptus robusta 22 14 400 4.8 70% M Nil Garden bed Nil L 224 288 Eucalyptus sp. 20 14 350 4.2 70% M Nil Garden bed Nil H A1 290 Eucalyptus robusta 14 7 300 3.6 80% <	279	Banksia serrata	5	3	200	2.4	70%	М	Nil	Garden bed	Nil	L	Z 1
283 Lopnostemon confertus 10 7 300 3.6 80% M Nii Garden bed Nii M A1 284 Eucalyptus robusta 18 16 600 7.2 80% M Nii Garden bed Nii H A1 285 Acacia elata 7 5 250 3 30% O Borer Garden bed Nii L ZZZ4 286 Eucalyptus robusta 22 14 400 4.8 70% M Nii Garden bed Nii L ZZZ4 288 Eucalyptus robusta 14 7 50 3 30% O Borer Garden bed Nii H A1 289 Eucalyptus robusta 14 7 300 3.6 80% M Nii Steep slope Nii M A1 289 Aliocasuarina torulosa 7 4 200 2.4 60% M Nii<	280	Lophostemon confertus	16	14	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A1
284 Eucalyptus robusta 18 16 600 7.2 80% M Nii Garden bed Nii H A1 285 Acacia elata 7 5 250 3 30% O Borer Garden bed Nii L ZZA 286 Eucalyptus robusta 22 14 400 4.8 70% M Nii Garden bed Nii M A1 287 Acacia elata 7 5 250 3 30% O Borer Garden bed Nii H A 288 Eucalyptus sp. 20 14 350 4.2 70% M Nii Garden bed Nii H A1 289 Eucalyptus robusta 14 7 300 3.6 80% M Nii Steep slope Nii M A1 290 Allocasuarina torulosa 7 4 200 2.4 60% M Nii <td< td=""><td>282</td><td>Eucalyptus botryoides</td><td>14</td><td>8</td><td>250</td><td>3</td><td>60%</td><td>М</td><td>Heavily pruned from powerlines</td><td>Garden bed</td><td>HV wires</td><td>М</td><td>ZZ9</td></td<>	282	Eucalyptus botryoides	14	8	250	3	60%	М	Heavily pruned from powerlines	Garden bed	HV wires	М	ZZ9
285 Acacia elata 7 5 250 3 30% O Borer Garden bed Nil L ZZ4 286 Eucalyptus robusta 22 14 400 4.8 70% M Nil Garden bed Nil M A1 287 Acacia elata 7 5 250 3 30% O Borer Garden bed Nil L ZZ4 288 Eucalyptus robusta 14 7 300 3.6 80% M Nil Garden bed Nil H A1 289 Eucalyptus robusta 14 7 300 3.6 80% M Nil Steep slope Nil M A1 290 Allocasuarina torulosa 7 4 200 2.4 60% M Failures Steep slope Nil L Z1 291 Coryrebia gummifera 18 12 400 4.8 80% M Nil	283	Lophostemon confertus	10	7	300	3.6	80%	М	Nil	Garden bed	Nil	M	A1
286 Eucalyptus robusta 22 14 400 4.8 70% M Nil Garden bed Nil M A1 287 Acacia elata 7 5 250 3 30% 0 Borer Garden bed Nil L ZZ4 288 Eucalyptus pobusta 14 7 300 3.6 80% M Nil Garden bed Nil H A1 289 Eucalyptus robusta 14 7 300 3.6 80% M Nil Steep slope Nil H A1 290 Allocasuarina torulosa 7 4 200 2.4 60% M Failures Steep slope Nil L 210 291 Corymbia gummifera 18 12 400 4.8 80% M Nil Garden bed Aij L Z1 292 Cupressus sp. 6 1 100 1.2 80% M Nil	284	Eucalyptus robusta	18	16	600	7.2	80%	М	Nil	Garden bed	Nil	Н	A1
287 Acacia elata 7 5 250 3 30% O Borer Garden bed Nii L ZZ4 288 Eucalyptus sp. 20 14 350 4.2 70% M Nii Garden bed Nii H A1 289 Eucalyptus robusta 14 7 300 3.6 80% M Nii Steep slope Nii M A1 290 Allocasuarina torulosa 7 4 200 2.4 60% M Failures Steep slope Nii L Z10 291 Corymbia gummilera 18 12 400 4.8 80% M Nii Garden bed Adjacent structure H A1 292 Cupressus sp. 6 1 100 1.2 80% M Nii Garden bed Nii L Z1 293 Washingtonia robusta 2 2 200 2.4 90% S	285	Acacia elata	7	5	250	3	30%	0	Borer	Garden bed	Nil	L	ZZ4
288 Eucalyptus sp. 20 14 350 4.2 70% M Nil Garden bed Nil H A1 289 Eucalyptus robusta 14 7 300 3.6 80% M Nii Steep slope Nii M A1 290 Allocasuarina torulosa 7 4 200 2.4 60% M Failures Steep slope Nii L 210 291 Corymbia gummifera 18 12 400 4.8 80% M Nii Garden bed Adjacent structure H A1 292 Cupressus sp. 6 1 100 1.2 80% M Nii Garden bed Nii L Z1 293 Washingtonia robusta 2 2 200 2.4 90% S Nii Garden bed Nii L Z1 294 Banksia serrata 6 5 150 1.8 80% S	286	Eucalyptus robusta	22	14	400	4.8	70%	М	Nil	Garden bed	Nil	М	A1
289 Eucalyptus robusta 14 7 300 3.6 80% M Nil Steep slope Nil M A1 290 Allocasuarina torulosa 7 4 200 2.4 60% M Failures Steep slope Nil L Z10 291 Corymbia gummifera 18 12 400 4.8 80% M Nil Garden bed Adjacent structure H A1 292 Cupressus sp. 6 1 100 1.2 80% M Nil Garden bed Nil L Z1 293 Washingtonia robusta 2 2 200 2.4 90% S Nil Garden bed Nil L Z1 294 Banksia serrata 6 5 150 1.8 80% S Nil Garden bed Aljacent building L Z1 295 Eucalyptus botryoides 22 14 500 6 80%	287	Acacia elata	7	5	250	3	30%	0	Borer	Garden bed	Nil	L	ZZ4
290 Allocasuarina torulosa 7 4 200 2.4 60% M Failures Steep slope Nil L Z10 291 Corymbia gummifera 18 12 400 4.8 80% M Nil Garden bed Adjacent structure H A1 292 Cupressus sp. 6 1 100 1.2 80% M Nil Garden bed Nil L Z1 293 Washingtonia robusta 2 2 200 2.4 90% S Nil Garden bed Nil L Z1 294 Banksia serrata 6 5 150 1.8 80% S Nil Garden bed Adjacent building L Z1 295 Acacia balieyana 7 5 200 2.4 80% M Nil Garden bed Nil L Z1 296 Eucalyptus botryoides 22 14 500 6 80% <t< td=""><td>288</td><td>Eucalyptus sp.</td><td>20</td><td>14</td><td>350</td><td>4.2</td><td>70%</td><td>М</td><td>Nil</td><td>Garden bed</td><td>Nil</td><td>Н</td><td>A1</td></t<>	288	Eucalyptus sp.	20	14	350	4.2	70%	М	Nil	Garden bed	Nil	Н	A1
291 Corymbia gummifera 18 12 400 4.8 80% M Nil Garden bed Adjacent structure H A1 292 Cupressus sp. 6 1 100 1.2 80% M Nil Garden bed Nil L 21 293 Washingtonia robusta 2 2 200 2.4 90% S Nil Garden bed Nil L 21 294 Banksia serrata 6 5 150 1.8 80% S Nil Garden bed Adjacent building L 21 295 Acacia baileyana 7 5 200 2.4 80% M Nil Garden bed Nil L 21 296 Eucalyptus botryoides 22 14 500 6 80% M Nil Garden bed Nil H A1 297 Eucalyptus botryoides 16 8 300 3.6 80% M <td>289</td> <td>Eucalyptus robusta</td> <td>14</td> <td>7</td> <td>300</td> <td>3.6</td> <td>80%</td> <td>М</td> <td>Nil</td> <td>Steep slope</td> <td>Nil</td> <td>M</td> <td>A1</td>	289	Eucalyptus robusta	14	7	300	3.6	80%	М	Nil	Steep slope	Nil	M	A1
292 Cupressus sp. 6 1 100 1.2 80% M Nil Garden bed Nil L Z1 293 Washingtonia robusta 2 2 200 2.4 90% S Nil Garden bed Nil L Z1 294 Banksia serrata 6 5 150 1.8 80% S Nil Garden bed Adjacent building L Z1 295 Acacia baileyana 7 5 200 2.4 80% M Nil Garden bed Nil L Z1 296 Eucalyptus botryoides 22 14 500 6 80% M Nil Grass Nil H A1 297 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Grass Nil L Z1 299 Eucalyptus botryoides 10 5 200 2.4 80% S Nil	290	Allocasuarina torulosa	7	4	200	2.4	60%	М	Failures	Steep slope	Nil	L	Z10
