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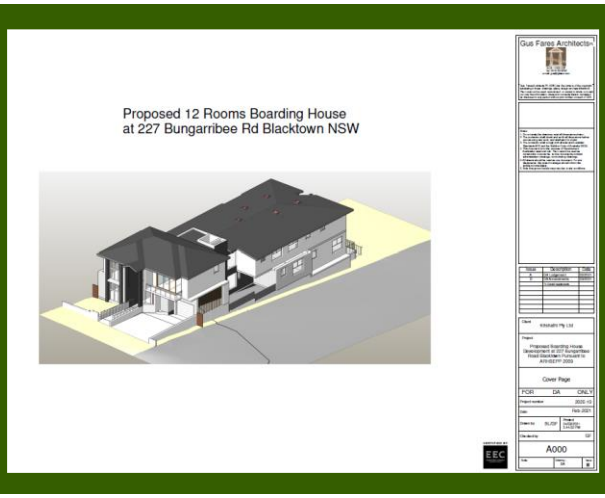
ARBORICULTURAL IMPACT ASSESSMENT AND TREE MANAGEMENT PLAN



PROPOSED BOARDING HOUSE DEVELOPMENT APPLICATION DA-21-00559

227 BUNGARRIBEE ROAD BLACKTOWN, NSW

Report prepared for:

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3rd May 2021

Arboriculture Australia™
Member #2590

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 the particular time and or conditions specified herein.

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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 aforementioned 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.

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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 Blacktown City Council, Tree Preservation Order (TPO) under the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.

This Arboricultural Impact Assessment was prepared by Horticultural Management Services.

It is understood that this report is to form part of a Development Application for a proposed 12 room Boarding House Development Application, which includes approved tree and shrub removal, demolition of existing dwelling, basement excavations, proposed construction of a new boarding house dwelling and associated landscaping as per Annexure A Proposed Development Layout.

A site investigation was undertaken on Monday 3rd May 2021 to determine the site and adjoining trees overall health, structural integrity and identification of other physical conditions that may be present within the proposed development site, which may be affected by the proposed design.

The purpose of this report is to identify the trees within and or adjoining the development site, provide information on their individual current health and condition, determine their remaining life expectancy and significance in the landscape and assess their suitability for retention/preservation.

The potential impact of the proposed development has also been assessed, together with recommendations for amendments to the design or construction to ensure the retention of tress 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

