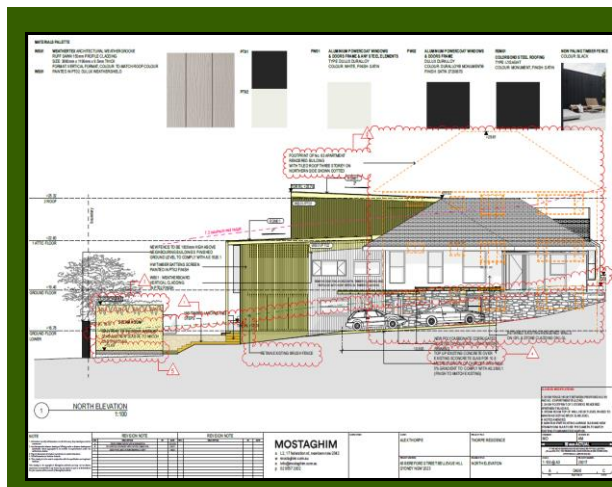


ARBORICULTURAL IMPACT ASSESSMENT AND TREE MANAGEMENT PLAN



PROPOSED RESIDENTIAL BUILDING AND ALTERATIONS DEVELOPMENT APPLICATION

**65 BERESFORD ROAD
BELLEVUE HILL, NSW**

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23rd November 2020
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DISCLAIMER

This report has been prepared in accordance with the scope of services described in agreement between Horticultural Management Services and the client.

This report relies upon data, surveys and site inspections results taken at or under that particular time and or conditions specified herein.

Any representation, statement, opinion or advice, expressed or implied in this publication is made in good faith but on the basis that Horticultural Management Services, its agents and employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement, or advice referred to above.

Every effort has been made in this report to include, assess, and address all defects, structural weaknesses, instabilities of the subject trees. All inspections were made from ground level using only visual means and no intrusive or destructive means of inspection were used. For many structural defects such as decay and inclusions, internal inspection is required by means of resistograph or similar. No such investigation has been made in this case. Trees are living organisms and are subject to failure through a variety of causes not able to be identified by means of this inspection and assessment.

Information contained in this report covers only the subject tree that was assessed and reflects the condition of the subject tree at the time of inspection. Any finding, conclusion or recommendations only apply to the circumstances and no greater reliance should be assumed or drawn by the Client.

There is no warranty or guarantee, expressed or implied that problems or deficiencies regarding the subject trees or the subject site may not arise in the future.

Furthermore, this report has been prepared solely for the use by the Client. The Client acknowledges that this assessment, and any opinions, advice or recommendations expressed or given in it, are based on the information supplied by the Client and based on the data observations, measurements and analysis carried out or obtained by Horticultural Management Services and referred to in the assessment.

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TABLE OF CONTENTS

TABLE OF FIGURES	5
1.0 INTRODUCTION AND BACKGROUND	6
2.0 SITE LOCATION	7
2.1 AERIAL SITE LOCATION	7
3.0 AIMS	7
4.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT	8
5.0 METHODOLOGY.....	9
5.1 VISUAL TREE ASSESSMENT	10
5.2 HERITAGE SIGNIFICANCE	10
5.3 LANDSCAPE SIGNIFICANCE.....	11
5.4 TREES ON ADJOINING LAND	12
5.5 IMPACT ASSESSMENT	12
6.0 PRUNING/REMOVAL STANDARDS	13
7.0 TREE PROTECTION ZONES AND ROOT SYSTEM	13
8.0 TREE PROTECTION ZONE.....	14
8.1 NORMAL STRUCTURAL ROOT FORM OF A TREE	15
8.2 TYPES OF TREE ROOTS	16
8.3 ROOT PLATE	16
8.4 WOODY ROOTS.....	16
8.5 NON-WOODY ROOTS.....	16
9.0 DEFINITION OF ASSESSED HEALTH AND CONDITION OF TREE	17
9.1 TREE AGE CLASS TERMINOLOGY.....	17
9.2 SAFE USEFUL LIFE EXPECTANCY (SULE)	17
9.3 ASSESSED STRUCTURAL CONDITION.....	18
9.4 ECOLOGICAL VALUE OF TREE	18
9.5 VISUAL AMENITY PROVIDED-PROMINENCE	18
9.6 RETENTION VALUE WITHIN THE LANDSCAPE	19
9.7 RISK LEVEL MATRIX- CONSEQUENCES OF EVENT OCCURRING.....	19
9.8 ENVIRONMENTAL ZONE DEFINITIONS.....	20
10.0 TREE IDENTIFICATION ASSESSMENT SUMMARY	21
11.0 TREE IDENTIFICATION BASED ON PROPOSED DEVELOPMENT	31
12.0 TPO EXEMPT TREES IN YELLOW BASED ON SURVEY.....	32
12.1 TREES PROPOSED TO BE REMOVED IN RED BASED ON DEVELOPMENT ..	33
12.2 TREE MANAGEMENT PLAN (TMP) FOR RETAINED TREES.....	34
12.3 TREE PROTECTION AND STRUCTURAL ROOT ZONES FOR TREES	35

12.4	TREE MANAGEMENT PLAN (TMP) – SCAFFOLD ERECTION	36
12.5	TREE MANAGEMENT AND CROSS SECTION FOR TREES, 1, 2 AND 3	37
13.0	SITE PHOTOGRAPHS	38
14.0	RETENTION OF SITE AND ADJOINING TREES (GENERAL OVERVIEW)	45
15.0	SENSITIVE CONSTRUCTION APPROACH FOR SITE AND ADJOINING TREES	46
16.0	PRE-CONSTRUCTION TREE PROTECTION MEASURES	47
16.1	APPOINTMENT OF SITE ARBORIST	47
16.2	EDUCATION	47
16.3	SITE WORKS TREE PROTECTION ZONES.....	47
16.4	TREE PROTECTION FENCING	48
16.5	SIGNAGE	48
16.6	SILT FENCING, SEDIMENT CONTROL AND SOIL EROSION.....	49
17.0	SITE MANAGEMENT OF RETAINED TREES	50
17.1	MATERIALS STORAGE.....	50
17.2	WASTE STORAGE	50
18.0	TREE PROTECTION MEASURES FOR CONSTRUCTION PROCESS.....	50
18.1	SITE ACCESS.....	50
18.2	TEMPORARY SERVICES.....	50
18.3	WORKS WITHIN THE TREE PROTECTION ZONE	50
18.3.1	TREE TRUNK PROTECTION WORKS	51
18.3.2	TREE BRANCH PROTECTION WORKS	51
18.3.3	ROOT PRUNING AND EXCAVATION WORKS	51
18.3.4	TREE DAMAGE DURING WORKS	52
18.3.5	COMPLETION OF WORKS WITHIN TREE PROTECTION ZONE.....	52
18.4	SOIL PROTECTION WORKS.....	52
18.6	MONITORING.....	52
19.0	POST CONSTRUCTION MAINTENAINCE PROCESS.....	53
20.0	CONCLUSION	54
21.0	RECOMMENDATIONS.....	55
ANNEXURE A: PROPOSED DEVELOPMENT LAYOUT		57
ANNEXURE B: PROPOSED LANDSCAPE MASTER.....		61
ANNEXURE C: PROPOSED STORMWATER/DRAINAGE LAYOUT		65
ANNEXURE D: TREE MANAGEMENT PLAN (TMP) – SCAFFOLD ERECTION		67
ANNEXURE E: TREE MANAGEMENT PLAN (TMP) – SUSPENDED SLAB		68
ANNEXURE F: TREE PROTECTION DETAIL		69
ANNEXURE G: TREE TRUNK BRANCH AND ROOT PROTECTION.....		70

ANNEXURE H: S.U.L.E- SAFE USEFUL LIFE EXPECTANCY (BARRELL 1995)	71
ANNEXURE I: DEFINITION OF TREE TERMINOLOGY	72
ANNEXURE J: REFERENCES	75
ANNEXURE K: CERTIFICATION	76

TABLE OF FIGURES

<i>Figure 1 Shows the location of the study site</i>	7
<i>Figure 2 Shows an aerial location of the study site</i>	7
<i>Figure 3 Shows a diagram of a typical tree root structure</i>	15
<i>Figure 4 Shows a list of trees observed and assessed to this application</i>	30
<i>Figure 5 Shows the trees location assessed based on the plans provided</i>	31
<i>Figure 6 Shows trees that are TPO Exempt in YELLOW</i>	32
<i>Figure 7 Shows Trees in RED that are required to be removed based on plans</i>	33
<i>Figure 8 Shows areas considered to be hand dug to ensure tree retention</i>	34
<i>Figure 9 Site and adjoining trees TPZ and SRZ ensure minimal impacts</i>	35
<i>Figure 10 Shows considered scaffold erection if or as required</i>	36
<i>Figure 11 Shows the cross section for tree 1, 2 and 3, noting no changes in existing ground levels</i>	37
<i>Figure 12 Shows a Paperbark tree which may require minor branch pruning</i>	38
<i>Figure 13 Shows Leylandii Conifers, that are TPO Exempt species</i>	38
<i>Figure 14 Shows Trees 1, 2 and 3 not impacted from the proposed works</i>	39
<i>Figure 15 Shows Tree 3 and existing concrete slab levels to remain</i>	39
<i>Figure 16 Shows Tree 3 with the existing driveway</i>	40
<i>Figure 17 Shows adjoining Trees 4 and 4a being self-seeded Hackberry</i>	40
<i>Figure 18 Shows Tree 5 being minor Mock Orange and Bird of Paradise</i>	41
<i>Figure 19 Shows the rear Tree 6 being an Exempt African olive to be removed</i>	41
<i>Figure 20 Shows Tree 7 located on the high side of an existing retaining wall</i>	42
<i>Figure 21 Shows minor Trees 8 and 9 that may be removed and replaced</i>	42
<i>Figure 22 Shows adjoining Trees 10, 11 and 12 sufficiently distanced</i>	43
<i>Figure 23 Shows again Tree 6 with minor trees to be removed</i>	43
<i>Figure 24 Shows adjoining Celtis, sufficiently distanced and unimpacted</i>	44
<i>Figure 25 Shows Tree 16 a minor fruit tree, sufficiently distanced</i>	44

1.0 INTRODUCTION AND BACKGROUND

Horticultural Management Services were engaged to conduct an Arboriculture Assessment Report with particular regard to the Commonwealth Environment Protection and Biodiversity Conservation Act 1999, with reference made to the Office of Environment and Heritage (OEH) (formerly National Parks and Wildlife Services), replaced by the Biodiversity Conservation Act 2016, Biosecurity Act 2015 and Woollahra Council Local Environmental Plan 2014 (Woollahra LEP), clause 5.9 *Preservation of trees or vegetation*, Chapter E3 - Tree Management of the Development Control Plan 2015 (DCP).

This Arboricultural Assessment Report and Tree Management Plan was prepared by Horticultural Management Services.

It is understood that this report is to form part of a Development Application for proposed building alterations and additions, which includes building extension works, removal of the existing pool, construction of new pool, site excavations, approved minor tree removal and protection and associated landscaping as per Annexure A Proposed Development Layout, with supporting supplementary engineering, stormwater and landscape plans within attached Annexures.

Site investigations were undertaken over September 2020 to August 2021, to determine the existing and adjoining trees overall health, condition, and structural integrity, and to determine their remaining life expectancy and significance in the landscape and assess their suitability for retention/preservation, based on the tree's health and site development/constraints within the proposed development site, which may be affected by the proposed development application and scope of works.

The potential impact of the proposed building alterations, extensions, pool excavation, decking and associated landscape works have also been considered, together with recommendations for amendments to the design or construction requirements to ensure the retention of trees considered worthy of preservation.

This assessment takes into consideration the ecological qualities of all trees and other significant vegetation on the site and its biotic, ecological, historical, and visual significance.

The scope of this report includes the allocation of SULE ratings (Safe Useful Life Expectancy), identification of arboricultural and recommended work as required.

Information contained in this report covers only the subject trees that were assessed and reflects the condition of the subject trees on site at the time of inspection.

2.0 SITE LOCATION

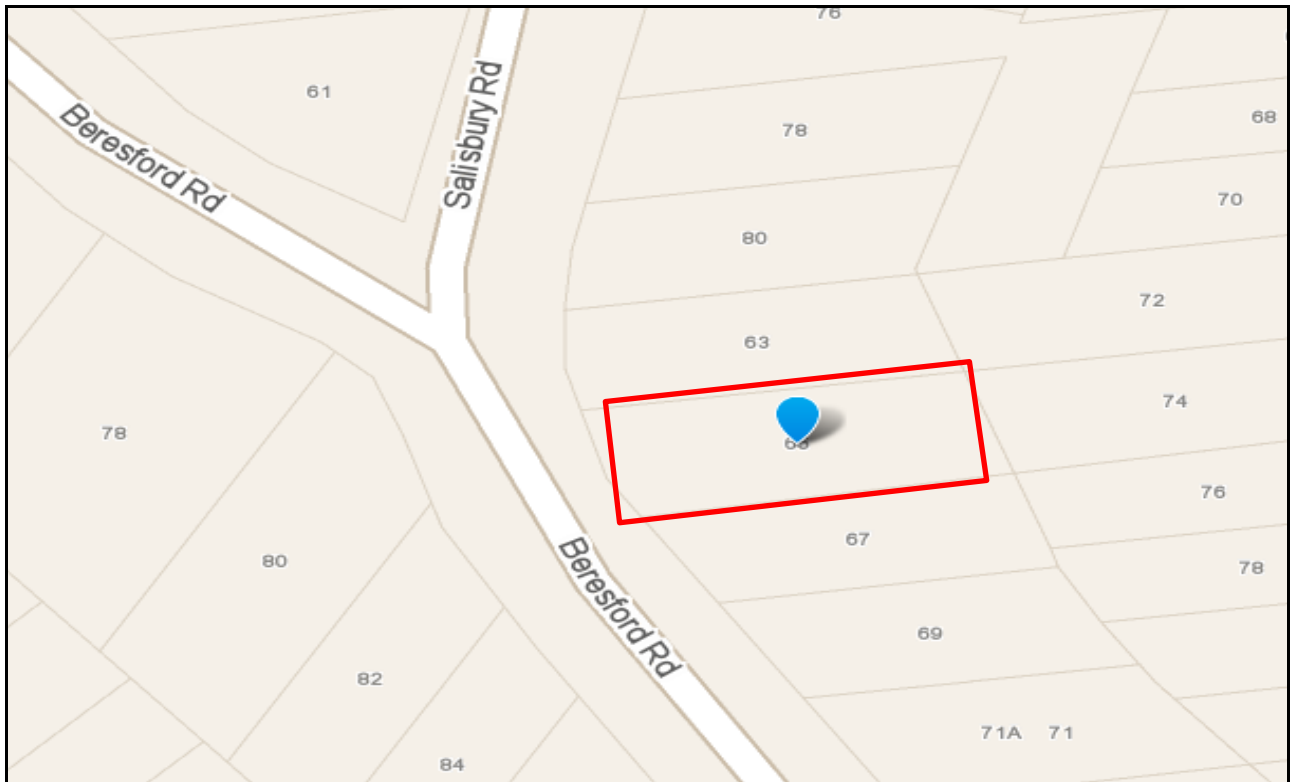


Figure 1 Shows the location of the study site. Source whereis.com.au

2.1 AERIAL SITE LOCATION



Figure 2 Shows an aerial location of the study site. Source Googleearth.com

3.0 AIMS

To detail the condition of the trees and consider the location and condition of such in relation to their surrounds.

Provide as an outcome of the assessment, the following:

- Carry out an inspection of the subject trees within and adjacent to the site/s and site conditions,
- Assess the condition of the subject tree(s),
- A description of the trees and other vegetation on the subject site,
- Observations made,
- Discussion on the trees in their current landscape,
- Determine the subject trees' Landscape Significance including cultural, environmental, and aesthetic values,
- Consider the benefits of retention or removal of the trees for the medium to long-term benefit of the trees and on-going public safety,
- Provide recommendations for Tree Management, if or as required, within the context of a development application, and
- Prepare site specific tree protection specifications for trees recommended for retention,

4.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The site is identified as 65 Beresford Road, Bellevue Hill NSW.

It is understood that this report is to form part of a Development Application for proposed building alterations and additions, which includes building extension works, removal of the existing pool, construction of new pool, site excavations, approved minor tree removal and protection and associated landscaping as per Annexure A Proposed Development Layout.

Relevant site plans and or documents were viewed prior to undertaking the Arborist Assessment with plans reviewed being;

- Maroubra Consulting Pty Ltd, Drainage Concept Plan, Project C1 D, MC – 004, date 20.8.2021,
- Maroubra Consulting Pty Ltd, Drainage Sections Plan, Project C2 D, MC – 004, date 20.8.2021,
- Mostaghim Architects Pty Ltd, Existing/Demolition Ground Floor Plan DA02, Revision B, date 11.8.2021,
- Mostaghim Architects Pty Ltd, North Elevation, Drawing Number DA08, Revision C, date 11.8.2021
- Mostaghim Architects Pty Ltd, Proposed Ground Floor, Plans Numbered DA06, Revision C, date 11.8.2021
- Mostaghim Architects Pty Ltd, Proposed Lower Ground Floor Plan Drawing Number DA05, Revision C, date 20.8.2021,
- Mostaghim Architects Pty Ltd, South Elevation, Drawing Number DA09, Revision B, date 11.8.2021
- TaylorBrammer Landscape Architects Pty Ltd, Landscape Master Plan, Drawing Numbers 01 to 04, Revision B date 23.8.2021,

A site plan accompanies this report and identifies all trees located on and or adjoining this proposed development application site, which may be impacted upon.

5.0 METHODOLOGY

This report was determined as a result of several comprehensive site inspections undertaken September 2020 to August 2021. The subject trees were inspected by Horticultural Management Services (HMS).

The comments and recommendations in this report are based on findings from this site inspection. Each tree has been provided with identification number for reference purposed denoted on the attached tree location plan and correlating with the Tree Assessment Schedule and as discussed within the report.