293 Washingtonia robusta 2 2 200 2.4 90% S Nil Garden bed Nil L Z1 294 Banksia serrata 6 5 150 1.8 80% S Nil Garden bed Adjacent building L Z1 295 Acacia baileyana 7 5 200 2.4 80% M Nil Garden bed Nil L Z1 296 Eucalyptus botryoides 22 14 500 6 80% M Nil Grass Nil H A1 297 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 298 Eucalyptus botryoides 10 5 200 2.4 80% S Nil Garden bed Nil L Z1 300 Eucalyptus botryoides 16 8 300 3.6 80% M	291	Corymbia gummifera	18	12	400	4.8	80%	М	Nil	Garden bed	Adjacent structure	Н	A1
294 Banksia serrata 6 5 150 1.8 80% S Nil Garden bed Adjacent building L Z1 295 Acacia baileyana 7 5 200 2.4 80% M Nil Garden bed Nil L Z1 296 Eucalyptus botryoides 22 14 500 6 80% M Nil Grass Nil H A1 297 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil L Z1 298 Eucalyptus haemastoma 4 4 150 1.8 80% S Nil Garden bed Nil L Z1 299 Eucalyptus botryoides 10 5 200 2.4 80% S Nil Garden bed Nil L Z1 300 Eucalyptus botryoides 16 8 300 3.6 80% M	292	Cupressus sp.	6	1	100	1.2	80%	М	Nil	Garden bed	Nil	L	Z 1
295 Acacia baileyana 7 5 200 2.4 80% M Nil Garden bed Nil L Z1 296 Eucalyptus botryoides 22 14 500 6 80% M Nil Grass Nil H A1 297 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 298 Eucalyptus haemastoma 4 4 150 1.8 80% S Nil Grass Nil L Z1 299 Eucalyptus botryoides 10 5 200 2.4 80% S Nil Garden bed Nil L Z1 300 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 301 Pittosporum undulatum 4 4 150 1.8 70% S Nil <td>293</td> <td>Washingtonia robusta</td> <td>2</td> <td>2</td> <td>200</td> <td>2.4</td> <td>90%</td> <td>S</td> <td>Nil</td> <td>Garden bed</td> <td>Nil</td> <td>L</td> <td>Z1</td>	293	Washingtonia robusta	2	2	200	2.4	90%	S	Nil	Garden bed	Nil	L	Z 1
296 Eucalyptus botryoides 22 14 500 6 80% M Nil Grass Nil H A1 297 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 298 Eucalyptus haemastoma 4 4 150 1.8 80% S Nil Grass Nil L Z1 299 Eucalyptus botryoides 10 5 200 2.4 80% S Nil Garden bed Nil L Z1 300 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 301 Pittosporum undulatum 4 4 150 1.8 70% S Failures Garden bed Nil L Z1 302 Casuarina cunninghamiana 6 4 150 1.8 70% S	294	Banksia serrata	6	5	150	1.8	80%	S	Nil	Garden bed	Adjacent building	L	Z 1
297 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 298 Eucalyptus haemastoma 4 4 150 1.8 80% S Nil Grass Nil L Z1 299 Eucalyptus botryoides 10 5 200 2.4 80% S Nil Garden bed Nil L Z1 300 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 301 Pittosporum undulatum 4 4 150 1.8 70% S Failures Garden bed Nil L Z1 302 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 303 Casuarina cunninghamiana 6 4 150 1.8 70% S <td>295</td> <td>Acacia baileyana</td> <td>7</td> <td>5</td> <td>200</td> <td>2.4</td> <td>80%</td> <td>М</td> <td>Nil</td> <td>Garden bed</td> <td>Nil</td> <td>L</td> <td>Z1</td>	295	Acacia baileyana	7	5	200	2.4	80%	М	Nil	Garden bed	Nil	L	Z 1
298 Eucalyptus haemastoma 4 4 150 1.8 80% S Nil Grass Nil L Z1 299 Eucalyptus botryoides 10 5 200 2.4 80% S Nil Garden bed Nil L Z1 300 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 301 Pittosporum undulatum 4 4 150 1.8 70% S Failures Garden bed Nil L Z1 302 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 303 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 304 Elaeocarpus reticulatus 6 3 100 1.2 80% S <td>296</td> <td>Eucalyptus botryoides</td> <td>22</td> <td>14</td> <td>500</td> <td>6</td> <td>80%</td> <td>М</td> <td>Nil</td> <td>Grass</td> <td>Nil</td> <td>Н</td> <td>A1</td>	296	Eucalyptus botryoides	22	14	500	6	80%	М	Nil	Grass	Nil	Н	A1
299 Eucalyptus botryoides 10 5 200 2.4 80% S Nil Garden bed Nil L Z1 300 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 301 Pittosporum undulatum 4 4 150 1.8 70% S Failures Garden bed Nil L Z1 302 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 303 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 304 Elaeocarpus reticulatus 6 3 100 1.2 80% S Nil Garden bed Nil L Z1	297	Eucalyptus botryoides	16	8	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
300 Eucalyptus botryoides 16 8 300 3.6 80% M Nil Garden bed Nil M A1 301 Pittosporum undulatum 4 4 150 1.8 70% S Failures Garden bed Nil L Z1 302 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 303 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 304 Elaeocarpus reticulatus 6 3 100 1.2 80% S Nil Garden bed Nil L Z1	298	Eucalyptus haemastoma	4	4	150	1.8	80%	S	Nil	Grass	Nil	L	Z 1
301 Pittosporum undulatum 4 4 4 150 1.8 70% S Failures Garden bed Nil L Z1 302 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 303 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 304 Elaeocarpus reticulatus 6 3 100 1.2 80% S Nil Garden bed Nil L Z1	299	Eucalyptus botryoides	10	5	200	2.4	80%	S	Nil	Garden bed	Nil	L	Z 1
302 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 303 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 304 Elaeocarpus reticulatus 6 3 100 1.2 80% S Nil Garden bed Nil L Z1	300	Eucalyptus botryoides	16	8	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
303 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 304 Elaeocarpus reticulatus 6 3 100 1.2 80% S Nil Garden bed Nil L Z1	301		4	4	150	1.8	70%	S	Failures	Garden bed	Nil	L	Z 1
303 Casuarina cunninghamiana 6 4 150 1.8 70% S Nil Garden bed Nil L Z1 304 Elaeocarpus reticulatus 6 3 100 1.2 80% S Nil Garden bed Nil L Z1	302	Casuarina cunninghamiana	6	4	150	1.8	70%	S	Nil	Garden bed	Nil	L	Z1
304 <i>Elaeocarpus reticulatus</i> 6 3 100 1.2 80% S Nil Garden bed Nil L Z1	303		6	4			70%		Nil	Garden bed	Nil	L	
	304		6	3	100	1.2	80%	S	Nil	Garden bed	Nil	L	Z 1
	305	Corymbia gummifera	9	3	100	1.2	10%		Failures	Garden bed	Nil	L	ZZ4