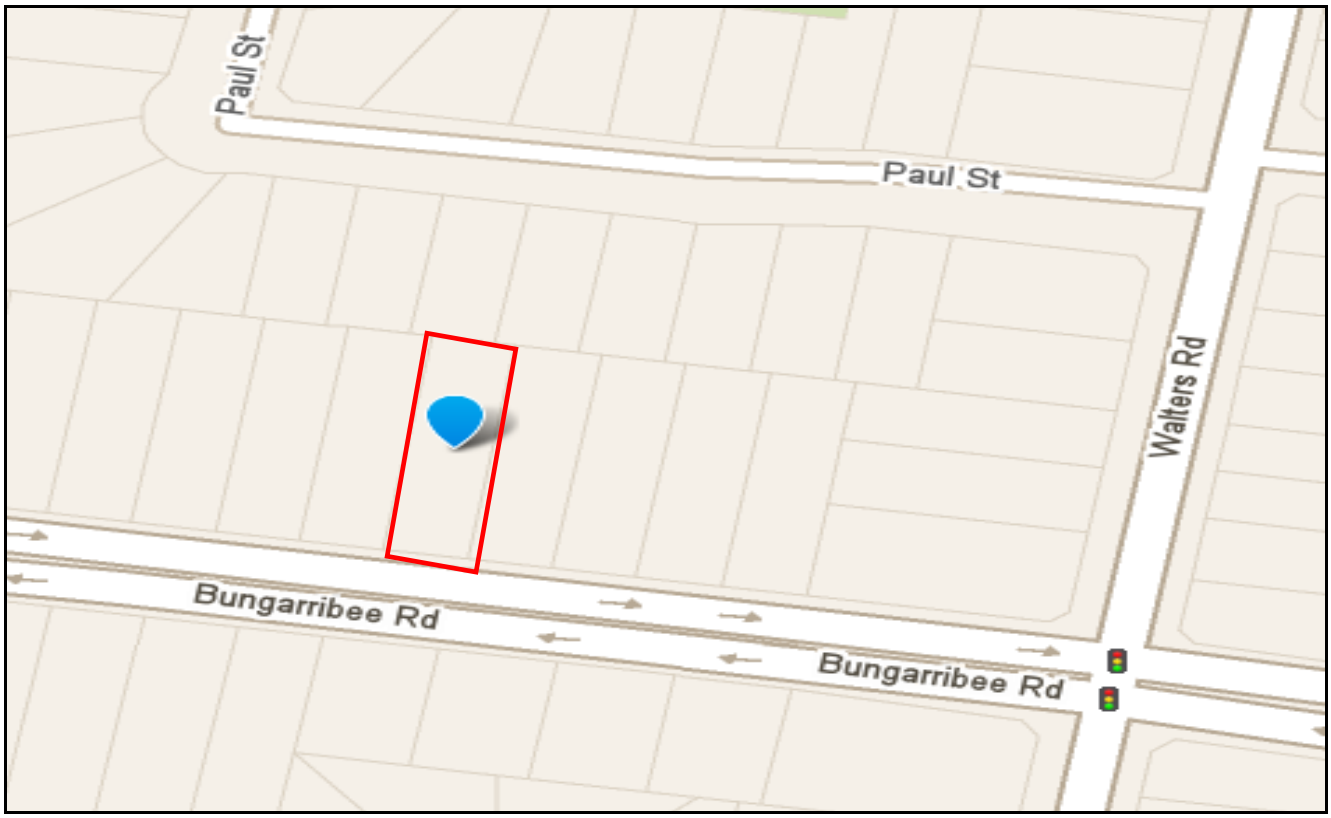


Figure 1 Shows the location of the study site. Source *whereis.com.au*

2.1 AERIAL SITE LOCATION

Figure 2 Shows an aerial location of the study site. Source *Nearmaps.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

Relevant site plans and or documents were viewed prior to undertaking the Arborist Assessment.

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

The site is identified as 227 Bungarribee Road, Blacktown NSW.

The site contains a mixture of introduced (planted) exotic and native vegetation observed. The herbaceous or grass vegetation consists of a mixture of introduced pastoral grasses/weed species due to the sites long term residential pursuits.

It is understood that this report is to form part of a Development Application for a proposed 12 room Boarding House Development Application, which includes approved tree and shrub removal, demolition of existing dwelling, basement excavations, proposed construction of a new boarding house dwelling and associated landscaping as per Annexure A Proposed Development Layout.

5.0 METHODOLOGY

This report was determined as a result of a comprehensive site inspection undertaken on Monday 3rd May 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 conductive 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 *Local Environmental Plan* 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 replaced by 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 (2015)

*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 adjoining the development have been assessed as part of this report.

There are no trees on adjoining properties that will be affected by this development.

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 conductive 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 Practise 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 frame work, 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 of group 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 X 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