The method of assessment applied to the proposed development site is adapted from the principles developed by the Local Government Tree Resources Association (LGTRA). This recognised form of assessment considers the trees health/condition and subsequent stability, both in the long and short term at the time of the assessment and including but not limited to;

- Species identification (botanical and common),
- Height and form,
- Observations made including an evaluation of the tree's health and vigour using Crown spread and cover, foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback and epicormic growth as indicators,
- Condition, using visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators,
- Suitability of the tree to the site and its existing location; in consideration of damage or potential damage to services or structures, available space for future development and nuisance issues,
- Likely future amenity based on a visual assessment,
- The trees tolerance to development impacts based on surface observations,
- Significance -specific heritage, cultural or intrinsic importance,
- Amenity value -as shade, windbreak etc or subjective, aesthetic values,
- Habitat value -both as an individual tree and as part of an ecological community,
- Observations of soil conditions and likely root spread,
- Overall condition assessment and suitability,
- Hazard/failure potential of tree to damage property or result in death,
- Safe Useful Life Expectancy (SULE) after Barrell (1995),

Retention Value, was based on the subject tree's Remaining Life Expectancy Range and Landscape Significance. The Retention Value was modified where necessary to take in consideration the subject tree's health, structure, and site suitability.

Landscape Significance, was determined by assessing the combination of the cultural, environmental, and aesthetic values of the subject trees. Whilst these values are subjective, a rating of high, moderate, low, or insignificant has been allocated to the trees. This provides a relative value of the trees' Landscape Significance which may aid in determining their Retention Value. A more detailed explanation is outlined in Section 5.3 Landscape Significance.

Tree height and canopy spread were estimated only. Diameter at Breast Height (DBH) was determined by measuring the main stem at 1.4m above ground. Photos were taken of the subject trees and subject site for the inclusion in this tabled report.

The components of **tree risk assessment** include the trees failure potential or in the case of the proposed, an environment conducive to tree failure.

5.1 VISUAL TREE ASSESSMENT

The inspection was limited to a visual examination of the subject trees from ground level.

This assessment process is used to determine the sustainability of each tree in the landscape. The assessment of each tree was made using Visual Tree Assessment (VTA).

All trees were assessed from the ground without dissection, probing or coring. No woody tissue testing was undertaken as part of this assessment.

Destructive, resistance testing, or aerial inspections have not been undertaken as part of this assessment. The health of the trees was determined by assessing the following:

- a) Foliage size and colour,
- b) Pest and disease infestation noted,
- c) Extension growth,
- d) Canopy density and form,
- e) Percentage of deadwood noted/observed,
- f) Presence of epicormic growth observed,
- g) Visible evidence of structural defects or instability,
- h) Evidence of previous pruning or physical damage,
- i) Observations made including an evaluation of the tree's health and vigour using Crown spread and cover, foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback and epicormic growth as indicators,
- j) Condition, using visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators,
- k) Suitability of the tree to the site and its existing location; in consideration of damage or potential damage to services or structures, available space for future development and nuisance issues,

5.2 HERITAGE SIGNIFICANCE

There are no trees within the site that have been identified as Heritage Items under Council Planning Instrument or identified within a Significant Tree Register.

5.3 LANDSCAPE SIGNIFICANCE

The sites **Landscape Significance** was determined by assessing the combination of the cultural, environmental, and aesthetic values of the subject trees.

Whilst these values are subjective, a rating of high, moderate, low, or insignificant has been allocated to the trees.

This provides a relative value of the trees' Landscape Significance which may aid in determining their overall retention value. Generally, the following criteria have been used to determine the Landscape Significance of the subject trees.

LANDSCAPE SIGNIFICANCE	DESCRIPTION
HIGH	The subject tree is listed as a Heritage Item under the <i>Local Environmental Plan</i> with a local or state level of significance.
	The subject tree forms part of the curtilage of a heritage item.
	The subject tree creates a 'sense of place' or is considered 'landmark' tree.
	The subject tree is of local, cultural, or historical importance or is widely known.
	The subject tree is listed on Council's Significance Tree Register.
	The subject tree is scheduled as a Threatened Species or Threatened Plant Community under the Biodiversity Conservation Act (2016).
	The subject tree is a remnant tree.
	The subject tree is a locally indigenous species and is representative of the original vegetation of the area.
	The subject tree provides habitat to a threatened species.
	The subject tree is an excellent representative of the species in terms of aesthetic value.
MODERATE	The subject tree makes a positive contribution to the visual character or amenity of the area.
	The subject tree provides a specific function such as screening or minimising the scale of a building.
	The subject tree has a known habitat value.
	The subject tree is a good representative of the species in terms of aesthetic value.
LOW	The subject tree is an environmental pest species or is exempt under the provisions of the local Council's Tree Preservation Order.
	The subject tree makes little or no contribution to the amenity of the locality.
	The subject tree is a poor representative of the species in terms of aesthetic value.
INSIGNIFICANT	The subject tree is declared a Noxious Weed under the Biosecurity Act (1993).

*NOTE: If the tree can be categorised into more than one value, the higher value should be allocated.

5.4 TREES ON ADJOINING LAND

In accordance with Council's requirements, trees within Five-(5m) adjoining the development site have also been assessed as part of this report.

There are no trees on adjoining properties that will be adversely affected by this development. Adjoining trees tabled are sufficiently distanced to be safely retained, protected, and managed.

5.5 IMPACT ASSESSMENT

A summary of each tree identified within the study site is outlined in section 10.0 Assessment of Existing Trees Identified on Site.

The assessment in each case has considered the following issues;

- Structural Root Zones (SRZ),
- Building works or footprint within TPZ or SRZ,
- Optimum Tree Protection Zones (TPZ) and Structural Root Zones (SRZ),
- SULE Rating for value of the tree assessed,
- Assessment of the likely impact of the proposed works,
- Recommendations for retention, management, or removal,

Changing the drainage patterns around a tree by constructing a building, driveways, road, and paths etc will alter the amount of water the tree receives and may cause root death or damage. Trenches dug beside or adjoining large trees for water, sewer or services may also damage the roots and will make a tree unstable.

Older trees will tolerate far less stress than younger trees as with age they become less responsive and find it very strenuous to respond to changes in their environment.

The components of tree risk assessment include the trees failure potential or in the case of land clearing/management, an environment conducive to tree failure.

Other factors are also considered related to the site, such as potential development or land use, soil condition and prevailing winds must be considered in conjunction when assessing the potential of failure for any tree.

6.0 PRUNING/REMOVAL STANDARDS

Any pruning recommended in this report is to be to the Australian Standard® AS4373 'Pruning of Amenity Trees', Amenity Tree Industry "Code of Practice 1998 and conducted in accordance with the NSW Work Cover Authority Code of Practice for Tree Work 2007.

All pruning or removal works are to be in accordance with the appropriate Tree Management Policy where applicable, or Tree Management Order (TMO), or Tree Preservation Order (TPO) and applicable consent conditions.

Tree maintenance work is specialised and in order to be undertaken safely and to ensure the works carried out are not detrimental to the survival of the tree or surrounding vegetation, all works should be undertaken by a qualified Arborist with appropriate competencies recognised within the Australian Qualification framework, with a minimum of 5 years of continual experience within the industry of operational amenity arboriculture, and covered by appropriate and current types of insurance to undertake such works.

Any pruning near electricity wires should be undertaken in accordance with relative Electrical Safety Rules and be performed by persons individually authorised by Energy Australia with a "Work Near Overhead Power Lines" Certificate to undertake this scope of works.

7.0 TREE PROTECTION ZONES AND ROOT SYSTEM

On average the tree's roots will extend to the outer reaches of their canopies, depending on morphology and disposition of the individual trees' roots, when known to be influenced by past or existing site conditions including but not limited to;

- The individual tree species,
- Soil type, structure, and location,
- Topography and existing drainage,
- Location of either manmade hard structures, or environment,
- Pruning requirements, if required,

These roots have two major functions, which are to obtain water and minerals from the soil and to give anchorage support to the tree.

This area is known as the Tree Protection Zone (TPZ), this is a designated area around tree where optimum protection and preservation efforts are implemented.

No disturbance should occur within this area. It is calculated by using a formula that considers the tolerance level of the species to disturbance, its age class, and its condition and trunk diameter.

The main area for surface feeding roots to occur is from the tree trunk to the outer canopy known as the drip zone. These fibrous roots are less likely to occur under or near other buildings, as there is little surface moisture or soil air presence for root survival. These fibrous roots are those that take up water and nutrients.

While some tree roots will deeply penetrate the soil profile, in search of available water, most will occupy the first 60-70cm of the soil, as to obtain the needed sustenance. At times, it will not be possible to retain the optimum TPZ around each tree and any activities proposed within this area must be carefully analysed to minimise any effects on its health and/or stability.

The actual spread of the root system is largely dependent on the species involved, and their localised environment. Any work carried out within the TPZ should be reviewed and supervised by an appropriately qualified Arborist.

Construction works proposed to be undertaken around the trees if not correctly assessed may modify the natural water table and reduce the amount of soil air and moisture present/available to the trees and their longevity may be greatly diminished.

If under the course of construction, the tree roots are damaged or adversely affected, their demise will cause drought stress; poor uptake of water and nutrients, slower dispersal of gums and resins and could, in the long term, influence the movement of certain compounds which make up the structure of the tree.

8.0 TREE PROTECTION ZONE

A Tree Protection Zone (TPZ) is a radial distance measured from the centre of the trunk of the tree. The intention of the TPZ is to minimise incursions to the root system and canopy to ensure the long-term health and stability of the tree.

A commonly used delineation for the TPZ is the dripline (extent of the crown spread projected to the ground plane). However, this may not provide adequate protection for trees that have prominent leans or distorted imbalanced or narrow crowns. A more appropriate guideline is the trunk diameter.

The Tree trunk measurement is recorded and known as the Diameter at Breast Height (DBH) at 1.4 metres from ground level using a metric tape measure. The TPZ area is then calculated by $\times 12$, another formula is then applied for the trees Structural Root Zone (SRZ) if the development is proposed to encroach into the TPZ.

Other factors included within the TPZ are the individual tree species, soil type, location, and proposed scope of works.

The above criteria also consider the following elements;

- The trunk diameter,
- The sensitivity/tolerance of the species to construction impacts,
- The level of maturity,
- The health, vigour, and structural integrity of the tree,
- The tree's root and crown formation,

Construction Tolerance considers the following elements,

- Good – Good tolerance to construction impacts,
- Moderate – Moderate tolerance to construction impacts,
- Poor- Poor tolerance to construction impacts,

Maturity class of the tree considers the following elements,

- Over-mature – Greater than 80% of the life expectancy for the species,
- Mature – Greater than 50 – 80% of the life expectancy for the species,
- Immature – Less than 20% of the life expectancy for the species,

8.1 NORMAL STRUCTURAL ROOT FORM OF A TREE

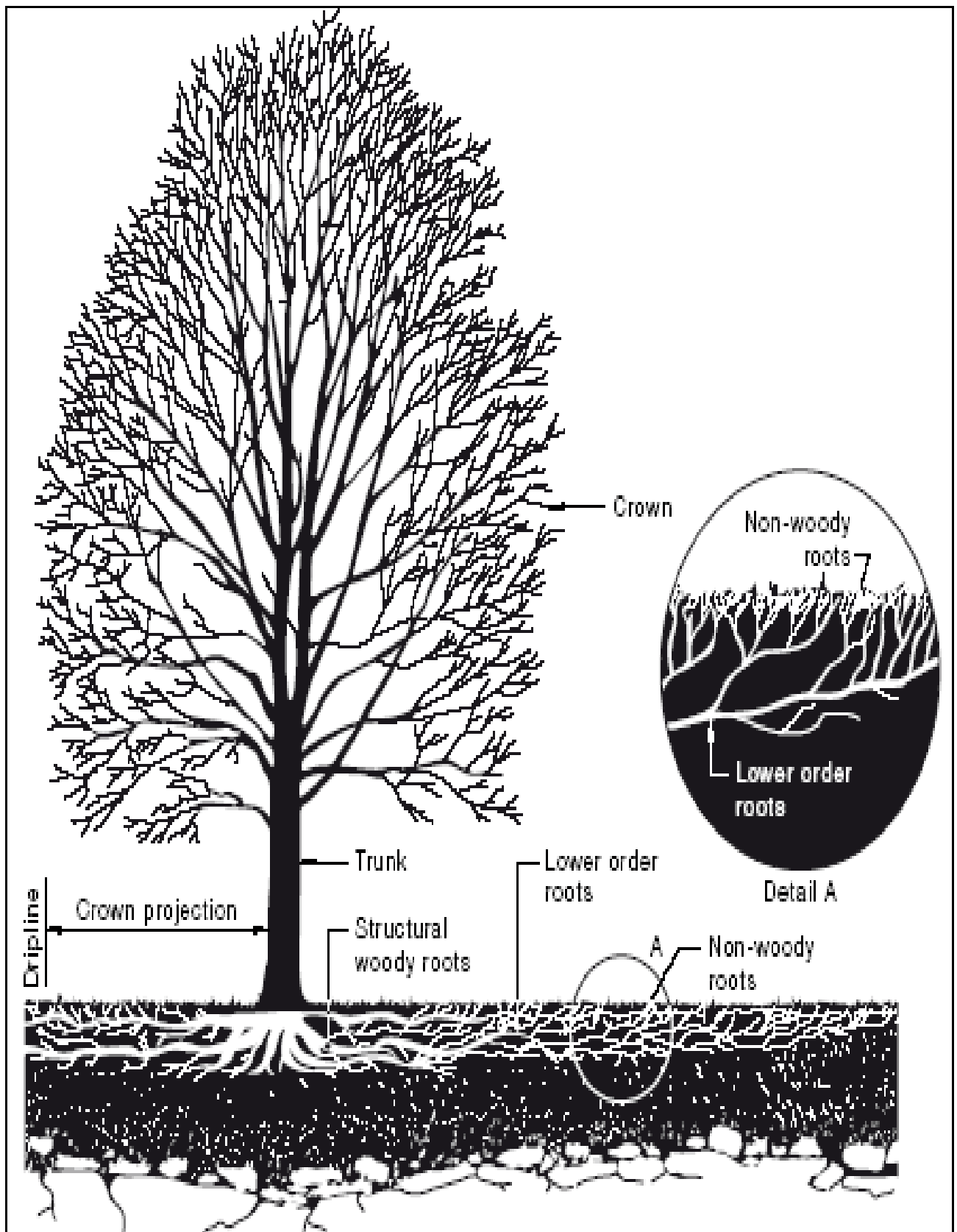


Figure 3 Shows a diagram of a typical tree root structure.

Source: Australian Standards - AS 4970-2009 Protection of trees on development sites.

8.2 TYPES OF TREE ROOTS

The tree's root system develops in accordance with its pre-determined, height, soil conditions (availability of water and nutrients) and location of the root systems in response to the need to support the tree.

Unless conditions are uniform around the tree, which would be highly unusual, the extent of the root-systems can be irregular and difficult to predict. As tree roots are very opportunistic, they will not generally show the symmetry seen in the aerial parts.

Most of the root system is in the surface 600mm to 700mm, extending radially for distances which are frequently in excess of the tree height.

8.3 ROOT PLATE

This forms the main structural woody roots which provides overall anchorage for the tree. It is this central part of the root-system (large root mass with sub-soil normally attached) which may tilt over or rotates in storm events.

8.4 WOODY ROOTS

Beyond the root plate the root system rapidly subdivides into smaller diameter woody roots (hydrotropic) which conduct water and nutrients from the non-woody roots.

8.5 NON-WOODY ROOTS

Off the smaller diameter woody root system, a mass of non-woody, fine feeder roots system develops. These are the roots which are active in water and nutrient uptake, are very fine in structure, typically less than 0.5mm diameter, and include mycorrhizal associations with some soil fungi. They are short lived, growing in response to the needs of the tree, with the majority dieing back each winter.

Conditions should be conducive for maintaining the growth of these non-woody roots to provide for the water and nutrient requirements of the tree.

Non-woody roots are vulnerable to damage, and once it occurs, water and nutrient uptake will be restricted until new ones are produced. Vigorous young trees will be capable of rapid regeneration, but more mature to over mature trees will respond slowly, if at all.

Any root damage and or demise may cause some drought stress; poor uptake of water and nutrients, slower dispersal of gums and resins and could, in the long term, influence the movement of certain compounds which make up the structure of the tree, resulting in the slow decline to death of the trees.

9.0 DEFINITION OF ASSESSED HEALTH AND CONDITION OF TREE

The condition of each tree has been related in overall terms as one of the following headings and information is presented in section 11.0 Assessment of Existing Trees Identified on Site.

Good, the tree is generally healthy, vigorous, and free from the presence of major disease, obvious structural weaknesses, and fungal or insect infestation and is expected to continue to live in the same condition as at the time of the inspection. Only small recommendations may be required to help continue the trees longevity.

Fair, the tree is generally vigorous but has some indication of decline due to the early effects of disease, fungal or insect infestation, or has been affected by physical (storm damage) or mechanical damage (Vandalism or involved in an accident by a vehicle) or is faltering due to the modification of the tree's environment essential for its survival.

This tree group may recover with remedial work undertaken by a Qualified Arborist where appropriate or without intervention and may regain some vigour and stabilise over time. Medium recommendations are required to bring this tree up to a satisfactory standard.

Poor, the tree is exhibiting symptoms of advanced and irreversible decline due to factors such as fungal infestation, termite damage, ring barking of the tree's trunk due to borer infestation, major die-back in branches and the foliage is thinning in the crown due to various effects, epicormic growth is present throughout the inner canopy while the tree is using up its stored sugar and is in a state of stress.

This tree group will decline further to death over a period regardless of remedial works or modifications undertaken.

Dead, the tree is no longer alive and is in poor structural condition, that may cause damage to people or property and removal is strongly recommended.

9.1 TREE AGE CLASS TERMINOLOGY

The following maturity class have been allocated to each tree and considers the following elements,

Immature:	Less than 20% of the life expectancy for the species,
Semi-mature:	Middle age trees, 20% to 50% of life expectancy,
Mature:	Greater than 50 – 80% of the life expectancy for the species,
Over-mature:	Greater than 80% of the life expectancy for the species, senescent tree, or those declining irreversibly to death,

9.2 SAFE USEFUL LIFE EXPECTANCY (SULE)

The remaining Safe Useful Life Expectancy of a tree is an estimate of the sustainability of the tree within the site/landscape, calculated based on an estimate of the average age of the species in an urban area, compared with its estimated current age.

The estimated SULE of each tree is discussed with the following values;

- Greater than 40 years (Long),
- Between 15 and 40 years (Medium),
- Between 5 and 15 years (Short),
- Less than 5 years,
- Dead or hazardous,

9.3 ASSESSED STRUCTURAL CONDITION

This refers to the tree's form and growth habit modified by its environment, the state of the trunk and main structural branches.

It includes the presence of defects as decay, weak branch junctions and other visible abnormalities. Although some trees without defects fail in major storms, the presence of any defect will increase the chances of failure.