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
306	Corymbia gummifera	10	4	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
307	Corymbia gummifera	10	4	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
308	Acacia implexa	8	3	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
309	Eucalyptus microcorys	12	7	250	3	80%	М	Nil	Grass	Nil	M	A 1
310	Eucalyptus scoparia	10	6	150	1.8	70%	S	Nil	Garden bed	Nil	М	A1
311	Eucalyptus microcorys	12	7	250	3	80%	М	Nil	Grass	Nil	М	A1
312	Eucalyptus sp.	8	7	250	3	0%	0	Nil	Garden bed	Nil	L	ZZ4
313	Eucalyptus microcorys	12	7	250	3	80%	М	Nil	Grass	Nil	M	A 1
314	Eucalyptus microcorys	12	7	250	3	80%	М	Nil	Grass	Nil	М	A 1
315	Eucalyptus microcorys	9	5	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
316	Eucalyptus microcorys	9	5	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
317	Eucalyptus microcorys	9	5	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
318	Eucalyptus microcorys	9	5	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
319	Eucalyptus microcorys	18	12	400	4.8	80%	М	Nil	Garden bed	Nil	Н	A1
320	Eucalyptus microcorys	24	14	450	5.4	80%	М	Nil	Garden bed	Nil	Н	AA1
321	Eucalyptus microcorys	9	5	150	1.8	80%	S	Nil	Grass	Nil	L	Z 1
322	Eucalyptus microcorys	24	14	450	5.4	80%	М	Nil	Garden bed	Nil	Н	AA1
323	Eucalyptus microcorys	24	14	450	5.4	80%	М	Co-dominant	Garden bed	Nil	Н	AA1
324	Eucalyptus microcorys	24	16	500	6	80%	М	Included bark	Garden bed	Nil	Н	Z9
325	Eucalyptus microcorys	24	16	500	6	80%	М	Nil	Garden bed	Nil	Н	AA1
326	Eucalyptus pilularis	24	16	600	7.2	80%	М	Nil	Grass	Adjacent building	Н	AA1
327	Corymbia gummifera	14	9	300	3.6	80%	М	Nil	Garden bed	Nil	M	A1
328	Eucalyptus saligna	20	12	350	4.2	80%	М	Nil	Garden bed	Nil	Н	A1
330	Acer negundo	8	8	300	3.6	80%	М	Nil	Grass	Adjacent building	М	Z3
331	Cinnamomum camphora	7	5	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z3
332	Eucalyptus saligna	22	12	450	5.4	80%	М	Nil	Garden bed	Nil	Н	A1
333	Casuarina cunninghamiana	14	9	350	4.2	80%	М	Included bark	Garden bed	Adjacent building	М	ZZ5
334	Casuarina cunninghamiana	14	6	300	3.6	80%	М	Splits throughout base	Garden bed	Nil	М	Z 9
335	Casuarina cunninghamiana	14	6	300	3.6	80%	М	Splits throughout base	Garden bed	Nil	М	Z 9
336	Corymbia maculata	9	4	200	2.4	80%	S	Nil	Garden bed	Nil	М	Z 1
337	Casuarina cunninghamiana	16	7	300	3.6	80%	М	Nil	Garden bed	Nil	М	A 1
338	Casuarina cunninghamiana	16	7	300	3.6	80%	М	Nil	Garden bed	Nil	М	A 1
339	Casuarina cunninghamiana	14	6	300	3.6	80%	М	Splits throughout base	Garden bed	Nil	М	Z 9