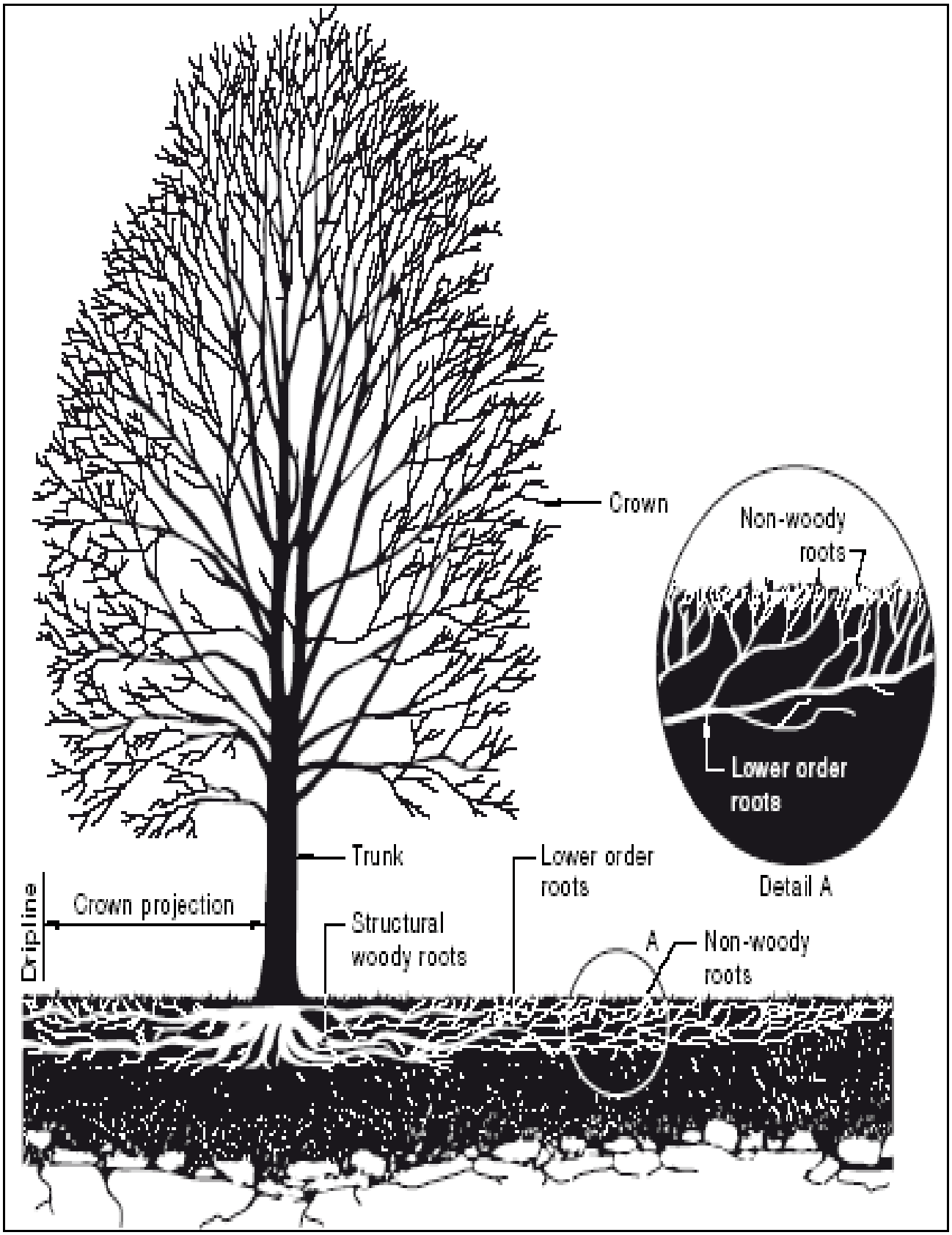


Figure 3 Shows a diagram of a typical tree root structure.
Source: Australian Standards - AS 4970-2009 Protection of trees on development sites.

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.

The majority 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 fine in structure, typically less than 0.5mm diameter, and include mycrorrhizal 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 conductive 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 of time 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,

Juvenile:	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 on the basis of 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**						
MEDIUM- (M) 15 to 40 Years			**Moderate Retention Value**				
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 ie. 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 eg. Slope constraint (> 18^0), watercourse buffer, sensitive vegetation buffer, Flora/Fauna significant/buffer as identified on site.