- Good;** Trees with a single dominant trunk along which evenly spaced branches are spread. Branches have properly formed collars which provide strong attachment to the trunk and are about 25% of the trunk diameter. Minor structural defects may be present with low failure potentials.
- Average;** Trees with structural defects with low failure potential.
- Fair;** Trees with structural defects with medium failure potentials and require monitoring on an annual basis.
- Poor;** Trees with defects which have failed, or have a high risk of failing soon, and corrective action must be taken soon as possible.

9.4 ECOLOGICAL VALUE OF TREE

These categories are based upon the criteria used in the Thyer Tree Valuation Method (1996) to evaluate a tree's ecological benefit.

- | | | |
|----|-----------|---|
| 0. | None | Weed species |
| 1. | Low | Restricts desirable plants or of little benefit to fauna. |
| 2. | Medium | Beneficial to flora & fauna provides food source and/or shelter. |
| 3. | High | Remnant /indigenous species of native vegetation. |
| 4. | Very High | Indigenous species being an integral part of a natural ecosystem. |

9.5 VISUAL AMENITY PROVIDED-PROMINENCE

Criteria for the assessment of amenity values are based upon the criteria used in the Thyer Tree Valuation Method (1996) to evaluate a tree's visibility in the local area.

The amenity value of a tree is a measure of its visibility, its overall position within the site, its contribution to the visual amenity and character of the area, its living crown size/spread, visual appearance including natural form/habit and crown density percentage.

As a rule, a prominent (location) larger and significant subject tree, with good form, habit, density etc will achieve a higher amenity value.

- | | | |
|----|-----------|--|
| 0. | None | Seldom/rarely seen (remote location). |
| 1. | Low | Seen frequently by private owners or adjacent residents. |
| 2. | Medium | Seen by neighbourhood residents and or passers-by. |
| 3. | High | Known locally or seen by many passers-by. |
| 4. | Very High | Of local historical importance or known widely. |

9.6 RETENTION VALUE WITHIN THE LANDSCAPE

The **Retention Values** of the trees have been determined based on the estimated longevity of the individual tree with consideration of its landscape significance rating. Together with recommendations contained within this report the information should be used to determine the most appropriate action for protection, retention of trees considered worthy of preservation and or removal.

Retention Value Rating	Landscape/Environmental Significance						
Estimated Life Expectancy	1- Very High	2- Very High to High	3- High to Moderate	4 - Moderate	5- Moderate to Low	6- Low	7- Nil
HIGH – (H) Greater than 40 Years	High Retention Value			Moderate Retention Value			
MEDIUM- (M) 15 to 40 Years							
LOW – (L) 5 to 15 years	Low Retention Value						
Less than 5 Years							
Dead or Hazardous							

Table 2 Landscape Significance Value

9.7 RISK LEVEL MATRIX- CONSEQUENCES OF EVENT OCCURRING

Occupational Health and Safety Legislation places a “Duty of Care” on individuals and companies to ensure potential hazards and risks regarding tree management are eliminated as best as possible and develop controls for long term tree management.

Whilst a trees overall health may be hard to determine to a “Lay or Common person” there are some visible signs that may flag potential safety concerns including but not limited to; Limb shedding, poor canopy and foliage colour, major deadwood or die-back of out limbs etc.

The Risk Matrix table below involves determining the potential risk verses the probable consequence of exposure to the hazard and the likelihood of the event occurring.

RISK LEVEL MATRIX – CONSEQUENCES OF EVENT OCCURRING					
LIKELIHOOD	Catastrophic (Fatality)	Major (Serious Injury)	Moderate (Medical treatment)	Minor (First Aid)	Insignificant (No Injury)
Almost Certain	E 25	E 23	E 20	H 16	H 11
Likely	E 24	E 21	H 17	H 12	M 7
Possible	E 22	E 18	H 13	M 8	L 4
Unlikely	E 19	H 14	M 9	L 5	L 2
Rare	H 15	H 10	M 6	L 3	L 1

Table 3 RISK LEVEL MATRIX

Risk Levels are;

- E = Extreme** (18 to 25) – Act Now
- H = High** (12 to 17) – ASAP
- M = Moderate** (7 to 11) – Plan, and
- L = Low Risk** (1 to 6) – Review/assess tree annually

9.8 ENVIRONMENTAL ZONE DEFINITIONS

- 1. Landscaped:** Ornamental gardens including managed open lawns, tree/shrub planting.
- 2. Remnant:** Remnant vegetation significant to a local ecological community but managed with hard scaped areas i.e. paved areas, driveways,
- 3. Natural Bushland:** Natural bushland vegetation significant to local and broader ecological Vegetation communities and or identified under the Threatened Species Conservation Act 1995. Natural Bushland can then be defined further subject to ground truthing into the following sub-sections.
 - a) Good.** High-quality vegetation and habitat values,
 - b) Medium.** Good quality vegetation with some introduced weed species, and
 - c) Poor.** Low-quality remnant vegetation, high-level weed infestation (and range of weed species), erosion, limited native habitat, requires site specific Vegetation Management Plan.
- 4. Mapped Environmental Constraint Areas:**

As per Council mapping e.g. Slope constraint ($> 18^\circ$), watercourse buffer, sensitive vegetation buffer, Flora/Fauna significant/buffer as identified on site.

10.0 TREE IDENTIFICATION ASSESSMENT SUMMARY

Risk Matrix	Catastrophic Urgent- Tree requires immediate removal due to WH&S concerns.	Major Tree requires removal as part of development application or due to poor health, structure, and WH&S concerns.	Moderate TPO Exempt due to current removal approval, species, or height requirements.	Low Tree to be retained, protected, and monitored.
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Tree Number	Tree Species Common Name Botanical name	Height (m)	DBH @ 1.4m	DAB (mm)	SRZ Required (m)	TPZ Required (m)	Tree Age * Young * Semi Mature * Mature * Over Mature	Tree Health * Good * Fair * Poor * Dead	Tree Structure * Good * Fair * Poor	SULE Rating	Ecological Significance * High * Medium * Low * Nil	Landscape/ Visual Significance * High * Moderate * Low * Nil	Retention Value * H 40yrs + * M 15 - 40yrs * L 5 to 15ys * Nil Less 5ys * Dead	Arborist Comments
1.	White ash <i>Fraxinus americana</i>	10	200	210	1.8	2.4	Mature	Good	Good	2	Nil	Low	Low to Medium	Based on AS4970-2009 Protection of Trees on Development Sites, this tree is located along the side garden adjoining the existing driveway and it is sufficiently distanced to be safely retained and protected, with no works impacting this tree TPZ/SRZ. This tree will be monitored over various hold points as the development progresses.

2.	Silky Oak <i>Grevillea robusta</i>	15	500	570	2.7	6	Mature	Good	Good	3	Nil	Low	Low to Medium	Based on AS4970-2009 Protection of Trees on Development Sites, this tree is located along the side garden adjoining the existing driveway and is sufficiently distanced to be safely retained and protected, with no works impacting this tree TPZ/SRZ.
3.	Liquidambar <i>Liquidambar styraciflua</i>	14	800	950	3.3	9.6	Mature	Good	Good	3	Nil	Low	Low to Medium	Based on AS4970-2009 Protection of Trees on Development Sites, this tree is located along the side garden adjoining the existing driveway and it is sufficiently distanced to be safely retained and protected. Whilst works appear to be within its SRZ, the existing concrete and ground levels are not to be changed or impacted upon. The raised timber deck is to be on saddles etc, ensuring no impacts this tree TPZ/SRZ and safe retention as per engineers' plans provided
4.	Jacaranda <i>Jacaranda mimosifolia</i>	8	340	600	2.7	6	Mature	Good	Good	3	Nil	Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this tree is located along the side garden adjoining the existing driveway and it is sufficiently distanced to be safely retained and protected, ensuring no impacts this tree TPZ/SRZ and safe retention as per engineers' plans provided.
	Hackberry (4a) <i>Celtis australis</i>	5	140	290	1.9	3	Mature	Good	Good	3B	Nil	Nil	Nil	
	Adjoining trees													

5.	Mock Orange <i>Murraya paniculata</i>	2	M/T	250	N/A	N/A	Mature	Good	Good	5	Nil	Nil	Nil	No, minor shrub is TPO Exempt as defined in Woollahra Council DCP, Chapter E3 Tree Management 2015, being less than 5m in height and it does not meet the definition of a prescribed trees in Section E3.2.1 and may be removed without further consideration.
6.	African Olive <i>Olea europaea subsp. cuspidata</i>	8	M/T	400	N/A	N/A	Mature	Good	Good	3B	Nil	Nil	Nil	No, tree is TPO Exempt as defined in Woollahra Council DCP, Chapter E3 Tree Management 2015, being a noxious environmental weed as definition Section E3.4.1 and may be removed without further consideration.
7.	Lilly Pilly <i>Acemena smithii</i> Adjoining tree	8	260	270	2	3.2	Mature	Good	Good	3	Nil to Low	Low	Low	Yes, based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is located on the high side of the common boundary retaining wall and it is sufficiently distanced to be safely retained, protected, with no works impacting this tree.

8.	Crepe Myrtle <i>Lagerstroemia indica</i>	3.5	180 200	260	N/A	N/A	Mature	Good	Good	5	Nil	Nil	Nil	No, minor shrub is TPO Exempt as defined in Woollahra Council DCP, Chapter E3 Tree Management 2015, being less than 5m in height and it does not meet the definition of a prescribed trees in Section E3.2.1 and may be removed without further consideration.
9.	Crepe Myrtle <i>Lagerstroemia indica</i>	2.5	M/T	260	N/A	N/A	Mature	Good	Good	5	Nil	Nil	Nil	No, minor shrub is TPO Exempt as defined in Woollahra Council DCP, Chapter E3 Tree Management 2015, being less than 5m in height and it does not meet the definition of a prescribed trees in Section E3.2.1 and may be removed without further consideration.
10.	Claret Ash <i>Fraxinus oxycarpa</i> 'Raywoodii' Adjoining tree	9	290	300	2	3.5	Mature	Good	Good	2	Nil	Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is located on the high side of the common boundary retaining wall and it is sufficiently distanced to be safely retained, protected, with no works impacting this tree.

11.	Crepe Myrtle <i>Lagerstroemia indica</i> Adjoining tree	5	M/T	300	2	3.5	Mature	Good	Good	5	Nil	Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is located on the high side of the common boundary retaining wall and it is sufficiently distanced to be safely retained, protected, with no works impacting this tree.
12.	Lilly Pilly <i>Acemena smithii</i> Adjoining tree	4	M/T	300	2	3.5	Mature	Good	Good	5	Nil	Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is located on the high side of the common boundary retaining wall and it is sufficiently distanced to be safely retained, protected, with no works impacting this tree.
13.	Hackberry <i>Celtis australis</i> Adjoining tree	6	190	200	1.9	2.4	Mature	Good	Good	3B	Nil	Nil to Low	Nil to Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is sufficiently distanced to be safely retained, protected, and managed with no works proposed within its SRZ and any works within its TPZ will be hand dug as required to ensure no impacts to this adjoining tree.

14.	Hackberry <i>Celtis australis</i> Adjoining tree	9	300	320	2.4	4.2	Mature	Good	Good	3B	Nil	Nil to Low	Nil to Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is sufficiently distanced to be safely retained, protected, and managed with no works proposed within its SRZ and any works within its TPZ will be hand dug as required to ensure no impacts to this adjoining tree.
15.	Hackberry <i>Celtis australis</i> Adjoining tree	9	480	600	2.7	5.8	Mature	Good	Good	3B	Nil	Nil to Low	Nil to Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is sufficiently distanced to be safely retained, protected, and managed with no works proposed within its SRZ and any works within its TPZ will be hand dug as required to ensure no impacts to this adjoining tree.
16.	Guava fruit trees <i>Psidium guajava</i> Adjoining tree	2	M/T	20	1.8	2	Mature	Good	Good	5	Nil	Nil	Nil	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining exempt fruit tree is sufficiently distanced to be safely retained, protected, with no works impacting this tree.

17.	European/table Olive <i>Olea europaea</i>	6	M/T	250	2	3	Mature	Good	Good	3	Nil	Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this site fruit tree is sufficiently distanced to be safely retained, protected, with no landscaping works impacting this trees retention.
18.	European/table Olive <i>Olea europaea</i>	6	M/T	250	2	3	Mature	Good	Good	3	Nil	Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this site fruit tree is sufficiently distanced to be safely retained, protected, with no landscaping works impacting this trees retention.
19.	Plum Pine <i>Podocarpus elatus</i> Council Street Tree	2	50	80	1.8	2	Mature	Good	Good	3	Nil	Low to Moderate	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this Street tree is sufficiently distanced to be safely retained, protected, with no works impacting this tree safe retention.
20.	Lilly Pilly <i>Acemena smithii</i>	4	M/T	200	1.8	2.2	Mature	Good	Good	5	Nil	Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is located on the high side of the common boundary retaining wall and it is sufficiently distanced to be safely retained, protected, with no works impacting this tree.

21.	Lilly Pilly <i>Acemena smithii</i> And Spartan Conifers <i>Juniperus chinensis</i> 'spartan'	4	150	1.9	2.7	2.3	Mature	Good	Good	3	Nil to Low	Nil to Low	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this screening hedge is sufficiently distanced to be safely retained, protected, with no landscaping works impacting this trees retention.
		4	200	1.9	1.9	2.7	Mature	Good	Good	3	Nil	Low	Low	
22.	Camphor laurel <i>Cinnamomum camphor</i> Council Street Tree	14	1.4	1.5	4	15	Mature	Fair to Poor	Poor	4C	Nil	Moderate	Nil	Council street tree is sufficiently distanced to be unaffected by the proposed works, however, it is in poor health with noted reduced canopy and in major decline. This tree should be monitored annually.
23.	Broad Leaved paperbark <i>Melaleuca quinquenervia</i> Adjoining Tree	8	290	300	2	2.9	Mature	Good	Good	2	Low	Low to Moderate	Low	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining tree is sufficiently distanced to be safely retained, protected from considered construction vehicles, however, minor correctional pruning of some lower and overhanging scaffold limbs may require pruning back to the collar or growth point by project arborist.

24.	Happy Plant <i>Dracaena marginata</i>	2	M/T	250	1.8	2	Mature	Good	Good	5	Nil	Nil	Nil	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining ornamental tree/shrub. tree is sufficiently distanced to be safely retained, protected from considered construction vehicles, with no further protection works required.
25.	Cocos Palm <i>Syagrus romanzoffiana</i> Adjoining Palm Tree	9	240	260	1.8	2.9	Mature	Good	Good	3B	Nil	Nil	Nil	Based on AS4970-2009 Protection of Trees on Development Sites, this adjoining palm tree is sufficiently distanced to be safely retained, protected from considered construction vehicles, with no further protection works required.
26.	Leyland Cypress x 9 <i>Cupressocyparis leylandii</i> Group Screen Planting along driveway	3.5	M/T	250	N/A	N/A	Mature	Good	Good	5	Nil	Nil	Nil	No, minor planted shrubs are listed as E3.4.1 Noxious weeds and exempt species as defined in Woollahra Council DCP, Chapter E3 Tree Management 2015, being less than 5m in height and it does not meet the definition of a prescribed trees in Section E3.2.1 and may be removed without further consideration.

27.	Camellia <i>Camellia japonica</i>	2	M/T	250	N/A	N/A	Mature	Good	Good	5	Nil	Nil	Nil	No, minor planted shrub is TPO Exempt as defined in Woollahra Council DCP, Chapter E3 Tree Management 2015, being less than 5m in height and it does not meet the definition of a prescribed trees in Section E3.2.1 and may be removed without further consideration.
28.	Camellia <i>Camellia japonica</i>	2	M/T	250	N/A	N/A	Mature	Good	Good	5	Nil	Nil	Nil	No, minor planted shrub is TPO Exempt as defined in Woollahra Council DCP, Chapter E3 Tree Management 2015, being less than 5m in height and it does not meet the definition of a prescribed trees in Section E3.2.1 and may be removed without further consideration.