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
340	Corymbia gummifera	14	6	300	3.6	70%	М	Heavily pruned	Garden bed	Nil	M	A 1
341	Corymbia gummifera	24	14	500	6	0%	0	Nil	Garden bed	Nil	Н	ZZ4
342	Angophora costata	14	9	350	4.2	60%	М	Borer, Heavily pruned	Garden bed	HV wires	M	Z 10
343	Eucalyptus sp.	8	5	250	3	80%	S	Nil	Garden bed	Nil	M	Z 1
345	Casuarina cunninghamiana	14	6	300	3.6	80%	М	Splits throughout base	Garden bed	Nil	M	Z 9
346	Eucalyptus saligna	24	12	450	5.4	80%	М	Major storm failures	Garden bed	Nil	Н	ZZ4
347	Eucalyptus saligna	24	12	400	4.8	80%	М	Major storm failures	Garden bed	Nil	Н	ZZ4
348	Banksia serrata	5	3	150	1.8	80%	S	Nil	Garden bed	Nil	L	Z 1
349	Corymbia gummifera	18	12	400	4.8	80%	М	Nil	Garden bed	Kerb	М	A1
350	Eucalyptus paniculata	24	10	400	4.8	70%	М	Heavily pruned	Garden bed	HV wires	Н	A 1
351	Angophora costata	10	5	200	2.4	70%	S	Borer	Garden bed	Nil	L	Z4
352	Angophora costata	16	12	350	4.2	60%	М	Nil	Garden bed	Nil	М	A1
353	Eucalyptus saligna	22	7	250	3	70%	М	Borer in base, Slender habit	Garden bed	Nil	М	Z9
354	Eucalyptus paniculata	24	14	450	5.4	80%	М	Included bark at co-dominant	Garden bed	HV wires	Н	Z9
355	Eucalyptus saligna	20	8	200	2.4	80%	S	Slender habit	Garden bed	Nil	М	A1
356	Eucalyptus saligna	22	9	300	3.6	80%	М	Nil	Garden bed	Nil	Н	A1
357	Eucalyptus saligna	22	9	300	3.6	80%	М	Nil	Garden bed	Nil	Н	A1
358	Angophora costata	18	12	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
359	Eucalyptus saligna	9	4	100	1.2	80%	S	Nil	Garden bed	Nil	L	Z 1
360	Eucalyptus pilularis	28	26	1000	12	80%	M	Nil	Garden bed	Nil	Н	AA1
361	Eucalyptus microcorys	26	22	800	9.6	80%	М	Co-dominant	Garden bed	HV wires	Н	AA1
362	Allocasuarina torulosa	4	4	150	1.8	0%	0	Dead tree	Garden bed	Nil	L	ZZ4
363	Eucalyptus microcorys	26	22	800	9.6	80%	М	Co-dominant	Garden bed	HV wires	Н	AA1
364	Eucalyptus microcorys	18	9	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
365	Eucalyptus microcorys	14	7	200	2.4	70%	S	Nil	Garden bed	Nil	М	Z 1
366	Eucalyptus microcorys	18	9	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
367	Eucalyptus microcorys	20	18	600	7.2	70%	М	Topped, Central leader removed, Leaning across road	Garden bed	HV wires	Н	Z10
368	Eucalyptus microcorys	18	9	300	3.6	80%	М	Nil	Garden bed	Nil	M	A1
369	Eucalyptus microcorys	18	9	300	3.6	80%	М	Nil	Garden bed	Nil	М	A1
370	Eucalyptus microcorys	14	7	200	2.4	70%	S	Cambium damage	Garden bed	Nil	M	Z 10
371	Eucalyptus microcorys	30	26	800	9.6	80%	М	Nil	Garden bed	Nil	Н	AA1
372	Eucalyptus microcorys	28	20	600	7.2	80%	М	Nil	Garden bed	Nil	Н	AA1