10.0 TREE IDENTIFICATION ASSESSMENT SUMMARY

Risk Matrix	Catastrophic	Major	Moderate	Low
	Urgent- Tree requires immediate removal due to WH&S concerns.	Tree requires removal as part of development application.	TPO Exempt due to species, height requirements and or approved to be removed by Council.	Tree to be retained, protected, and monitored

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.	Weeping Bottlebrush *Callistemon viminalis* ***Council Street Tree***	2.5	260	270	N/A	N/A	Mature	Good	Good	3	Nil	Low	Nil to Low	This minor planted Council street tree is required to be removed as it is located within the proposed new basement driveway viewing sightline for exiting the boarding house, it will be replaced in landscape upon completion.
2.	Weeping Bottlebrush *Callistemon viminalis* ***Council Street Tree***	2.5	220	230	N/A	N/A	Mature	Good	Good	3	Nil	Low	Nil to Low	This minor planted Council street tree is required to be removed as it is located within the proposed new basement driveway excavation area, it will be replaced in landscape upon completion.

3.	Hills Weeping Fig *Ficus microcarpa var. hillii*	8	M/T	500	2.5	6	Mature	Good	Good	2	Low	Low to Moderate	Low to Medium	This minor planted tree is required to be removed as it is located within close proximity to the proposed new development, considered construction requirement and the trees considered future growth to maturity and long-term impacts to the building assets, it will be replaced in landscape upon completion.
4.	Chinese Tallowwood *Sapium sebiferum*	3	100	110	N/A	N/A	Mature	Good	Good	3	Nil	Nil	Nil	This minor planted ornamental tree is required to be removed as it is located within the proposed new basement excavation area, it will be replaced in landscape upon completion.
5.	American Arborvitae *Thuja occidentalis*	6	M/T	280	N/A	N/A	Mature	Good	Good	5	Nil	Nil to Low	Nil	As per Councils TPO, this planted ornamental conifer is TPO as it is located within 4m of an approved dwelling, and it may be removed without consent.

6.	Cocos Palm *Syagrus romanzoffiana*	5	240	250	N/A	N/A	Mature	Good	Good	3B	Nil	Nil	Nil	This nuisance environmental weed species palm tree is required to be removed as it is located within the proposed new basement excavation area, it will be replaced in landscape upon completion.
7.	Weeping Bottlebrush *Callistemon viminalis*	5	M/T	260	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Nil to Low	Nil to Low	Nil	This nuisance environmental weed species palm tree is required to be removed as it is located within the proposed new basement excavation area, it will be replaced in landscape upon completion.
8.	Cocos Palm *Syagrus romanzoffiana*	7	240	250	N/A	N/A	Mature	Good	Good	3B	Nil	Nil	Nil	This nuisance environmental weed species palm tree is required to be removed as it is located within the proposed new basement excavation area, it will be replaced in landscape upon completion.

9.	Cocos Palm *Syagrus romanzoffiana*	8	250	260	N/A	N/A	Mature	Good	Good	3B	Nil	Nil	Nil	This nuisance environmental weed species palm tree is required to be removed as it is located within the proposed new basement excavation area, it will be replaced in landscape upon completion.
10.	Grey Gum *Eucalyptus moluccana*	14	480 550	800	N/A	N/A	Mature	Good to Fair	Fair	4C	Medium	Moderate	Medium	This tree is sufficiently distanced to be safely retained and protected from the proposed development and scope of works; however, it is recommended to be removed due to noted structural faults, cracking toward the branch trunk union. It is recommended to be removed and replaced in the landscape upon completion with an advanced tree.

Key. Multi trunk (M/T)

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).