Figure 4 Shows a list of trees observed and assessed in relation to this application by a Qualified Horticulturist and AQF Level 5 Arborist (Dip Arb)





LOWER GROUND FLOOR
1:100

No. 67
RENDERED HOUSE
TILE ROOF

LEGEND

- existing walls to be retained
- existing walls to be demolished
- existing structures to be demolished

NOTES

1. Consultation with the client has resulted in the following changes to the plan:
2. The client has requested the following changes to the plan:
3. The client has requested the following changes to the plan:
4. The client has requested the following changes to the plan:
5. The client has requested the following changes to the plan:
6. The client has requested the following changes to the plan:
7. The client has requested the following changes to the plan:
8. The client has requested the following changes to the plan:
9. The client has requested the following changes to the plan:
10. The client has requested the following changes to the plan:

REVISION NOTE

NO.	REVISION	DATE	BY	CHK
1	ISSUED FOR TENDERS	10/10/2017	AM	AM
2	REVISED PLAN	10/10/2017	AM	AM
3	REVISED PLAN	10/10/2017	AM	AM
4	REVISED PLAN	10/10/2017	AM	AM
5	REVISED PLAN	10/10/2017	AM	AM
6	REVISED PLAN	10/10/2017	AM	AM
7	REVISED PLAN	10/10/2017	AM	AM
8	REVISED PLAN	10/10/2017	AM	AM
9	REVISED PLAN	10/10/2017	AM	AM
10	REVISED PLAN	10/10/2017	AM	AM

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8	REVISED PLAN	10/10/2017	AM	AM
9	REVISED PLAN	10/10/2017	AM	AM
10	REVISED PLAN	10/10/2017	AM	AM

MOSTAGHIM

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p. 02 9557 2002

PROJECT
ALEX THORPE

PROJECT ADDRESS
65 BEREFORD STREET BELLEVUE HILL
SYDNEY NSW 2023

PROJECT TYPE
THORPE RESIDENCE

EXISTING / DEMOLITION LOWER GROUND FLOOR PLAN

LEGEND

- existing walls to be retained
- existing walls to be demolished
- existing structures to be demolished

NOTES

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p. 02 9557 2002

PROJECT
ALEX THORPE

PROJECT ADDRESS
65 BEREFORD STREET BELLEVUE HILL
SYDNEY NSW 2023

PROJECT TYPE
THORPE RESIDENCE

EXISTING / DEMOLITION LOWER GROUND FLOOR PLAN

LEGEND

- existing walls to be retained
- existing walls to be demolished
- existing structures to be demolished

NOTES

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5	REVISED PLAN	10/10/2017	AM	AM



HORTICULTURAL
Management Services

12.2 TREE MANAGEMENT PLAN (TMP) FOR RETAINED TREES

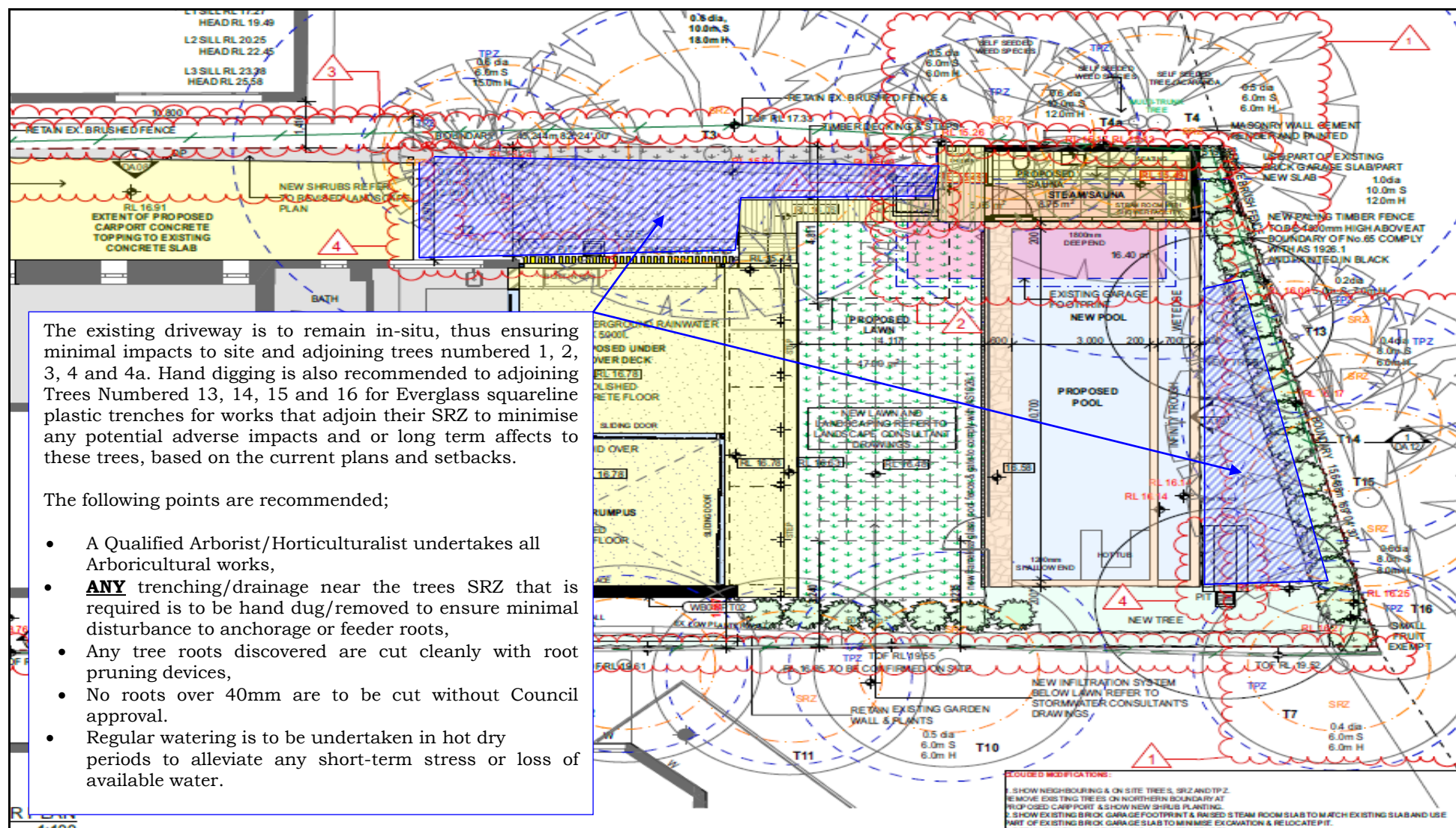


Figure 8 Shows areas considered to be hand dug and or managed to ensure tree retention.

12.3 TREE PROTECTION AND STRUCTURAL ROOT ZONES FOR SITE AND ADJOINING TREES

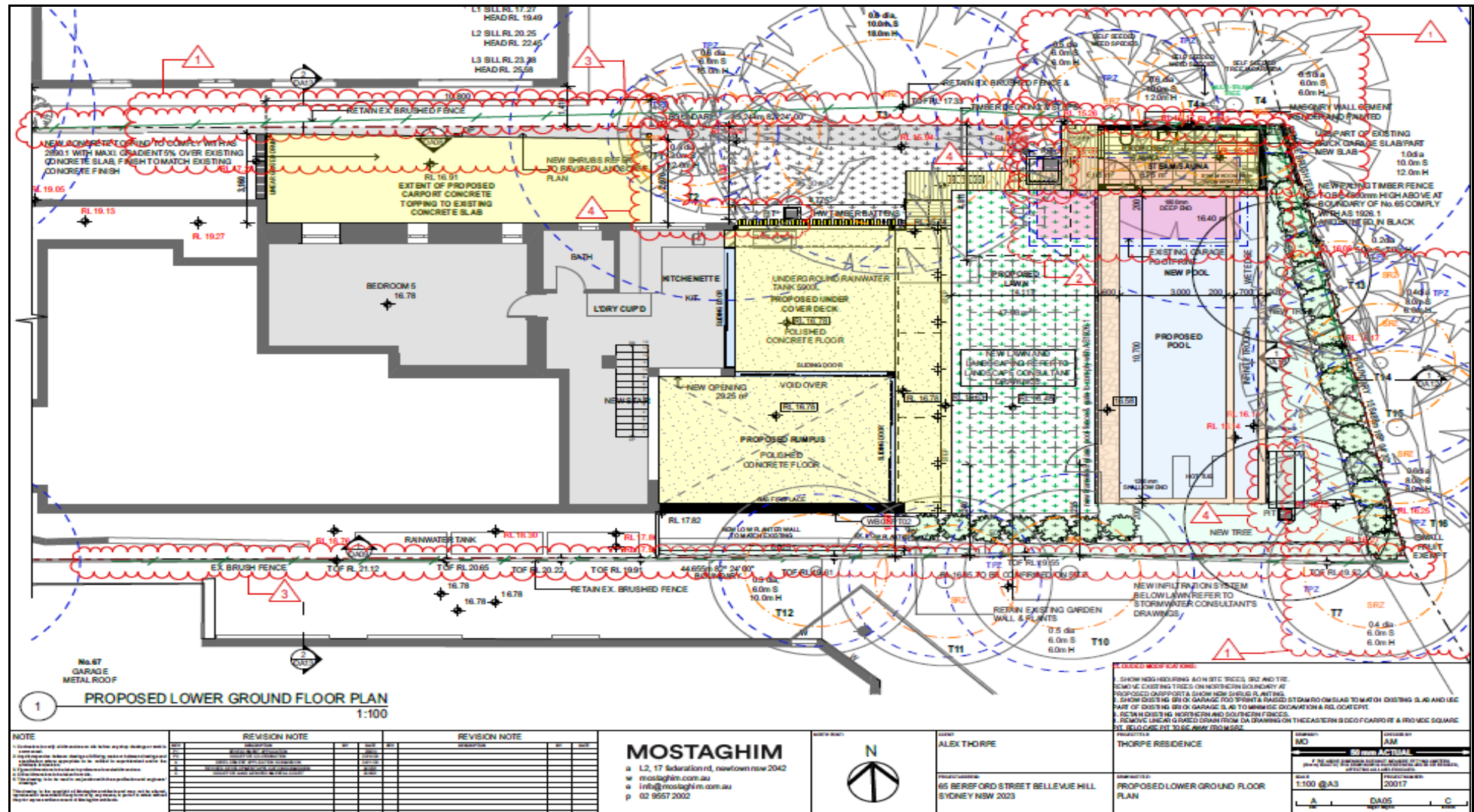


Figure 9 Site and adjoining trees TPZ and SRZ ensure minimal impacts to these trees based on best practice.

12.4 TREE MANAGEMENT PLAN (TMP) – SCAFFOLD ERECTION TO PROTECT TREES NUMBERED 1, 2 AND 3

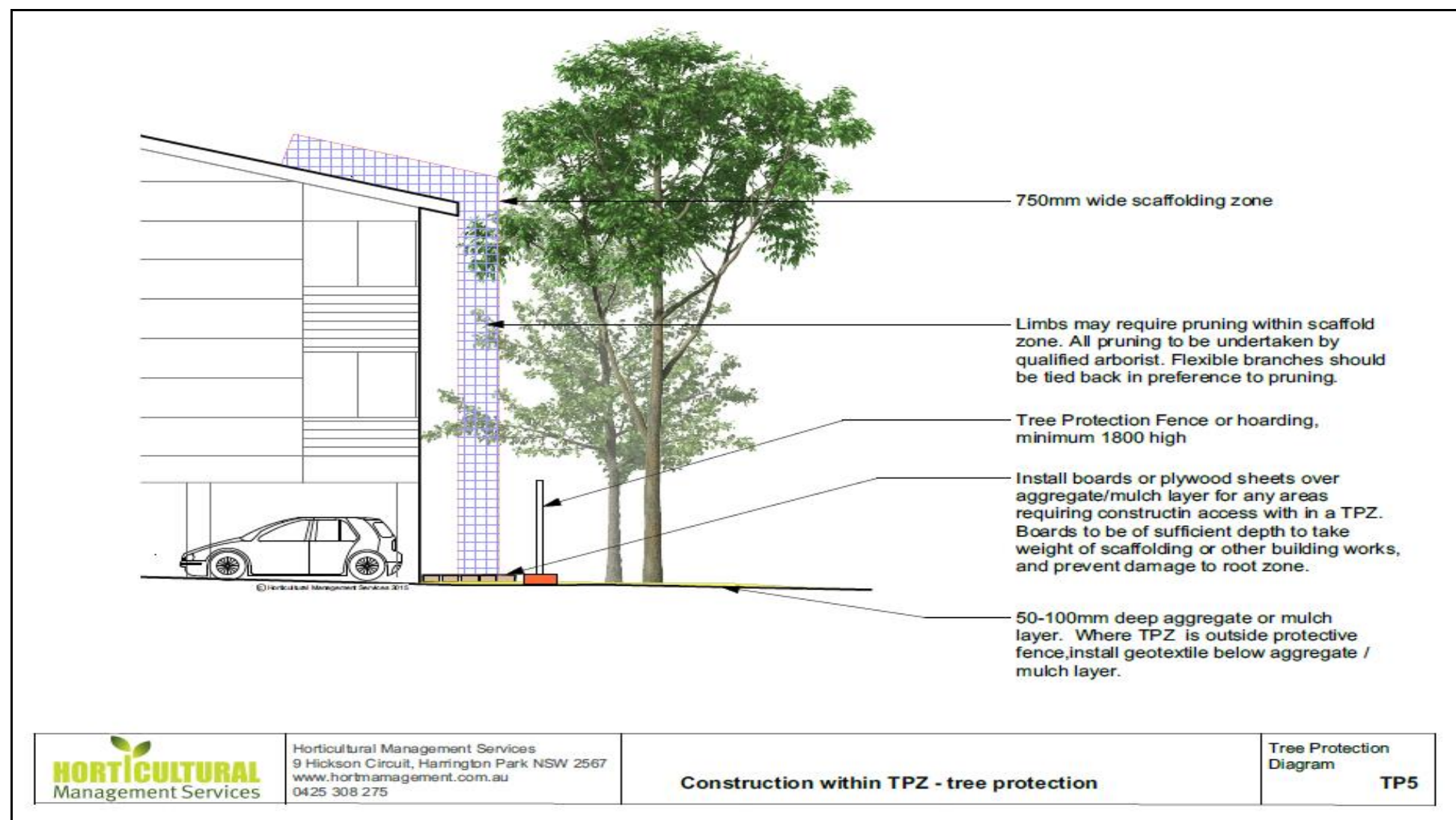


Figure 10 Shows considered scaffold erection if or as required.

12.5 TREE MANAGEMENT AND CROSS SECTION FOR TREES, 1, 2 AND 3

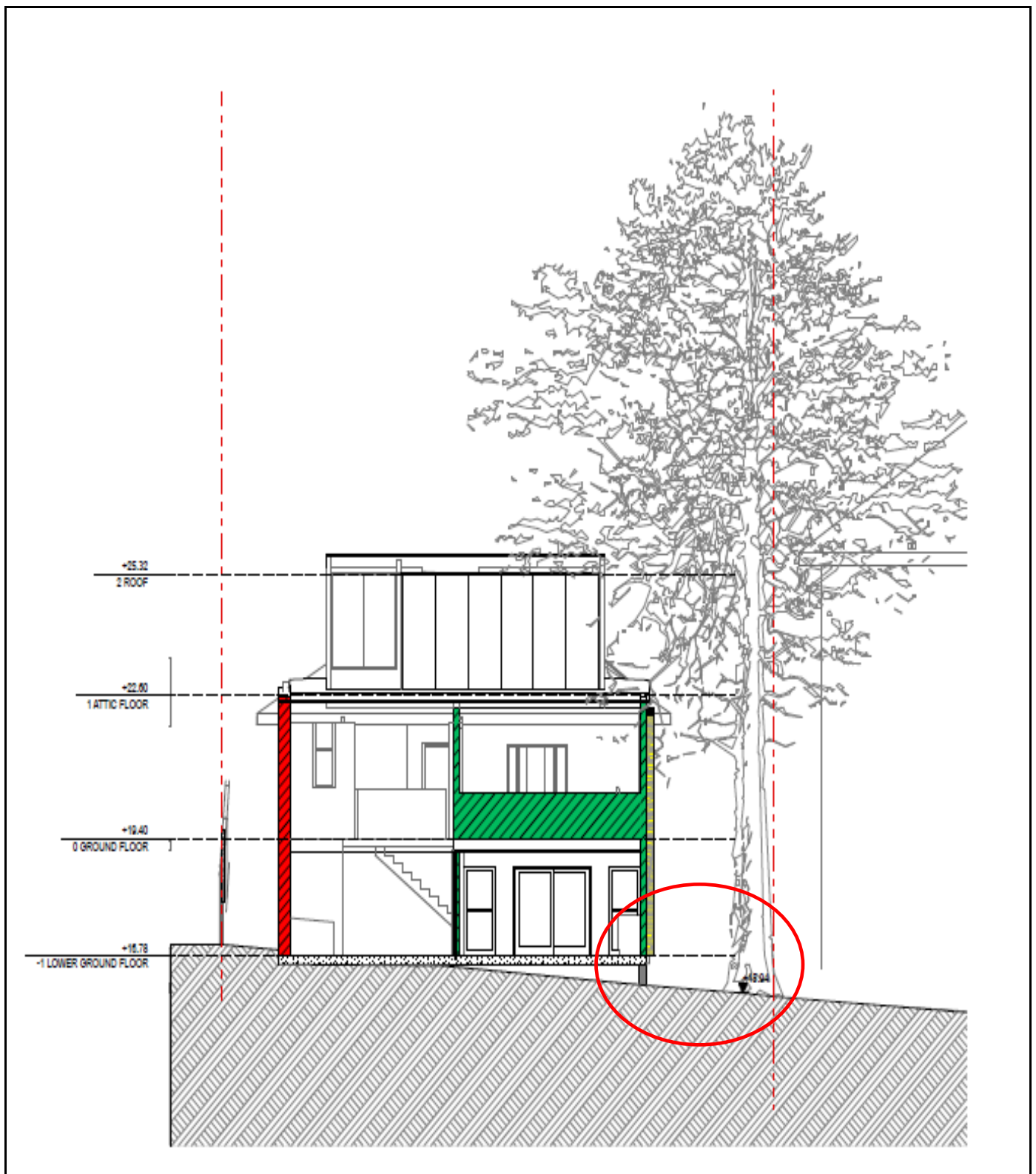


Figure 11 Shows the cross section for tree 1, 2 and 3, noting no changes in existing ground levels for the proposed building extensions and timber deck works. Existing concrete is to remain and be unaffected by these works, with the exempt of required drainage lines that will be cut, and concrete removed by hand to ensure no impacts to site or adjoining trees.

13.0 SITE PHOTOGRAPHS



Figure 12 Shows an adjoining Paperbark tree which may require minor branch removal/pruning of limbs around 40mm for delivery access.



Figure 13 Shows Leylandii Conifers, that are TPO Exempt species that are recommended to be removed and replaced with an appropriate species.



Figure 14 Shows Trees 1, 2 and 3 not impacted from the proposed works.



Figure 15 Shows Tree 3 and existing concrete slab levels to remain unchanged and In Situ with the exempt for minor stormwater drainage line installations.



Figure 16 Shows Tree 3 with the existing driveway that is recommended to be removed from around the base of the tree to allow for future growth.



Figure 17 Shows adjoining Trees 4 and 4a being self-seeded Hackberry and Jacaranda trees within the existing retaining wall.



Figure 18 Shows Tree 5 being minor Mock Orange and Bird of Paradise.



Figure 19 Shows the rear Tree 6 being an Exempt African olive to be removed.



Figure 20 Shows Tree 7 located on the high side of an existing retaining wall



Figure 21 Shows minor Trees 8 and 9 that may be removed and replaced.



Figure 22 Shows adjoining Trees 10, 11 and 12 sufficiently distanced to be retained and protected being on the high side of the retaining wall, thus in impacts to the trees SRZ is proposed and anticipated.



Figure 23 Shows again Tree 6 with minor trees to be removed.



Figure 24 Shows adjoining Celtis, sufficiently distanced and unimpacted.



Figure 25 Shows Tree 16 a minor fruit tree, sufficiently distanced to be unaffected by these works.

14.0 RETENTION OF SITE AND ADJOINING TREES 1, 2, 3, 4, 4a, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 AND 25 (General Overview)

The following points may be considered for the long-term retention of trees under this application.