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No.	Genus species	Height	Spread	DBH	TPZ	Foliage cover	Age Class	Defects	Location	Services	Significance	Tree AZ
373	Eucalyptus microcorys	18	9	350	4.2	80%	М	Nil	Garden bed	Nil	М	A 1
374	Eucalyptus microcorys	30	22	600	7.2	80%	М	Nil	Garden bed	Nil	Н	AA1
375	Eucalyptus microcorys	30	22	600	7.2	80%	М	Nil	Garden bed	Nil	Н	AA1
376	Eucalyptus microcorys	22	14	400	4.8	80%	М	Nil	Garden bed	Nil	Н	AA1
377	Eucalyptus microcorys	24	16	450	5.4	80%	М	Nil	Garden bed	Nil	Н	AA1
378	Eucalyptus microcorys	30	22	600	7.2	80%	М	Nil	Garden bed	Nil	Н	AA1
379	Eucalyptus microcorys	30	22	600	7.2	80%	М	Nil	Garden bed	Nil	Н	AA1
380	Eucalyptus microcorys	14	7	200	2.4	80%	S	Nil	Garden bed	Nil	M	A 1
381	Eucalyptus saligna	22	12	500	6	50%	М	Heavily pruned, Only one lateral branch remaining	Garden bed	HV wires	М	ZZ10
382	Eucalyptus microcorys	20	18	600	7.2	70%	М	Topped, Central leader removed, Leaning across road	Garden bed	HV wires	Н	Z10
383	Eucalyptus microcorys	20	18	600	7.2	70%	М	Topped, Central leader removed, Leaning across road	Garden bed	HV wires	Н	Z10
384	Eucalyptus microcorys	14	10	350	4.2	70%	М	Topped, Central leader removed, Leaning across road	Garden bed	HV wires	M	Z10
385	Eucalyptus microcorys	28	14	400	4.8	80%	M	Nil	Garden bed	HV wires	Н	AA1
386	Eucalyptus microcorys	18	9	300	3.6	80%	М	Nil	Garden bed	Nil	M	A1
387	Eucalyptus saligna	30	28	1100	13.2	80%	М	Bracket fungi in base, Further investigation required	Garden bed	Nil	Н	AA2
388	Eucalyptus sp.	12	3	500	6	0%	0	Nil	Garden bed	HV wires	L	ZZ4
389	Eucalyptus robusta	26	20	1000	12	80%	М	Co-dominant	Garden bed	HV wires	Н	AA1
390	Eucalyptus sp.	20	16	400	4.8	70%	М	Nil	Garden bed	Nil	Н	A 1
391	Eucalyptus sp.	14	10	300	3.6	70%	М	Nil	Garden bed	HV wires	M	A1
392	Eucalyptus robusta	16	8	300	3.6	70%	М	Nil	Garden bed	HV wires	М	A 1
393	SUGAR GUM	14	9	300	3.6	60%	М	Heavily pruned	Garden bed	HV wires	М	Z4
394	Angophora costata	14	6	250	3	70%	S	Heavily pruned, Hazard beam	Garden bed	HV wires	М	Z 9