11.0 TREE IDENTIFICATION BASED ON PROPOSED DEVELOPMENT LOCATION

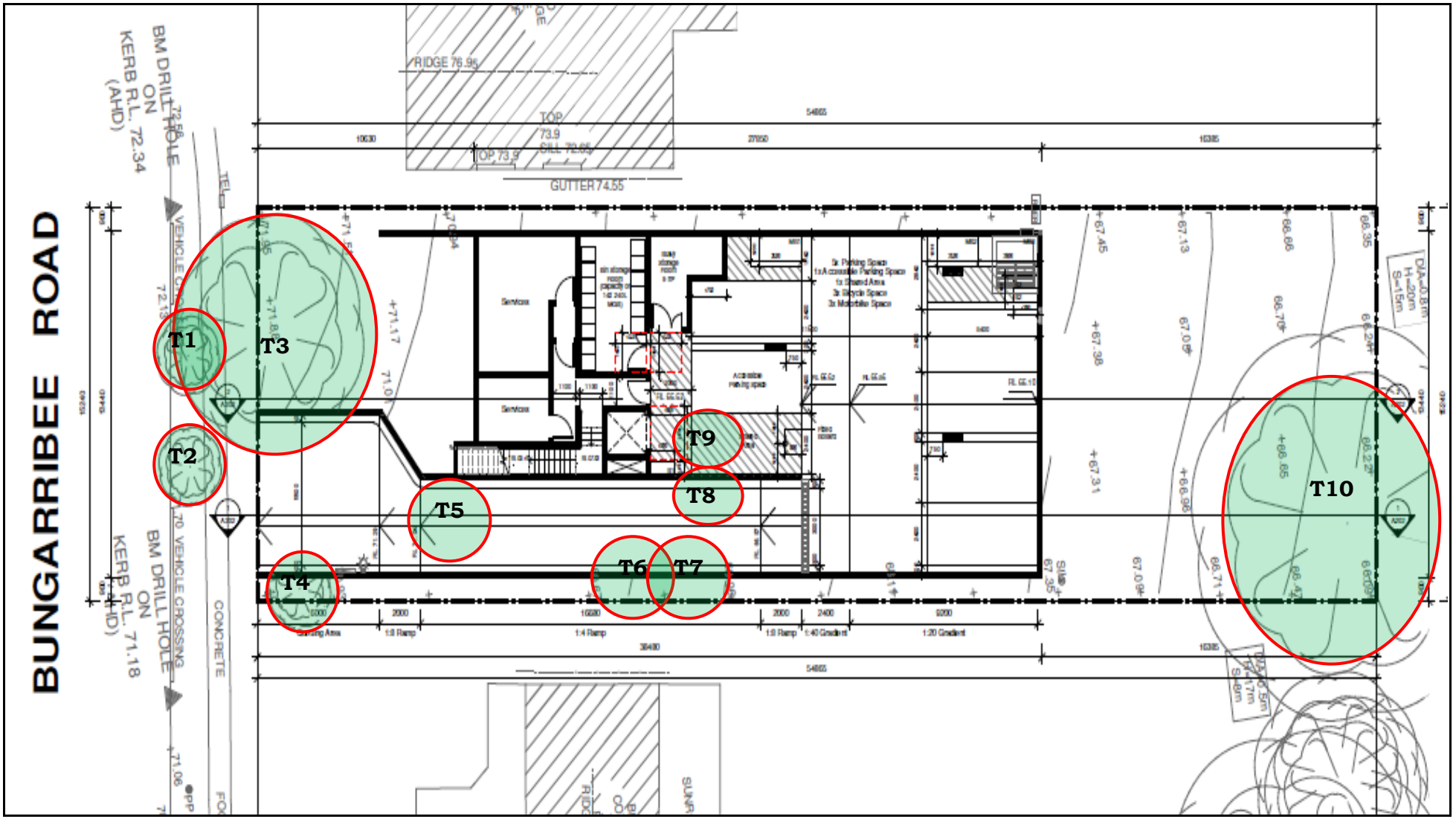


Figure 5 Shows the site trees location based on the proposed basement development layout.