- Avoid large changes to the surface structure due to modification of the tree's moisture / surface feeding roots,
- A Qualified Arborist/Horticulturalist undertakes all Arboricultural works,
- All trenching near the trees as required is to be hand dug to ensure minimal disturbance to additional surface feeding roots,
- Any tree roots discovered are cut cleanly with root pruning devices,
- Vertical deep watering points for stressed mature trees if or as required,
- Air-knife treatments, to alleviate soil compaction where trees are suffering stress, and to inspect tree root structures and growth patterns,
- Any proposed work located near the trunk or outer canopy of the trees drip line, where services are known to be in the vicinity, any excavation for services should be hand dug to ensure minimal impact to the trees surface feeding and support roots,
- Any tree roots that are exposed will be removed by approved Arboricultural techniques and have a root hormone i.e. Formula 20® or equivalent applied at the manufacture's specification,
- Any trenches undertaken near tree drip zones will be backfilled and compacted with an approved Australian Standard orchid mix 60/40 containing washed river sand and peat moss to a minimum depth of 700mm, the remaining soil profile is to be filled with an approved topsoil to meet the existing soil surface,
- No building waste is to be disposed of/or stored near the tree trunk or drip zone,
- To ameliorate impact of any development, advanced plants may be used in the Landscape Master Plan,
- Plantings should take into consideration the high priority of the streetscape and visual amenity,
- Any vegetation removed during the development is not mulched and used in landscaping due to the high levels of weed infestation on the site and the likelihood that seeds, and viable cuttings may be spread throughout the development,
- To ameliorate impact of any development, standard erosion and sediment controls are recommended,
- The trees drip line/zone is to be mulched to the Horticultural standard of 75mm,
- Regular watering is to be undertaken in hot dry periods to alleviate any short-term stress or loss of available water,
- Erection of a chain mesh safety fence be installed to ensure the protection of Trees Critical Root Zone as per Annexure B,
- A qualified Arborist should monitor these trees over a twelve (12) month period to evaluate the trees recovery and provide technical information to Council as required.

15.0 SENSITIVE CONSTRUCTION APPROACH FOR SITE AND ADJOINING TREES

Where works are unavoidable within the Tree Protection Zone (TPZ) and or Structural Root Zone (SRZ) of trees to be retained, the following should be considered, but not limited to;

- Minimise the direct and indirect impacts to tree roots and soil such as root severance or damage, soil excavation, compaction, and contamination,
- Allow for the free movement of water and oxygen within the soil of the TPZ,
- Allow for future rooting area adjacent to the TPZ,

Where the placement of footings within the SRZ cannot be avoided, root sensitive footing systems should be considered i.e. Terrabond®, Rocla Tri hex® paver or Eco paver® series would be sufficient to allow surface moisture and air into both trees surface feeding zone. These footings systems are minimal in their need for excavation by comparison to strip footings.

Footing systems such as pier and beam, screw pile and waffle slab have the potential to reduce the impact on trees by retaining sections of soil and roots between the piers.

To achieve the most benefit from this type of construction, the following is recommended;

- Discontinuous footings should be used within the SRZ of the subject tree. (Standard footing design could be used outside this area),
- All beams should be above the natural soil grade/surface,
- The footing design should allow for the greatest achievable span between Piers (as per engineer's specifications/advice),
- Piers should not be placed within the Root Plate Radius of the subject tree,
- Foundations for the proposed piers should be initially hand dug to a depth of 500mm or to rock. If any roots are found that are greater than 40mmø, the pier position should be relocated, subject to engineer's advice,
- The proposed excavations should not result in the severance of roots greater than 40mmø,
- Care should be taken to avoid soil compaction between piers and any drilling machinery should remain outside the Tree Protection Zone. If access within the Tree Protection Zone by machinery cannot be avoided, appropriate compaction control methods should be used,
- Consider the type of equipment that will be used to drill holes for the piers and the clearance/tolerance requirement under the subject tree's canopy,
- These construction methods may require the implementation of post-construction maintenance such as irrigation and mulching. This would assist in minimising the potential impacts on tree health by providing favourable environment conditions for continued root growth and development.

Where achievable, pedestrian / vehicular access ways should be constructed of a semipermeable material (as listed above) and placed above grade to minimize the need for excavation. The strength of the pavement shall be selected to reduce the reliance on sub-base for strength.

Where appropriate, hand excavation and root pruning should be undertaken along the length of excavations adjacent to SRZs prior to any machine construction work. Major roots (greater than 40mmø) should not be severed or damaged. Minor roots

(less than 40mmø) to be pruned should be cleanly severed.

16.0 PRE-CONSTRUCTION TREE PROTECTION MEASURES

16.1 APPOINTMENT OF SITE ARBORIST

A Site Arborist shall be appointed prior the commencement of all works on- site.

The Site Arborist shall monitor the trees to be retained and supervise the tree protection measures. The Site Arborist shall have a minimum qualification equivalent (using the Australian Qualifications Framework) of NSW TAFE Certificate Level 5 or above in Arboriculture. An allowance of Five-(5) working days' notice to allow inspections to be undertaken at the following stages would be considered standard practice.

INSPECTION/HOLD POINT	INSPECTION PERSONNEL
Identification of retained trees and installation of tree protection zone including protection fencing, silt fencing and appropriate signage.	Site Arborist to undertake with Site Supervisor.
Modification of the Tree Protection Zone if or as required.	Site Arborist to undertake with Site Supervisor.
Works within the Tree Protection Zone if or as required.	Site Arborist to undertake with Site Supervisor.
Completion of the construction works (Post Construction) and final inspection/sign off.	Site Arborist to undertake with Site Supervisor.

16.2 EDUCATION

The project development applicant, contractors and site workers shall receive a copy of the final/Council approved Arborist Assessment and specifications with a minimum of 3 working days prior to commencing work on-site. Contractors and site workers undertaking works within the Tree Protection Zones shall sign the site log confirming they have read and understand these specifications, prior to undertaking works on-site.

16.3 SITE WORKS TREE PROTECTION ZONES

The trees identified to be retained shall be protected prior to and during the construction process from activities that may result in an adverse effect on its health, structure, or longevity.

The area within the Tree Protection Zone shall exclude the following activities, unless otherwise stated and or approved by Council/Consent Authority;

Modification of existing soil levels,
Excavations and trenching,
Cultivation of the soil,
Mechanical removal of vegetation,
Soil disturbance,
Movement of natural rock,
Storage of materials, plant, or equipment,
Erection of site sheds,

Affixing of signage or hoarding to the tree,
Preparation of building materials,
Disposal of waste materials and chemicals,
Movement of pedestrian or vehicular traffic,
Temporary or permanent location of services,

16.4 TREE PROTECTION FENCING

Tree Protection Fencing shall be installed at the perimeter of the Tree Protection Zone as specified.

As a minimum, the Tree Protection Fence shall consist of 1.8m high temporary chain wire panels supported by steel poles/stakes. They shall be fastened together and supported to prevent sideways movement. The fence must have a lockable opening for access. The tree's woody roots shall not be damaged during the installation of the Tree Protection Fencing.

Shade cloth material shall be attached to the outer surface of the Tree Protection Fence. The shade cloth material shall be transparent to provide visibility into the Tree Protection Zone.

The Tree Protection Fence shall be erected prior to the commencement of works on-site and shall be maintained in good condition for the duration of the development period.

The Tree Protection Fence shall only be removed, altered, or relocated with the authorization from the Site Arborist in consultation with the Site Supervisor.

16.5 SIGNAGE

Tree Protection Signage shall be attached to the Tree Protection Zone and displayed in a prominent position on each tree protection fencing.

The signs shall be repeated at 10m intervals or closer where the fence changes direction. The signage shall be installed prior to the commencement of works on-site and shall be maintained in good condition for the duration of the development period.

The lettering for each sign shall be a minimum 72-point font size. The signs shall be a minimum size of 600 x 500mm. The lettering on the sign should comply with AS 1319. Each sign shall advise the following details;



- This fence has been installed to prevent damage to the tree and its natural environment. **Access is restricted.**
- If access, encroachment, or incursion into this Tree Protection Zone is required, prior authorisation is required by the Site Arborist.
- Name, address, and telephone number of the firm.

Source AS 4970-2009 Protection of trees on development sites

16.6 SILT FENCING, SEDIMENT CONTROL AND SOIL EROSION

To protect the sites habitat from soil erosion, an approved sedimentation control fence should be erected prior to the construction process.

The purpose of the silt fencing and sediment control is to ensure that no soil material (erosion) enters or leaves the building site into Tree Protection Zones or any nearby dams or creeks etc. Silt fence shall be installed parallel to the contours in the area immediately above the Tree Protection Zone. The silt fence shall be installed by securing geo-fabric to secure post fencing.

The post pickets shall be placed at 200mm below existing soil surface. Any sedimentation barrier used is to remain in place for a minimum of 12 weeks after practical completion and can be removed after this time provided, plant growth, health; density and condition have been noted by the Site Arborist.

A hay/straw bale shall be placed up slope from the silt fence and secured with timber stakes. The bottom of the geo-fabric shall be folded underneath the hay/straw bale.

To allow for the maintenance of both the Tree Protection Fence and the silt fence, the two- (2) fences shall be constructed separately and stand independently of each other. The silt fence shall be erected prior to the commencement of works on-site and shall be maintained in good condition for the duration of the development period.

It should be noted that the installation of silt fences as part of this Tree Protection Plan are not erosion and sediment control measures for the development.

The method and type of barrier is to be directed by Council and or as identified in EPA Guidelines, which covers the recently revised document "**Managing Urban Storm water: Soil and Construction Vol.1 (4th Edition)**" (also referred to as the "**Blue Book**"). The Blue Book covers a range of technical and management issues relating to erosion and sediment control in urban development (including standard drawings).

In addition, contractors must refrain from including but not limited to doing any of the following activities within or adjoining the tree protection zones.

- Stockpiling of soils, rubble, or other materials,
- Placement of a site office or shed,
- Mixing materials,
- Parking of construction machinery or other vehicles,
- Repairing machinery and or re-fuelling,
- Lighting of fires,

The Site should be left in a clean and tidy manner ensuring suitable mulch cover is applied within the trees drip zone prior to the sedimentation barrier removed.

17.0 SITE MANAGEMENT OF RETAINED TREES

17.1 MATERIALS STORAGE

No materials shall be stored or located within the specified Tree Protection Zone.

A silt fence shall be installed down slope of any storage points. Storage points (where applicable) shall be covered when not in use. An appropriate Environmental spill kit shall always be on site for any unlikely spillages.

17.2 WASTE STORAGE

Waste storage shall not be located within the specified Tree Protection Zone.

A silt fence box style collection point shall be installed down slope from any waste/rubbish collection point. All rubbish shall be stored to prevent material loss caused by wind and or water. Skip bins shall be covered when not in use.

All debris collected should be removed from the site and disposed of in an authorized waste management facility. Natural debris such as logs, and rocks may be left as wildlife habitat provided it does not present a safety hazard or become an obstruction. In such cases, it should be appropriately re-arranged and or secured.

Site sheds shall not be located within the specified Tree Protection Zone for any reason.

18.0 TREE PROTECTION MEASURES FOR CONSTRUCTION PROCESS

18.1 SITE ACCESS

Pedestrian and vehicular movement shall not occur within any section of the specified Tree Protection Zone.

18.2 TEMPORARY SERVICES

Temporary services i.e. water, electricity, sewer shall not be located within any section of the Tree Protection Zone, for any purpose.

18.3 WORKS WITHIN THE TREE PROTECTION ZONE

The Tree Protection Zone may need to be modified during the construction process to allow access between the tree to be retained and the construction works.

The Tree Protection Zone shall remain intact as specified and approved by Council until these works are to project completion. If access, encroachment, or incursion into the Tree Protection Zone is deemed essential, prior authorization is required by the Site Arborist.

The modification of the Tree Protection Zones may necessitate the dismantling of sections of the Tree Protection Fencing in the short term as part of the construction process. The Tree Protection Fence shall only be removed, altered, or relocated with the authorization of the Site Arborist in writing.

18.3.1 TREE TRUNK PROTECTION WORKS

Where deemed necessary by the Site Arborist, trunk protection shall be provided. Trunk protection may vary subject to the scope of works, trees age, height, and environmental conditions. For semi mature to mature trees shall be installed by wrapping around two-(2) layers of carpet underlay or similar around the trunk to a minimum height of 2m or were the lower scaffold branches allow.

The trunk shall further be protected with 2m lengths of timbers (75 x 50 x 200mm) spaced at 100mm centres, secured by wire rope. The wire rope shall not be fixed to the tree in any way.

18.3.2 TREE BRANCH PROTECTION WORKS

Where deemed necessary by the Site Arborist, branch protection shall be provided. Branch protection shall be installed by wrapping around two-(2) layers of carpet underlay or similar around the branch, secured by wire rope.

The wire rope shall not be fixed to the tree in any way.

18.3.3 ROOT PRUNING AND EXCAVATION WORKS

Minor roots (less than 40mm in diameter) to be pruned shall be cleanly severed with sharp, sterilised pruning implements. Hessian material shall be placed over the face of the excavation. Exposed roots shall be kept in a moist condition during the construction phase.

The main area for surface feeding roots to occur is from the tree trunk to the outer canopy known as the drip zone. These fibrous roots are less likely to occur under or near other buildings, as there is little surface moisture or soil air presence for root survival. These fibrous roots are those that take up water and nutrients.

While some tree roots will deeply penetrate the soil profile, in search of available water, most will occupy the first 60-70cm of the soil, as to obtain the needed sustenance. At times, it will not be possible to retain the optimum TPZ around each tree and any activities proposed within this area must be carefully analysed to minimise any effects on its health and/or stability.

The actual spread of the root system is largely dependent on the species involved, and their localised environment. Any work carried out within the Tree Protection Zone should be reviewed and supervised by the engaged Site Arborist.

Construction works proposed to be undertaken around the trees if not correctly assessed may modify the natural water table and reduce the amount of soil air and moisture present/available to the trees and their longevity may be greatly diminished.

If under the course of construction, the tree roots are damaged or adversely affected, their demise will cause drought stress; poor uptake of water and nutrients, slower dispersal of gums and resins and could, in the long term, influence the movement of certain compounds which make up the structure of the tree. Where major roots (greater than 40mmø) are encountered during excavations, further advice from the Site Arborist shall be sought prior to any pruning. Certain instances may require hand digging to ensure the trees health and overall stability.

18.3.4 TREE DAMAGE DURING WORKS

In the event of the tree that is to be retained becoming damaged during the development period, the Site Arborist shall be informed to inspect and provide advice on remedial action if or as required.

18.3.5 COMPLETION OF WORKS WITHIN TREE PROTECTION ZONE

Upon completion of the works within the Tree Protection Zone, the Tree Protection Fencing shall be shall erected until site machinery, sheds, storage facilities are removed.

Where the construction of new structures does not provide sufficient area for the specified Tree Protection Zone, the Tree Protection Zone shall be modified by the Site Arborist prior to any works commencing and be documented.

18.4 SOIL PROTECTION WORKS

Where deemed necessary by the Site Arborist, the ground surface within the Tree Protection Zone shall be protected by laying geo-textile over the existing mulch cover.

Large diameter (up to 70mm) recycled railway ballast (basalt) shall be placed over the geo-textile material to a depth of 100mm.

The soil layers shall not be inverted during the excavation works and topsoil shall be stockpiled on site for use in the landscape works. However, it is expected that stringent controls are imposed and implemented to minimise adverse impacts on the soil. These should be site specific and are beyond the scope of this report.

18.5 PEST AND DISEASE MONITORING

All plants should be monitored for pest and disease every two weeks as part of the programmed site inspections. Insecticide is not recommended for native plant species unless the problem becomes severe.

Most native plants will re-shoot after insect predation has passed.

18.6 MONITORING

The Site Arborist shall monitor the site fortnightly throughout the development period to ensure these specifications are maintained.

A site log shall record the details of the site inspections for review by the Principal Certifying Authority prior to the release of the Compliance/Occupation Certificate.

Any changes to the proposed design or through development on site will require additional arboricultural assessment.

The applicant/contractor shall complete all works tabled in this Arborist Assessment in accordance with this program as agreed with, any variations are to be formally submitted to the Site Arborist and or Certifying Authority for approval.

The work shall be deemed 'practically complete' when all works have been completed to the satisfaction of the Contractor and Certifying Authority.

19.0 POST CONSTRUCTION MAINTENAINCE PROCESS

Upon the completion of construction works, a final assessment of the tree(s) shall be undertaken by the Site Arborist in consultation with the Site Supervisor. Items to be inspected and addressed shall include but not limited to;

- Tree Protection Zone measures, (*where they adequate*)
- Any damage to the tree's root system, (*if applicable*)
- Any visible damage to the tree's trunk, branches, or canopy, (*if applicable*)
- Any changes in levels, soil structure, erosion, or loss of organic matter, (*if applicable*)
- Changes to wind loading in the crown through pruning requirement and effects of new structures, (*if applicable*)
- Pest and disease infestation, (*if observed*)
- Drought stress,
- Requirement for decompaction works, (*if applicable*)
- Requirement for further pruning works, (*if required*)
- Requirement for ongoing maintenance such as watering, mulching.

20.0 CONCLUSION

The trees which are subject of this report are protected under Woollahra Council Tree Preservation Order.

Consideration of retaining mature significant vegetation to the area was paramount. After close visual and physical investigation of the various trees condition the results from field investigations are as follows;

Tree Number 5, 6, 8, 9, 26 (Group screen hedge), 27 and 28 are TPO Exempt species due to height requirements (less than 5m), that may be removed without further consideration.

Site and adjoining trees numbered 1, 2, 3, 4, 4a, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25 are sufficiently distanced to be retained with no considered adverse impacts anticipated to these trees based upon their separation distance, existing concrete driveway to be left In-situ and best practice arboricultural techniques tabled that will ensure no impacts to the TPZ and or SRZ.

Furthermore, based on the proposed layout, access, considered construction requirements within the tree's present location and hand digging tabled there is no considered impacts to Trees numbered 1, 2 and 3.

Whilst works appear to be within various trees TPZ/SRZ, the retention of existing concrete and ground levels that are not to be changed or impacted upon. The raised timber deck is to be on saddles etc, ensuring no impacts this tree TPZ/SRZ and safe retention as per engineer's plans provided.

As stated, this tabled report is a snapshot of the existing trees structural condition, health and condition at that point in time on site and should be used as a guide when assessing this Development Application.

In summary, there are no unforeseen tree/vegetation issues that would arise out of the proposed development that would require modification to the proposal.

21.0 RECOMMENDATIONS

After close visual and physical investigation of the trees condition (VTA) the results from the field investigations indicated the following;

Tree Number 5, 6, 8, 9, 26 (Group screen hedge), 27 and 28 are TPO Exempt species due to height requirements (less than 5m), that may be removed without further consideration.

Site and adjoining trees numbered 1, 2, 3, 4, 4a, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25 are sufficiently distanced to be retained with no considered adverse impacts anticipated to these trees based upon their separation distance, existing concrete driveway to be left In-situ and best practice arboricultural techniques tabled that will ensure no impacts to the TPZ and or SRZ.