Explanatory Notes

- **Measurements/estimates:** All dimensions are estimates unless otherwise indicated. Measurements taken with a tape or clinometer are indicated with a '*'. Less reliable estimated dimensions are indicated with a '?'.
- **Species:** The species identification is based on visual observations and the botanical name. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. Where there is some doubt of the precise species of tree, it is indicated with a '?' after the name in order to avoid delay in the production of the report. The botanical name is followed by the abbreviation sp if only the genus is known. The species listed for groups and hedges represent the <u>main</u> component and there may be other minor species not listed.
- Tree number: relates to the reference number used on site diagram/report.
- Height: Height is estimated to the nearest metre.
- **Spread**: The average crown spread is visually estimated to the nearest metre from the outermost tips of the live lateral branches.
- **DBH:** These figures relate to 1.4m above ground level and are recorded in millimetres. If appropriate, diameter is measured with a diameter tape. 'M' indicates trees or shrubs with multiple stems.
- Foliage Cover: Percent of estimated live foliage cover for particular species range.
- Age class:
- Y Young = recently planted
- S Semi-mature (<20% of life expectancy)
- M Mature (20-80% of life expectancy)
- O Over-mature (>80% of life expectancy)
- TPZ: The Tree Protection Zone (TPZ) is the radial offset distance of twelve times the trunk diameter in meters.
- Tree AZ: See reference for Tree AZ categories in Appendix 3.
- **Significance:** A tree's significance/value in the landscape takes into account its prominence from a wide range of perspectives. This includes, but is not limited to neighbour hood perspective, local perspective and site perspective. The significance of the subject trees has been categorized into three groups, such as: High, Moderate or Low significance.



TreeAZ Categories (Version 10.04-ANZ)

Z Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species

Z 1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z 3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure

	or severe structural failure
Z 4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e. poor anchorage, increased exposure, etc

Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people

Excessive, severe and intolerable inconvenience to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. dominance, debris, interference, etc

Excessive, severe and intolerable damage to property to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. severe structural damage to surfacing and buildings, etc

Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population

- Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
- Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
- **Z11** Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
- Z12 Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorisation hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
А3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorisation hierarchy and should be given the most weight in any selection process.

TreeAZ is designed by Barrell Tree Consultancy (www.treeaz.com/tree_az/)

Tree protection fencing and signs - Illustrative specification

Protective fencing: Protective 1.8m high fencing should be installed at the location illustrated on the Tree Management Plan before any site works start. All uprights should be fixed in position for the duration of the development activity. The fixings must be able to withstand the pressures of everyday site work.

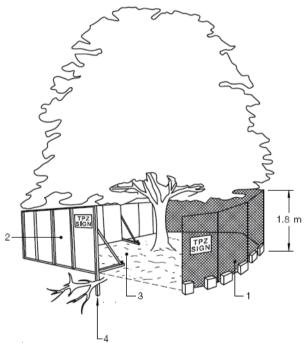
Inside the protective fencing, the following rules must be strictly observed:

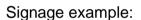
- No vehicular access
- No storage of excavated debris, building materials or fuels
- No excessive cultivation for landscape planting
- No fires
- · No mixing of cement
- No service installation or excavation

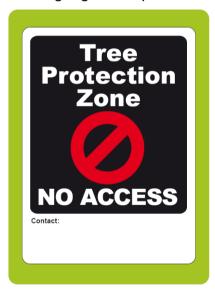
Once erected, protective fencing must not be removed or altered without consulting first with the project Arborist.

Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area and signage must be attached to outside of fencing.

Signage: All signs are to provide clear and readily accessible information to indicate that a TPZ has been established. Signage identifying the TPZ must be attached to outside of fencing and be visible from within the development site.







Legend

- Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2. Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4. Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

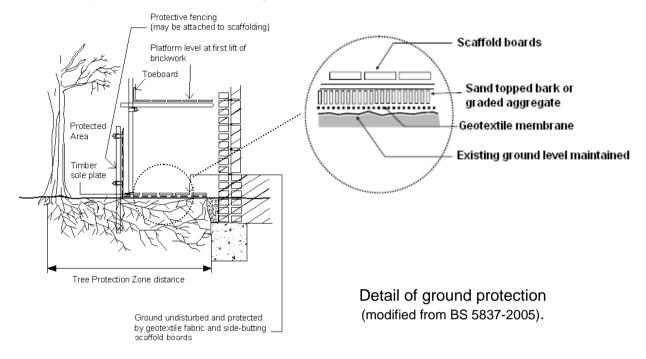
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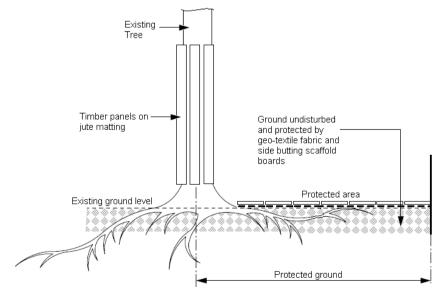


Root zone and trunk protection - Illustrative specification

Root zone protection: Where necessary, access through the TPZ can be achieved by laying aggregate and timber boards (or similar) over the root zone to protect roots. The ground beneath the boarding should be left undisturbed and should be protected with a porous geo-textile fabric covered with sand or mulch.



Trunk protection: Where fencing cannot be installed, the vertical trunk of exposed trees shall be protected by the placement of 3.6m lengths of 50 x 100mm hardwood timbers, spaced vertically, at 150mm centres and secured by 2mm wire at 300mm wide spacing over suitable protective padding material e.g. Jute Matting. The trunk protection shall be maintained intact until the completion of all work on site.



Detail of trunk protection.

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General guidance for working in TPZ

1 PURPOSE OF THIS GUIDANCE

This guidance sets out the general principles that must be followed when working within a TPZ. Where more detail is required, it will be supplemented by illustrative specifications in other appendices in this document (refer Appendix 4 and 5).

This guidance is based on the Australian Standards (2009) AS4970: Protection of Trees on Construction Sites.

Once the site works start, this guidance is specifically for the site personnel to help them understand what has been agreed and explain what is required to fully meet their obligations to protect trees. All personnel working in TPZs must be properly briefed about their responsibilities towards important trees based on this guidance.