12.0 TREES PROPOSED TO BE REMOVED BASED ON DEVELOPMENT LOCATION

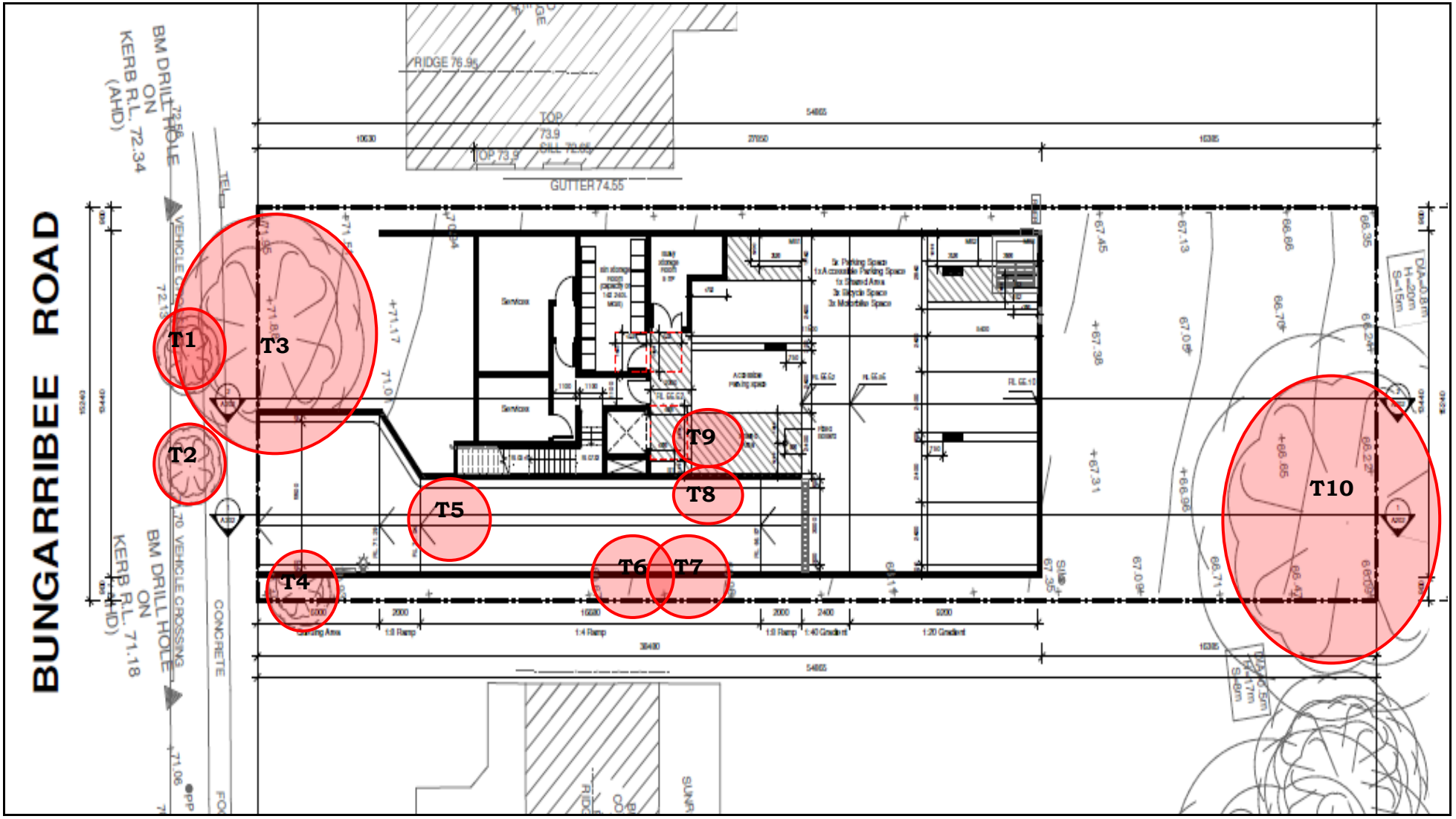


Figure 6 Shows the trees in RED to be removed based on the plans provided.

13.0 SITE PHOTOGRAPHS

Figure 7 Shows Council street trees numbered 1 and 2 required to be removed

Figure 8 Shows Trees 1, 2 and 3 from a distance to be removed.

Figure 9 Shows Tree 3 previous pruning and buttress roots system.

Figure 10 Shows Tree 3 root system lifting the driveway.

Figure 11 Shows minor Tree 4 from a distance.