Whilst works appear to be within various site and adjoining trees numbered 1, 2, 3, 4, 4a, 7, 10, 11, 12, 13, 14, 15, 16 TPZ/SRZ, the retention of existing concrete and ground levels that are not to be changed or impacted upon for Trees 1, 2, 3, 4, 4a will ensure their safe retention. The raised timber deck is to be on saddles etc, ensuring no impacts this tree TPZ/SRZ and safe retention as per engineer's plans provided.

Furthermore, based on the proposed layout, access, considered construction requirements within the tree's present locations and hand digging tabled there is no considered impacts site and adjoining trees.

The proposed works will conform to AS4970 -2009. The following points may be considered for retention and protection under this application;

- Trees Numbered 1, 2, 3, 4, 4a, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25 are to be retained, protected, and managed on site as our Tree Management Plan,
- Minor corrective pruning to Tree Numbered 23 is to be undertaken to ensure no potential impacts from site or delivery vehicles,
- The existing driveway is to be left in -situ and to be retained adjoining Trees 1, 2 and 3 to avoid unnecessary excavation within their SRZs, any works required within its TPZ is to be hand dug and undertaken by the project arborist,
- If the existing driveway is to be re-surfaced/amended, Trees 1, 2 and 3 are to be protected from new concrete topping, and slippage,
- New concrete is to be laid within the same location as the existing driveway alignment, to ensure no adverse impacts to trees,
- Removal of minor and nuisance environmental species numbered 5, 6, 8, 9, 26, 27 and 28 are TPO Exempt nuisance environmental weed species,
- Avoid large changes to the surface structure due to modification of the tree moisture / surface feeding roots,
- A Qualified Arborist/Horticulturalist undertakes all Arboricultural works,
- Any proposed works located within any trees SRZ, where services are known to be in the vicinity, any excavation for services should be hand dug to ensure minimal impact to the trees surface feeding and support roots,
- Any tree roots that are exposed will be removed by approved Arboricultural techniques and have a root hormone ie. Formula 20® or equivalent applied at the manufacture's specification,
- No building waste is to be disposed of/or stored near the tree trunk or drip zone,

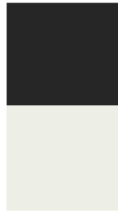
- Regular watering is to be undertaken in hot dry periods to alleviate any short-term stress or loss of available water,
- A qualified Arborist should monitor these trees over a twelve (12) month period to evaluate the trees recovery and provide technical information to Council as required.

No long-term impacts or adverse effects are anticipated to local fauna; furthermore, there are no unforeseen circumstances that would warrant this application to be declined.

WB01 WEATHERTEX ARCHITECTURAL WEATHERGROOVE
RUFF SAWN 150mm PROFILE CLADDING
SIZE: 3660mm x 1196mm x 9.5mm THICK
FORMAT: VERTICAL FORMAT, COLOUR: TO MATCH ROOF COLOUR
WB01 PAINTED IN PT02: DULUX WEATHERSHIELD

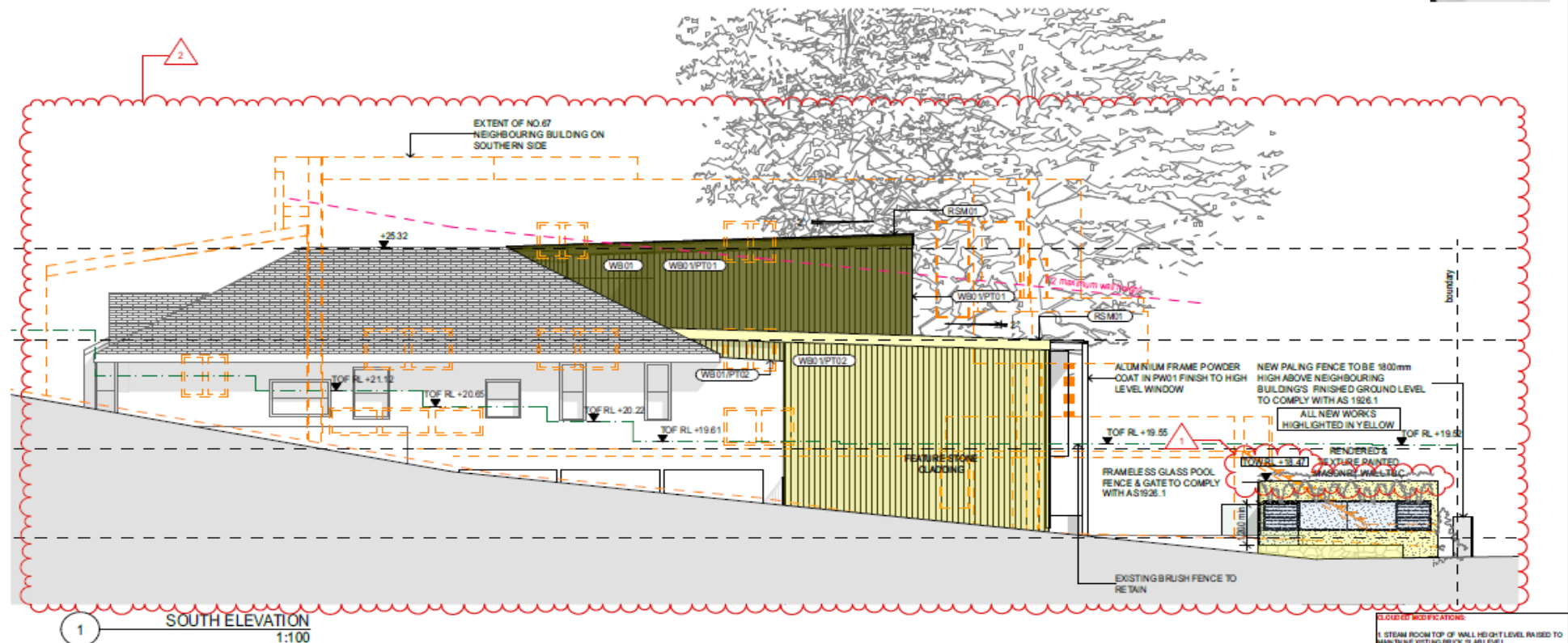


PT02



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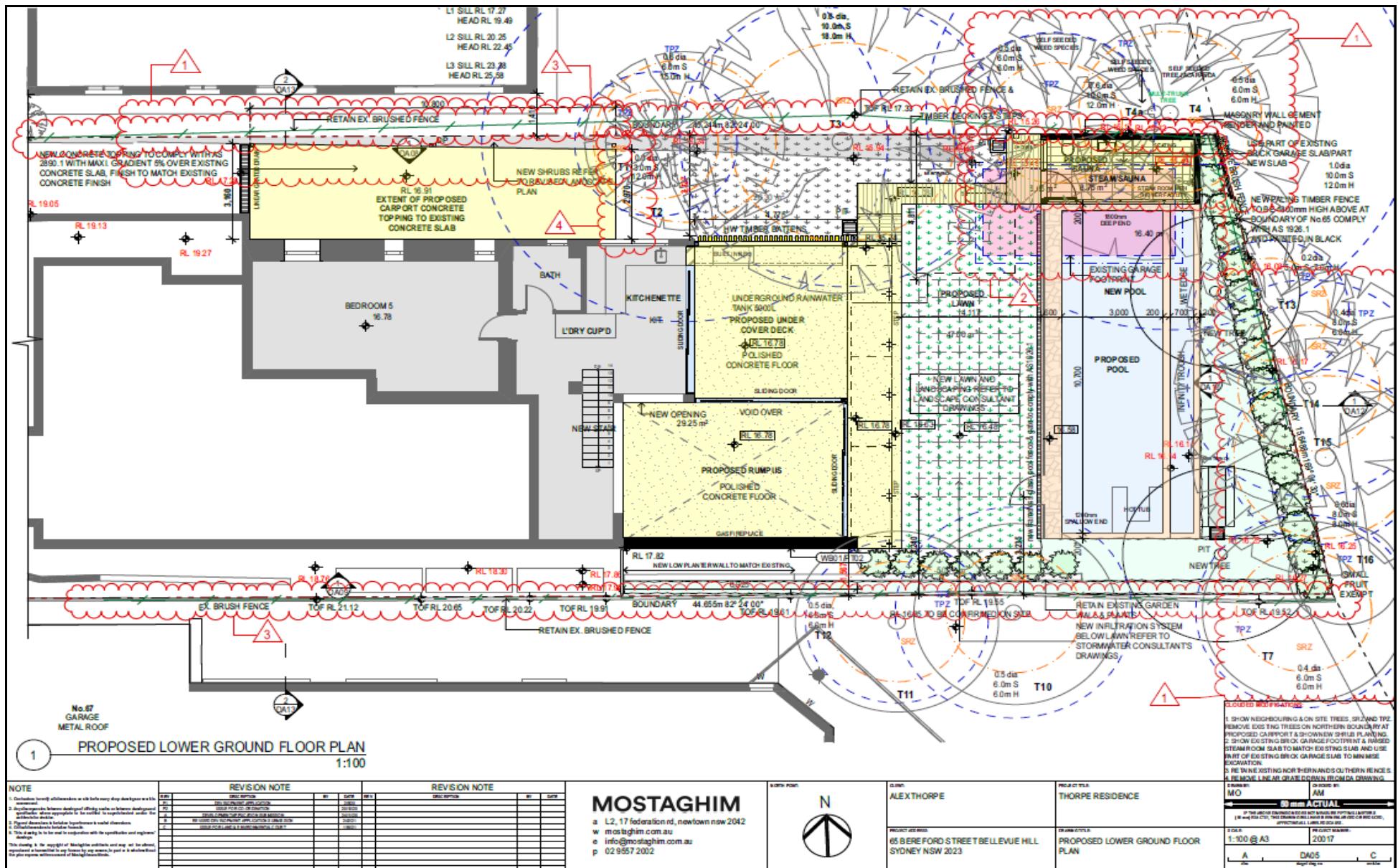
a L2, 17 federation rd, newtown nsw 2042
w mostaghim.com.au
e info@mostaghim.com.au
p 02 9557 2002

PROJECT JEE 0035
65 BERE FORD STREET BELLEVUE HILL
SYDNEY NSW 2023

SOUTH ELEVATION

1. STEAM ROOM TOP OF WALL HEIGHT LEVEL RAISED TO MAINTAIN EXISTING BRICK SLAB LEVEL.
2. SHOW FOOT PRINT OF NO. 67 NEIGHBORING BUILDING ON SOUTHERN SIDE.

1. NAME: _____ 2. NUMBER: MO		3. DATE: _____ 4. TIME: AM	
60 mm ACT			
IF THE AREA OR CONTAINER DOES NOT MATCH THE INFORMATION LISTED (IN and FOR CTS), THIS CONTAINER CANNOT BE USED FOR CTS OR CTS-CCO,			
5. DATE: 1:100 @ A3		6. PER-JECT NUMBER: 20017	
A <small>one</small>	DA09 <small>eight days in</small>	B <small>twelve</small>	



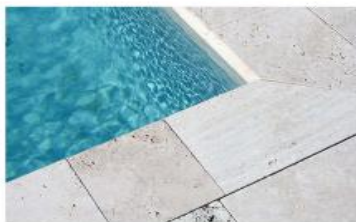
ANNEXURE B: PROPOSED LANDSCAPE MASTER

LANDSCAPE PLAN



DESIGN NOTES:

- 01 EXISTING TREE TO BE RETAINED
- 02 EXISTING PLANTING SUPPLEMENTED WITH NEW GROUND COVER AND SHRUBS TO BOUNDARY
- 03 NEW PROPOSED TREE
- 04 PROPOSED CARPORT CONCRETE TOPPING TO EXISTING CONCRETE SLAB
- 05 NEW TURF AREA ABOVE INFILTRATION SYSTEM
- 06 SEATING TO FRONTAGE COURTYARD
- 07 PLANTING TO STEAM ROOM ROOF
- 08 POLISHED CONCRETE FLOOR



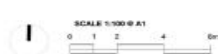
POOL STONE PAVING



STONE STEPPERS IN TURF



LAYERED PLANTING



LEGEND

DNA RNA

1000 bp marker



EXCLUSIVE FREE
TO THE READER



PROPOSED TIME



**PROPOSED
SAMPLING COURSE**

CONTACT: GARY

1.00
0.00

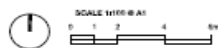
project: Benedict Rd, Bellevue Hill
client: ALEX THORPE
date: 23.08.2021
revision: B
drawn: DA
checked: AL

TaylorBrammer
TAYLOR BRAMMER LANDSCAPE ARCHITECTS PTY LTD
214 Colindale Avenue, North Sydney NSW 1570. E: enquiries@taylorbrammer.com.au T: 615 9557 8800

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ID	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT (m)	SIZE
TREES				
Sr-ec	<i>Boerhaavia aculeata</i>	Ilawana Fenne Tree	6m	45L
Sr-ec	<i>Boerhaavia rymidula</i>	Grey Myrtle	3m	45L
SHRUBS				
Dy-4	<i>Dysoxylum</i>	Philberty Palm	6m	300mm
Fl-4	<i>Flacourtia</i>	Shaggy Palm	2m	300mm
Sr-4	<i>Scaevola</i>	Ugly Plant	1m	300mm
Sr-4	<i>Scaevola</i>	Shaggy Palm 'Christmas'	2m	300mm
To-4	<i>Torresia</i>	King Palm	1m	300mm
Ts-4	<i>Trochodendron</i>	Trichodendron Bulbin dwarf	30cm	300mm
Ch-4	<i>Chamaecyparis</i>	Black Tree Lily	1m	300mm
GRASSPOSSHOVERNS				
Ct-1	<i>Citrus</i>	Katy Lily	0.5m	150mm
H-1	<i>Hesperis</i>	Sharon Lily	1m	150mm
Lm-1	<i>Lupinus</i>	Lupinus lupinus	1m	150mm
Mo-1	<i>Mollis</i>	native wild	0.2m	150mm
Ph-1	<i>Phlox</i>	Phloxendron Karaku	0.5m	150mm
LOW GROW SYSTEM				
Sr-1	<i>Sesuvium</i>	Black Sea Gull	0.3m	150mm
Al-1	<i>Albizia</i>	Albizia	150mm	150mm
Ka-1	<i>Kalanchoe</i>	Copper plant	150mm	150mm



LEGEND

T
- -
JFE BOUNDARY

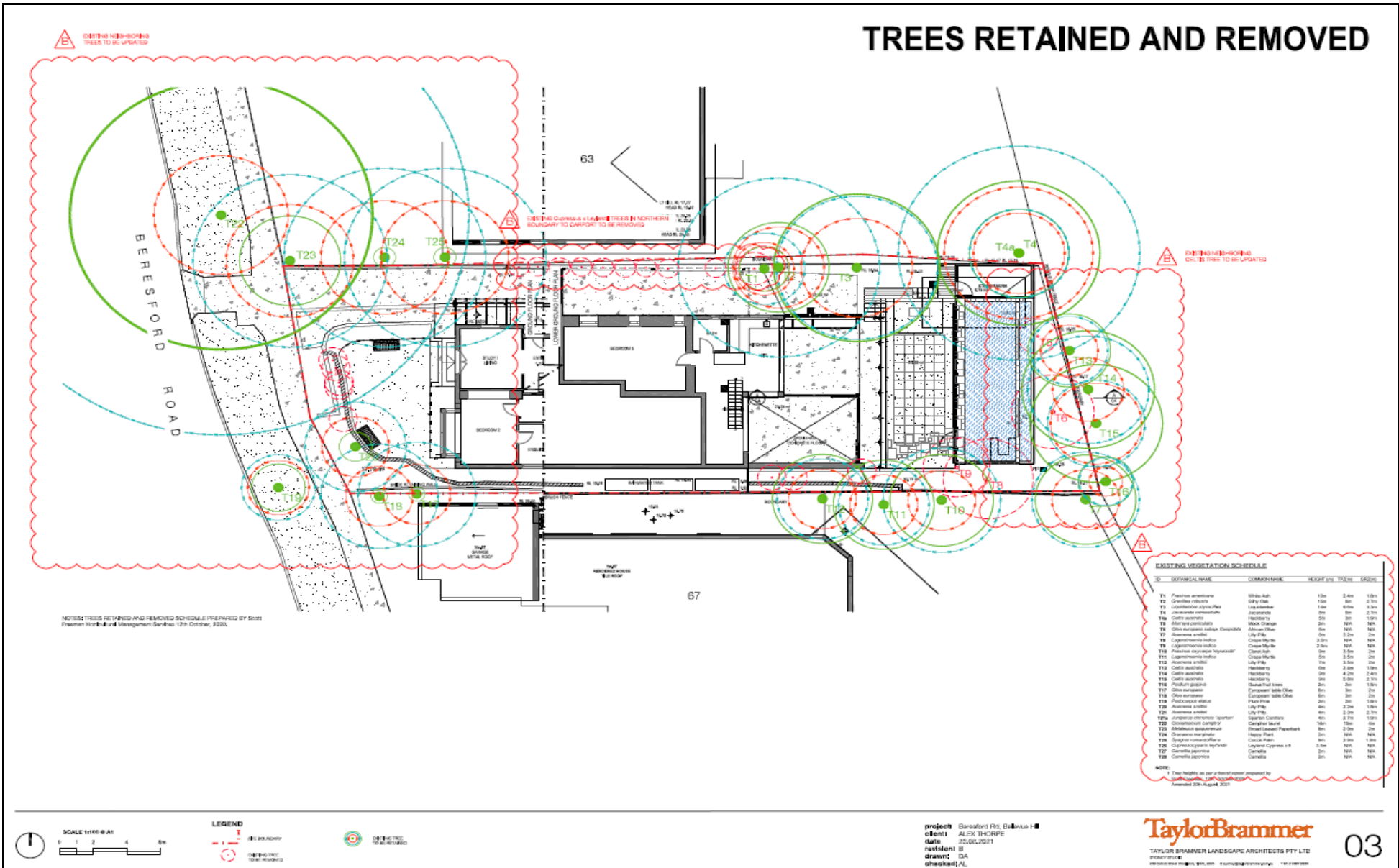
1800 mm HIGH LAPRED AND JAPANESE ELEVATION



project: Bireaford Rd, Bellevue HI
client: ALEX THORPE
date: 22.08.2021
revision: 8
drawn: DA
checked: AL

TaylorBrammer
TAYLOR BRAMMER LANDSCAPE ARCHITECTS PTY LTD
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02



HARDWOOD STAKE AND TIE AS SPECIFIED POSITION ON INWARD SIDE OF PLANT OUTSIDE ROD/STAKE OF PLANT CONTRACTOR TO ENSURE STAKES ARE SECURED TO PREVENT ASK TO DEMENTIA PATIENTS POTENTIAL WEAPON IF REMOVED FROM GROUND EASILY