This guidance should always be read in conjunction with the Tree Management Plan (TMP01) illustrating the areas where specific precautions are necessary. Each area where precautions are required is explained on the plan as identified on the legend. All protective measures should be installed according to the prevailing site conditions and agreed as satisfactory by the Project Arborist before any demolition or construction work starts.

2 TREE PROTECTION

2.1 Tree Protection Zone (TPZ)

The TPZ is a radial setback, extending outwards from the centre of the trunk, where disturbance must be minimised if important trees are to be successfully retained. The TPZ area is illustrated on the Tree Management Plan (TMP01) accompanying this guidance.

- The TPZ is a radial setback extending outwards from the centre of the trunk equal to the DBH x
 12
- This area shall be protected by tree protective fencing (refer Appendix 4).
- Any part of the TPZ outside of the tree protective fencing area must be isolated from the work operations by protective barriers and/or root zone protection for the duration of the work (refer Appendix 5).
- The Project Arborist shall approve the extent of the TPZ prior to commencement of works.
- The TPZ shall be mulched to a depth of 90mm with approved organic mulch e.g. leaf and wood chip where possible.
- Supplementary watering shall be provided in dry periods to reduce water or construction stress, particularly to those trees which may incur minor root disturbance.

The following activities shall be excluded within the TPZ:

- Excavation, compaction or disturbance of the existing soil.
- The movement or storage of materials, waste or fill.
- Soil level changes
- Disposal/runoff of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil
 and other toxic liquids
- Movement or storage of plant, machinery, equipment or vehicles.
- Any activity likely to damage the trunk, crown or root system.

2.2 Arboricultural supervision

Any work within TPZs requires a high level of care. Qualified arboricultural supervision is essential to minimise the risk of misunderstanding and misinterpretation. Site personnel must be properly briefed before any work starts. Ongoing work must be inspected regularly and, on completion, the work must be signed off by the Project Arborist to confirm compliance by the contractor.

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2.3 Tree protection fencing, root zone and trunk protection

Prior to site establishment, tree protection fencing and root zone and trunk protection shall be installed to establish the TPZ for trees to be retained in accordance with site conditions. These protective barriers shall be maintained entire for the duration of the construction program (refer Appendix 4 and 5).

Tree protection fencing and trunk and root zone protection shall be removed following completion of construction. The mulch layer in the TPZ shall be retained and replenished where required to maintain a 75mm thickness

2.4 Pruning

All pruning work required (including root pruning) should be in accordance with Australian Standard No 4373-1996 - Pruning of Amenity Trees.

2.5 Tree Damage

In the event of damage to a tree or the TPZ, the Project Arborist shall be engaged to inspect and provide advice on remedial action. This should be implemented as soon as practicable and certified by the Project Arborist.

2.6 Post construction maintenance

In the event of any tree deteriorating in health after the construction period, the Project Arborist shall be engaged to provide advice on any remedial action. Remedial action shall be implemented as soon as practicable and certified by the Project Arborist.

3 EXCAVATION AND FILL IN TPZ

3.1 Excavation within TPZ

If excavation within the TPZ is required the following shall be applied to preserve tree root systems:

- Excavation within TPZ must be carried out under the instruction and supervision of the Project Arborist.
- A root mapping exercise is to be undertaken and certified by the Project Arborist. Root mapping shall be undertaken by either ground penetrating radar, air spade, water laser or by hand excavation using hand tools, taking care not to damage the bark and wood of any roots.
- The purpose of the root mapping shall be to locate woody structural roots greater than 40mm in diameter. Where possible, flexible clumps of smaller roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage.
- If digging by hand, a fork shall be used to loosen the soil and help locate any substantial roots.
- Once roots have been located, the trowel shall be used to clear the soil away from them without damaging the bark.
- Exposed roots to be removed shall be cut cleanly with a sharp saw or secateurs.
- Roots temporarily exposed shall be protected from direct sunlight, drying out and extremes of temperature by appropriate covering.

3.2 Fill within TPZ

Placement of fill material within the Tree Protection Zone of trees to be retained should be avoided where possible. However, where fill cannot be avoided:

- All fill material to be placed within the TPZ should be approved by Project Arborist and consist of a course, gap-graded material to provide aeration and percolation to the root zone. Materials containing a high percentage of 'fines' is unacceptable for this purpose.
- The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil.
- No fill material should be placed in direct contact with the trunk.



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4 DEMOLITION OF SURFACING/STRUCTURES IN TPZ

4.1 Definitions of surfacing and structures

For the purposes of this guidance, the following broad definitions apply:

- **Surfacing:** Any hard surfacing used as a vehicular road, parking or pedestrian path including tarmac, solid stone, crushed stone, compacted aggregate, concrete and timber decking.
- **Structures:** Any man-made structure above or below ground including service pipes, walls, gate piers, buildings and foundations. Typically, this would include drainage structures, services, car-ports, bin stores and concrete slabs that support buildings.

4.2 Demolition and access

Roots frequently grow adjacent to and beneath existing surfacing/structures so great care is needed during access and demolition. Damage can occur through physical disturbance of roots and/or the compaction of soil around them from the weight of machinery or repeated pedestrian passage. This is not generally a problem whilst surfacing/structures are in place because they spread the load on the soil beneath and further protective measures are not normally necessary. However, once they are removed and the soil below is newly exposed, damage to roots becomes an issue and the following guidance must be implemented:

- No vehicular or repeated pedestrian access into TPZ permitted unless on existing hard surfacing or root zone protection.
- Regular vehicular and pedestrian access routes must be protected from compaction with temporary root zone protection as set out in Appendix 5.
- Where a TPZ is exposed by the work, it must be protected as set out in AS4970 until there is no
 risk of damage from the development activity.