10mm WIDE HESSIAN TIE IN FIGURE OF EIGHT FORM STAPLED TO STAKE

75mm DEPTH MULCH ANL - HORTIMARK

DECO SATURATED GRANULES (OR EQUAL) APPLIED AT 40gms PER m2 AS TOPDRESSING PRIOR TO MULCHING

TREE AS PER PLANT SCHEDULE

PLANTING MIXTURE MADE UP OF 50% SITE TOPSOIL AND 50% REPORTED ANL - GARDEN MIX THOROUGHLY MIXED PRIOR TO BACKFILLING

NOTE: ENSURE PLANTS ARE WATERED THOROUGHLY PRIOR TO PLANTING AND IMMEDIATELY FOLLOWING PLANTING INSTALLATION

SCALE

ADJOINING SURFACE
SEWER TO PLANS
FOR DETAILS

MULCH AS SPECIFIED
75mm DEPTH

REMOVE DEPTH OF
MULCH AT BASE OF
PLANT

FORM WATERING
DISH TO EACH
PLANT

PLANT AS PER
NOTES & P

1. STAKE AND THE AS
SPECIFIED
DRIVE INTO GROUND
ON OVERHEAD SIDE
MAX. HEIGHT 50mm
CLEAR OF BEDM.
BENCH INTO GROUND
90mm HESIAN IN
FILL, & RETAINED TO
STAKE

4. EXCAVATE PLANTING
HOLE NOT LESS THAN
150mm DEEPER THAN
PLANT CONTAINER

3. INSTALL 150mm OF
PLANTING MIX AS
SPECIFIED. THOROUGH
ROTARY HOSE RATIO
BROKEN UP SUBGRADE

1. REMOVE ALL EXISTING
GRASS & VEGETATION
APPROVED
HORIZONTAL SURFACE
TO A DEPTH OF 150mm

2

MASS PLANTING BED - NATURAL SECTION 1:10

3

TURF TYPICAL SECTION 1:20

EDGE REFER TO DETAIL

TURF AS SPECIFIED

TURF AS SPECIFIED

ULTIMATE SUBGRADE, 10 to 15mm DEPTH

IN 1000 x 100mm ON 75mm DEPTH MORTAR BED WITH HAUNCH

GENERAL NATURAL DRAINAGE

TURF AS SPECIFIED

CONCRETE STEPPER

75mm DEPTH

HOLDING PEG 25x100mm CCA PINE SUPERFLORE TYPE PEGS. INSTALL ON OUTSIDE OF JOINTS WHEN REQUIRED FOR ADDITIONAL SUPPORT

POSITION JOINTS WHERE CHANGE OF DIRECTION OCCURS OR WHERE DURABILITY IS NOT EXISTING. INCHES TWO PEGS AT EACH POINT

35x100 CCA PINE EDGING WITH 120mm DEEP SAW CUTS AT EVERY SPACING SUFFICIENT TO AVOID PEGS DRIVING CURVES

NEAT FITTING SURROUNDING JOINT PLANTING

CUT EDGE BOARD TO FIT NEATLY ADJUST SURROUNDING EDGES FINISH FLUSH WITH PAVED SURFACES

FIX SECURED TO PEGS WITH LONG CORROSION RESISTANT STEEL SCREWS FINISHING SCREW HEADS FLUSH WITH TIMBER

SADSPILL AGAINST EDGE BOARD TO MATCH ADJOINING LANDSCAPE FINISHED

TYPICAL PLAN OF STRAIGHT EDGE 1:16

PLAN OF CURVILINEAR TIMBER EDGING 1:16

AT JOINTS RINSE SCREW CORROSION RESISTANT TOOTH SCREW INTO PEGS PEG THEN SCREW TOP OF HOLDING STRIP INTO EDGE STRIP

TURF AS SPECIFIED

35x100 CCA PINE EDGE STRIP

MASS PLANTING BED

150x150 PEGS 50x100x30mm AT 1000 CTRS. FIX EDGE TO PEG WITH 2 No. 50 GALV. FLAT HEAD NAILS

FIXING PEG

HOLDING PEG

SECTION THROUGH CURVILINEAR TIMBER EDGING 1:16

NOTE: ALL TIMBER TO BE DURABILITY CLASS No. 1 CCA TREATED PINE

1250mm GGA PINE CAPPING BOARD

75x35mm PIP RAILS PROVIDE SLOPE CAP TO POST

50x50mm GALV. STEEL POSTS

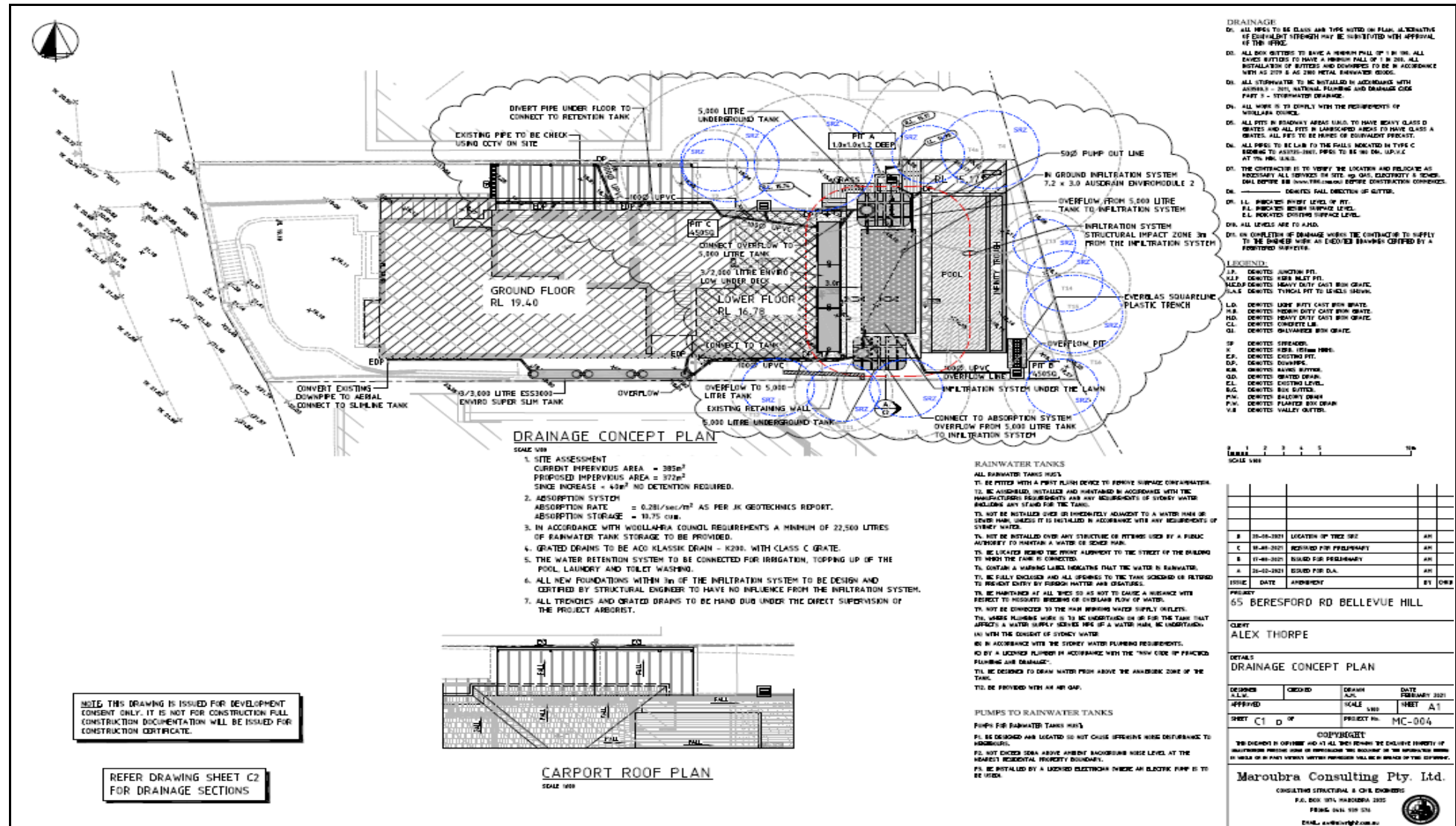
130x13mm THICK GGA PINE FALINGS SLOPELAP

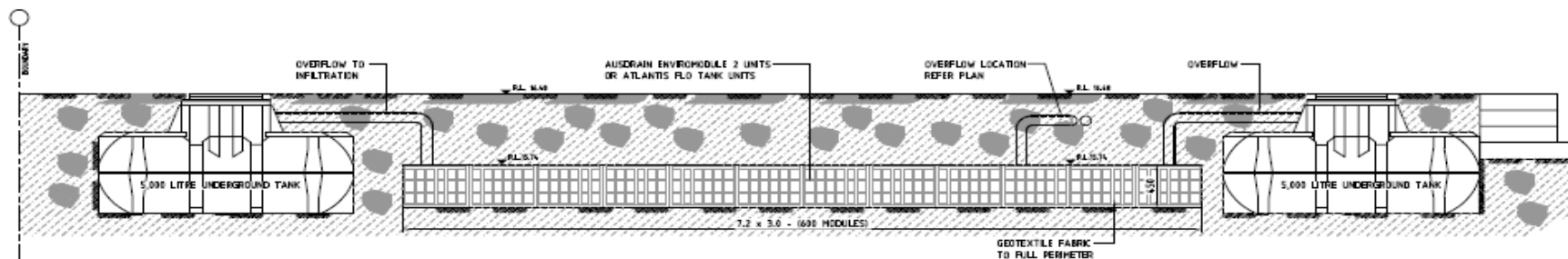
380 DIA. CORE DRILLED HOLE FOR 800 DEEP CONCRETE FOOTING

2400 TYPICAL

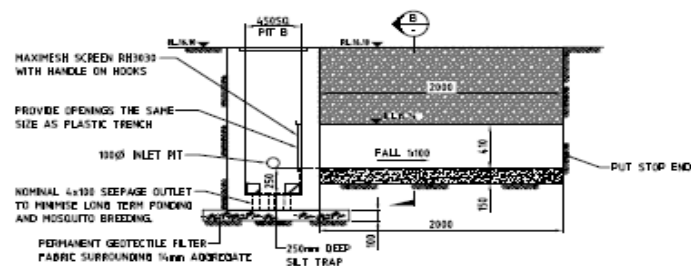
64

ANNEXURE C: PROPOSED STORMWATER/DRAINAGE LAYOUT

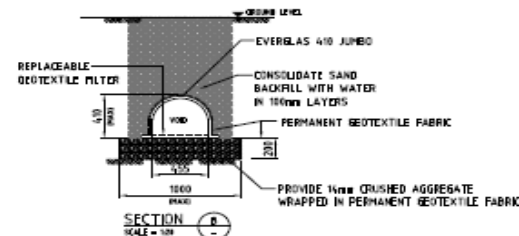




SECTION A-C
SCALE = 1:10

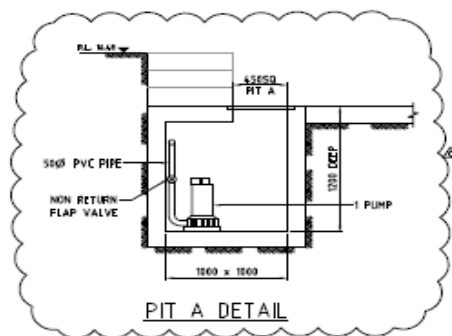


PIT B DETAIL



SECTION B-B
SCALE = 1:10

0 200 400 600 800 1000
SCALE 1:25



PIT A DETAIL

ISSUE	DATE	AMENDMENT	BY	CHK
C	20-08-2021	ISSUED FOR PRELIMINARY	AM	
B	11-08-2021	ISSUED FOR PRELIMINARY	AM	
A	26-02-2021	ISSUED FOR D.L.	AM	

PRIORITY
65 BERESFORD RD BELLEVUE HILL

CLIENT
ALEX THORPE

DETAILS
DRAINAGE SECTIONS

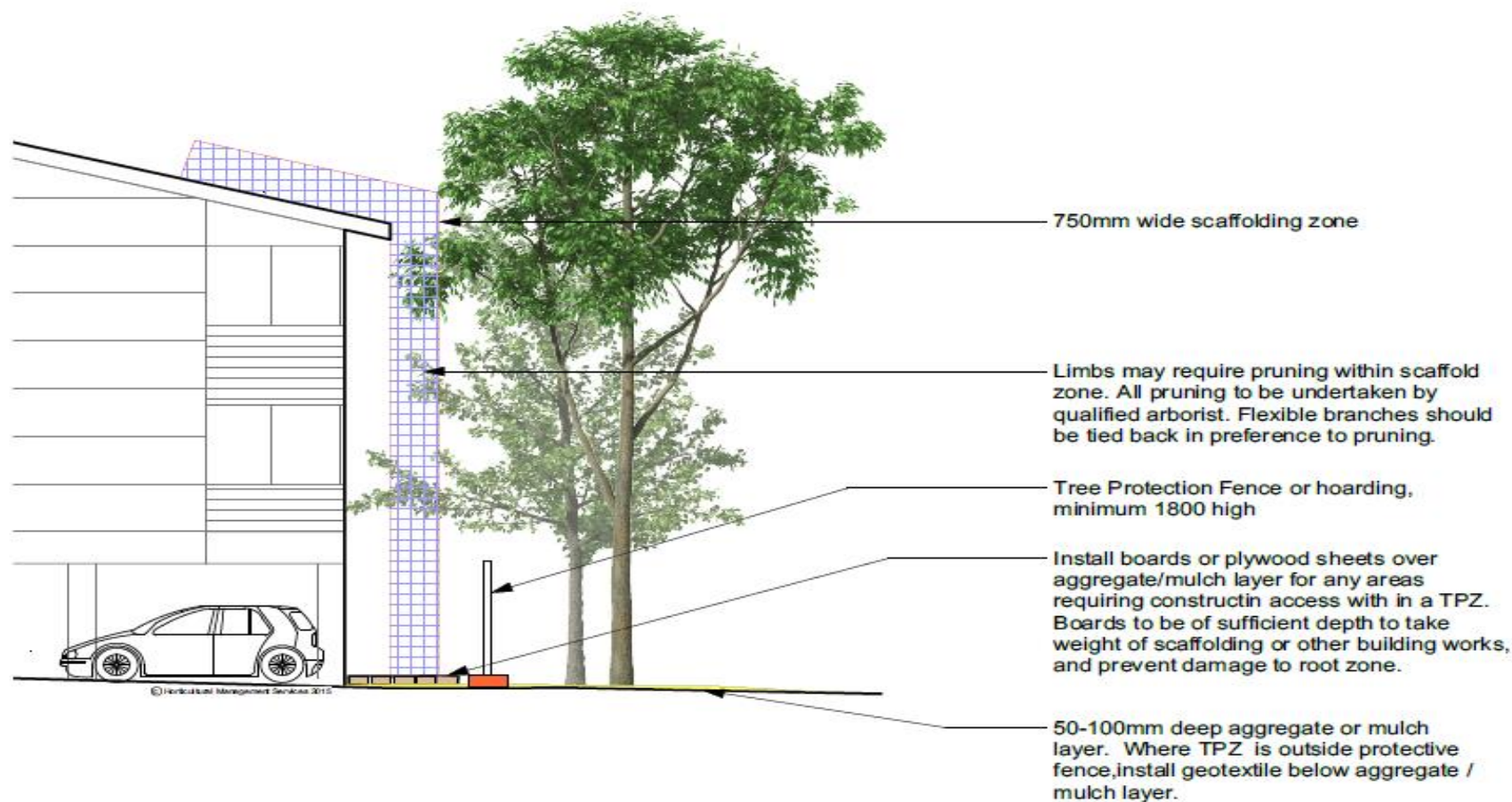
DESIGNED A.L.W.	CHECKED A.L.W.	DESIGNED A.L.W.	DATE PRELIMINARY 2021
APPROVED	SCALE 1:25	PROJECT No. MC-004	SHEET A1

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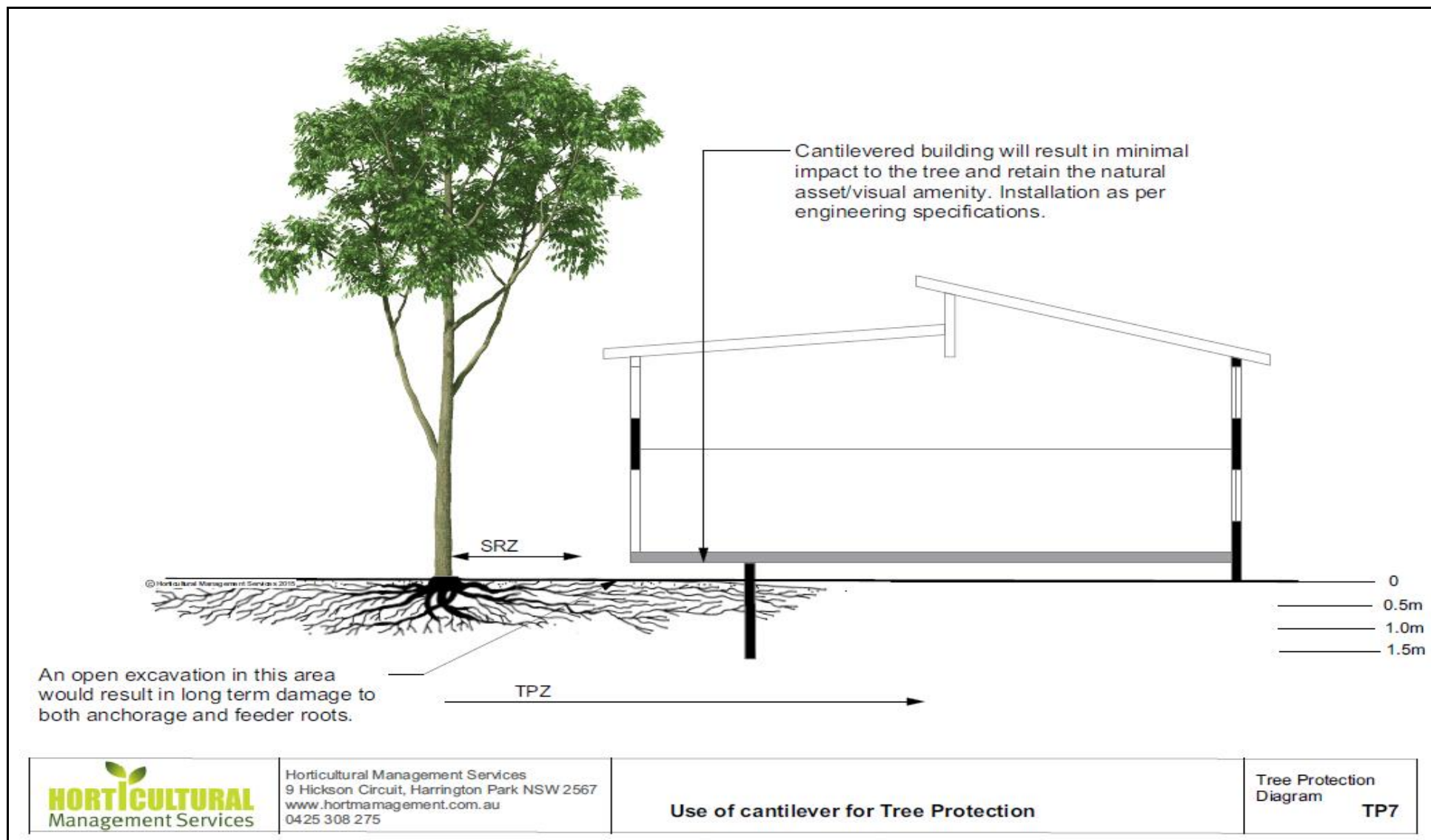
Maroubra Consulting Pty. Ltd.
CONSULTING STRUCTURAL & CIVIL ENGINEERS
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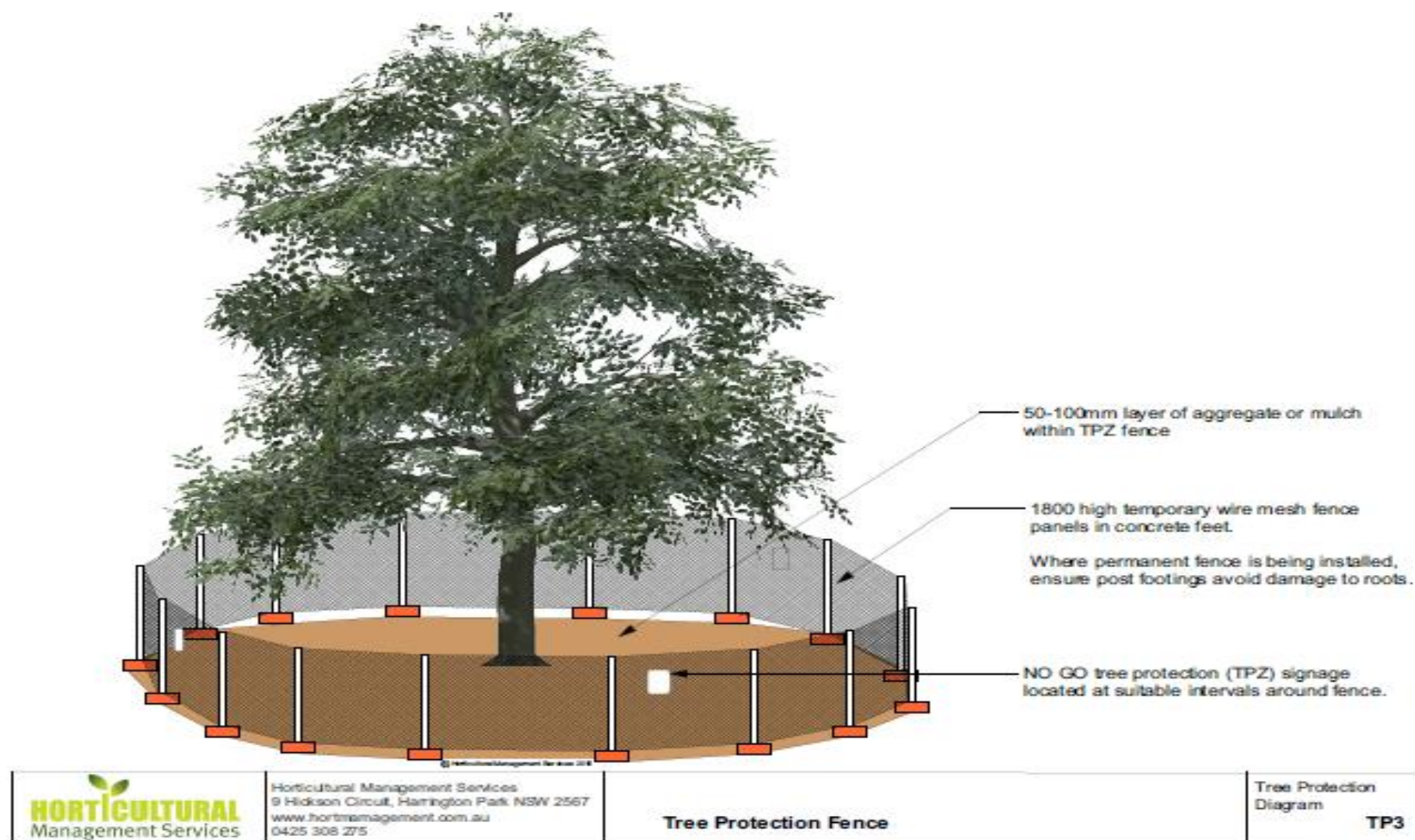
ANNEXURE D: TREE MANAGEMENT PLAN (TMP) – SCAFFOLD ERECTION



ANNEXURE E: TREE MANAGEMENT PLAN (TMP) – CANTILEVERED/SUSPENDED SLAB

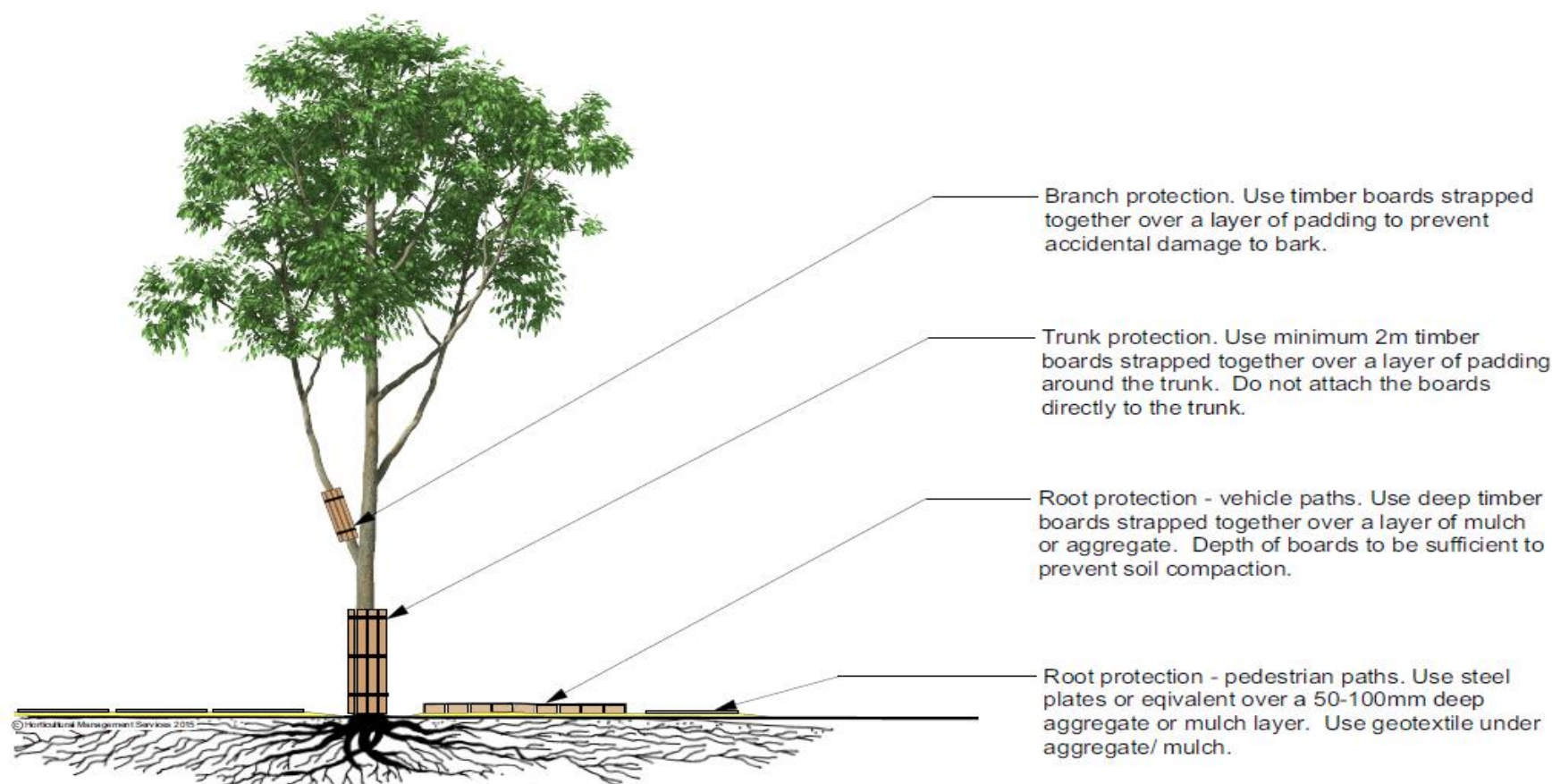


ANNEXURE F: TREE PROTECTION DETAIL



Source AS 4970-2009 Protection of trees on development sites.

ANNEXURE G: TREE TRUNK BRANCH AND ROOT PROTECTION



ANNEXURE H: S.U.L.E- SAFE USEFUL LIFE EXPECTANCY (Barrell 1995)

	1 LONG	2 MEDIUM	3 SHORT	4 REMOVAL	5 MOVED OR REPLACED
	Likely to be useful for over 40 years with acceptable risk and assuming reasonable maintenance	Likely to be useful for 15-40 years with acceptable risk and assuming reasonable maintenance	Trees that appeared to be retainable at the time of assessment for 5 to 15 years with acceptable level of risk.	Tree to be removed within the next 5 years	Tree which can be reliably moved or replaced.
A	Structurally sound trees growing in positions that can accommodate future growth	Trees which may only live 15-40 years	Trees that may only live between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Small tree less than 5m in height.
B	Trees which could be made suitable for long term retention by further care	Trees which may live for more than 40 years but which would be removed for safety or nuisance reasons	Trees which may live for more than 15 years but which would be removed for safety or nuisance reasons	Dangerous trees through instability or recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in height.
C	Trees of special significance for history, commemorative or rarity reasons that warrant extraordinary efforts to secure their long-term future	Trees that may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting	Trees that may live for more than 15 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings	Dangerous trees through structural defects including cavities, decay included bark, wounds, or poor form.	Trees that have been pruned to artificially control growth.
D		Trees which could be made suitable for medium term retention by remedial care	Trees which require substantial remediation tree care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
E				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings	
F				Trees damaging Or which may cause damage to existing structures within the next 5 years	
G				Trees that will become dangerous after removal of other trees for reasons given in A) to F)	

NOTE: No tree is “safe” i.e. entirely without hazard potential. The SULE rating given to any tree in this report assumes that reasonable maintenance will be provided by & qualified arborist using correct and acknowledged techniques. Retained trees are to have a reasonable setback and be protected from root damage. Incorrect practices can significantly accelerate tree decline and increase hazard potential.

ANNEXURE I: DEFINITION OF TREE TERMINOLOGY

This attachment is to accompany this Arborist Assessment to explain the terminology used and the rationale and assessment of factors used in the Safe Useful Life Expectancy (SULE) method of tree evaluation.

TERMINOLOGY USED:

DBH: Acronym for trunk diameter at breast height (1.4m from ground level)

DEADWOOD: Many trees are noted as having various diameter deadwood over the course of their lifecycle. Deadwood is a normal function for plant growth and development. The tree's upper canopy foliage or crown condition is an important indicator of an individual tree's health. Dieback is the progressive death of branches or shoots originating from the tips. Dieback and decline are parts of a disease complex that have similar causal agents. Crown dieback is a recognizable, visible symptom of the early stages of decline and potential tree death (www.fhm.fs.fed.us).

The safety of the target, namely pedestrians, is considered the primary basis for deadwood removal. As deadwood has an ecological value, the removal of deadwood is usually only carried out where it is a potential hazard to site users. Deadwooding a tree does not increase its life expectancy.

EPICORMIC GROWTH: The production of epicormic growth from dormant buds is a response to stress. Epicormic growth may be initiated by various causes such as branch loss, excessive pruning, fire damage, drought, defoliation and/or disease.

Epicormic growth comes from dormant buds held in the cambium. Under normal growth conditions, these buds are held in a dormant state by hormones produced in the canopy. These shoots are often produced by the tree in response to injury or environmental stress. Epicormic growth has implications for tree structure as the attachment of an epicormic shoot is much weaker than that of a 'naturally' developed branch (Fakes, 2004).

MYCORRHIZAE / RHIZOSPHERE: Mycorrhizae are fungi that grow in symbiotic association with tree roots (especially the fine root hairs) and are attributed with increasing the uptake of nutrients, particularly phosphorus, and reducing infection from soil-borne pathogens. They greatly increase the surface area of a tree's root system. Mycorrhizae require aerobic soil conditions and are reduced in number by compaction, waterlogging and over-use of soil fertilisers. Forest litter or similar mulch provides ideal conditions for the proliferation of mycorrhizae. Rhizosphere is a term describing the peripheral area of a tree's root system where this symbiotic association most commonly occurs.

CONDITION: An evaluation of the structural status of the tree including defects that may affect the useful life of an otherwise healthy specimen. Such influencing factors include cavities and decay, weak unions between scaffolds (major branches) or trunks and faults of form or habit.

TREE HAZARD POTENTIAL: An assessment of the risks associated in retaining a tree in its existing or proposed surrounds. Factors to consider are the growth characteristics of the species, tree vitality, condition and the frequency and type of potential targets. The impact the proposed works may have on tree vitality can only be assumed.

CO-DOMINANT STEMS: Co-dominant stems were noted on several trees throughout the subject site. The term 'co-dominant' is used to describe two or more stems or leaders that are approximately the same diameter and emerge from the same location on the main trunk. The junction where the two stems meet is a common location of above ground tree failure (Harris, Clark & Matheny, 1999).

The relative size of the two leaders is important to the tree's structural stability. Co-dominant stems split apart more easily than branches that are small, relative to trunk size. This is because the only way trunk xylem can grow around a branch, and form a strong attachment, is for the trunk to be larger in diameter than the branch attachment. If the branch diameters are near the same size, their attachment will be weak because their xylem tissues are essentially parallel and are not able to grow around each other. Co-dominant stems typically lack this overlapping tissue present in a collar, which can lead to possible failure at the point of attachment. Additionally, the weight and leverage of the co-dominant stems will increase with age, intensifying the stress on the attachment (Harris, Clark & Matheny, 1999).

Furthermore, co-dominant stems do not have built in protection zones as with normal branches. This is because they are extensions of the stem. This enables pathogens and insects to spread downward and upward with little natural protection (Shigo, 1989).

DOMINANT: Trees with crowns above the upper layer of the canopy and generally receiving light from above and the sides.

EDGE: Trees located on the edge of a more dominant canopy of trees, and frequently possessing asymmetrical crowns, (heavier on the open side) and trunks that may be distorted due to competing with others for valuable nutrients i.e. soil air, water, light.

FOREST: Trees that have grown in a forest setting and only have about 1/3 of their canopy located on tall straight trunks.

INCLUDED BRANCH JUNCTIONS: Included bark was noted on trees throughout the site. Included bark often forms when two branches or trunks grow together at sharply acute angles, producing a wedge of inward-rolling bark.

Junctions with included bark form weak attachments, as there is little connective tissue between the two stems. Although all co-dominant stems should be considered comparatively weak, co-dominant stems that have bark trapped in the union are significantly weaker than those that do not have bark included (Smiley, 2003).

Tree failure can occur when the strength of wood is exceeded by a mechanical stress and/or is compromised by the presence of defects.

INTERMEDIATE: Trees that have been overtopped, and become part of the understorey canopy

PROJECT ARBORIST: The person responsible for carrying out the tree assessment, report preparation, consultation with designers, specifying tree protection measures, monitoring and certification. The project arborist will be suitably experienced and competent in arboriculture, having acquired through training, qualification (minimum Australian Qualification Framework (AQF) Level 5, Diploma of Horticulture (Arboriculture)) and/or equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this Standard.

STRUCTURAL ROOT ZONE (SRZ): The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres.

This zone considers a tree's structural stability only, not the root zone required for a tree's vigour and long-term viability, which will usually be a much larger area.

TREE: Long lived woody perennial plant greater than (or usually greater than) 3 m in height with one or relatively few main stems or trunks (or as defined by the determining authority).

TREE PROTECTION ZONE (TPZ): A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

VIGOUR: Ability of a tree to sustain its life processes. The term 'vigour' in this document is synonymous with commonly used terms such as 'health' and 'vitality'.

VITALITY: Indicates the energy reserves of the tree and is determined by the observed crown colour and density, the percentage of dead / dying branches and epicormic growth. The vitality of the canopy and that of the root system is interdependent; root damage or heavy pruning draws on a tree's energy reserves. The tree's ability to initiate internal defence systems (compartmentalisation of damage) is reduced and it can also become predisposed to attack by insects and pathogens.

WORK: Any physical activity in relation to land that is specified by the determining authority.

WOUNDING: Generally, the wounds were located on the lower 2m of trees' trunk or on exposed roots. This suggests that the wounding may be a result of mechanical injury from landscape maintenance equipment. However, wounds were also noted higher up on the trunk and main branches. The likely cause of this wounding is branch failure, splitting or cracking during high wind events.

The primary effect of wounding is reduced translocation of water, minerals, and sugars because of loss of bark, cambium, and sapwood. Mechanical injury may also have implications for tree structure as the long-term effects of tree wounding is the potential development of decay. The long-term effects of tree wounding are the potential development of decay and loss of wood strength (Harris, Clark, Matheny, 1999).

ANNEXURE J: REFERENCES

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22. Woollahra Council Tree Preservation Order (TPO).

ANNEXURE K: CERTIFICATION

I certify that the enclosed “Arboricultural Impact Assessment and Tree Management Plan” for the proposed building alterations and additions at 65 Beresford Road, Bellevue Hill has been prepared by Horticultural Management Services.

To the best of my knowledge and professional integrity, it is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

Qualifications:

- *Diploma of Arboriculture*
- *Diploma of Horticulture*
- *Diploma of Conservation and Land Management*

Scott Freeman

Scott Freeman
Principal
Horticultural Management Services

Date 23.11.2020
Amended 23rd August 2021

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