4.3 Removal of surfacing/structures

Removing existing surfacing/structures is a high-risk activity for any adjacent roots and the following guidance must be observed:

- Appropriate tools for manually removing debris may include a pneumatic breaker, crow bar, sledgehammer, pick, mattock, shovel, spade, trowel, fork and wheelbarrow.
- Machines with a long reach may be used if they can work from outside the TPZ or from protected areas within the TPZ.
- Debris to be removed from the TPZ manually must be moved across existing hard surfacing or temporary root zone protection in a way that prevents compaction of soil. Alternatively, it can be lifted out by machines provided this does not disturb the TPZ.
- Great care must be taken throughout these operations not to damage roots.

5 INSTALLATION OF SURFACING/STRUCTURES IN TPZ

- **5.1 Basic principles:** New surfacing/structures in a TPZ are potentially damaging to trees because they may disturb the soil and disrupt the existing exchange of water and gases in and out of it. Adverse impact on trees can be reduced by minimising the extent of these changes within the TPZ.
 - Surfacing: Suitable surfacing should be relatively permeable to allow water and gas movement, load spreading to avoid localised compaction and require little or no excavation to limit direct damage. The actual specification of the surfacing is an engineering issue that needs to be considered in the context of the bearing capacity of the soil, the intended loading and the frequency of loading. The detail of product and specification are beyond the scope of this guidance and must be provided separately by the appropriate specialist.
 - Structures: Where possible structures are to be constructed above ground level on piled supports and redirecting water to where it is needed. The detailed design and specification of such structures is an engineering issue that should be informed and guided by the Project Arborist. Conventional strip foundations in the TPZ for any significant structure may cause excessive root loss and are unlikely to be acceptable. However, disturbance can be significantly reduced by supporting the above ground part of the structures on small diameter piles/piers or

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cast floor slabs set above ground level. The design should be sufficiently flexible to allow the piles to be moved if significant roots are encountered in the preferred locations.

5.2 Establishing the depth of roots

The precise location and depth of roots within the soil is unpredictable and will only be known when careful digging starts on site. Ideally, all new surfacing within a TPZ should be no-dig, i.e. requiring no excavation whatsoever, but this is rarely possible on undulating surfaces.

New surfacing normally requires an evenly graded sub-base layer, which can be made up to any high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted as would happen in conventional surface installation. Some limited excavation is usually necessary to achieve this and need not be damaging to trees if carried out carefully and large roots are not cut.

Tree roots and grass roots rarely occupy the same soil volume at the top of the soil profile, so the removal of a turf layer up to 50mm is unlikely to be damaging to trees. It may be possible to dig to a greater depth depending on local conditions but this would need to be assessed by the Project Arborist.

6 SERVICES IN TPZ

For the purposes of this guidance, services are considered as structures. Excavation to upgrade existing services or to install new services within a TPZ may damage retained trees and should only be chosen as a last resort. In the event that excavation emerges as the preferred option, the decision should be reviewed by the Project Arborist before any work is carried out. If excavation is agreed, all digging should be done carefully and follow the guidance set out in 3.1 above.

7 SOFT LANDSCAPING IN TPZ

For the purposes of this guidance, soft landscaping includes the re-profiling of existing soil levels and covering the soil surface with new plants or an organic covering (mulch). It does not include the installation of solid structures or compacted surfacing.

Soft landscaping activity after construction can be extremely damaging to trees.

No significant excavation or cultivation shall occur within the TPZ (e.g. planting holes). Where new designs require levels to be increased to tie in with new structures or surrounding ground level, good quality and relatively permeable top soil should be used for the fill. It should be firmed into place but not over compacted in preparation for turfing or careful shrub planting.

All areas close to tree trunks should be kept at the original ground level and have a mulched finish rather than grass to reduce the risk of mowing damage.



Schedule of works and responsibilities

Hold Point	Task	Responsibility	Certification	Timing of Inspection
1	Indicate clearly (with spray paint) trees approved for removal only	Principal Contractor	Project Arborist	Prior to demolition and site establishment
2	Establishment of tree protection fencing and additional root, trunk and/or branch protection	Principal Contractor	Project Arborist	Prior to demolition and site establishment
3	Supervise all excavations works proposed within the TPZ	Principal Contractor	Project Arborist	As required prior to the works proceeding adjacent to the tree
4	Inspection of trees by Project Arborist	Principal Contractor	Project Arborist	Monthly during construction period
5	Final inspection of trees by Project Arborist	Principal Contractor	Project Arborist	Prior to the issue of Occupation Certificate



Tree management plan

-refer attached Tree Management Plan, Dwg No. TMP01, by Naturally Trees dated 2 June 2021

SHEET 3

LEGEND:





Category AA
Trees worthy of Category A being a constraint



Category Z Trees not worthy of 01 Category ZZ being a constraint



Existing layout



Proposed layout



Tree protection zone (TPZ) boundaries



Protective fencing and TPZ area



TPZ where ground protection must be installed. Retain all existing levels.





Tree no longer on site



95 Stanhope Road, Killara NSW

Lourdes Retirement Village

Tree Management Plan



TMP01 Cover Sheet

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