Figure 12 Shows Tree 5 that is currently TPO Exempt and may be removed.

Figure 13 Shows site Cocos palms required to be removed for basement works

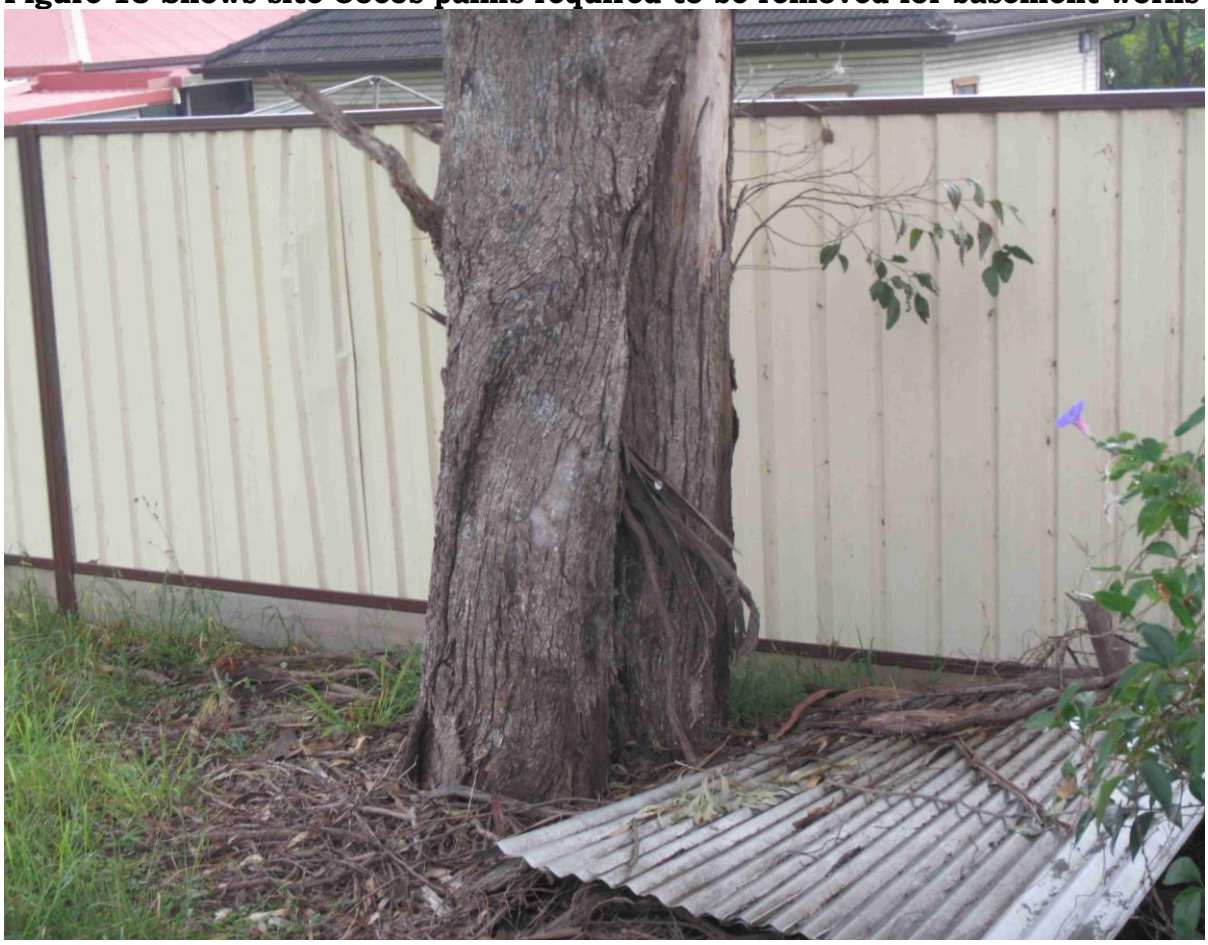


Figure 14 Shows Tree 10 lower trunk located in the corner of the site.

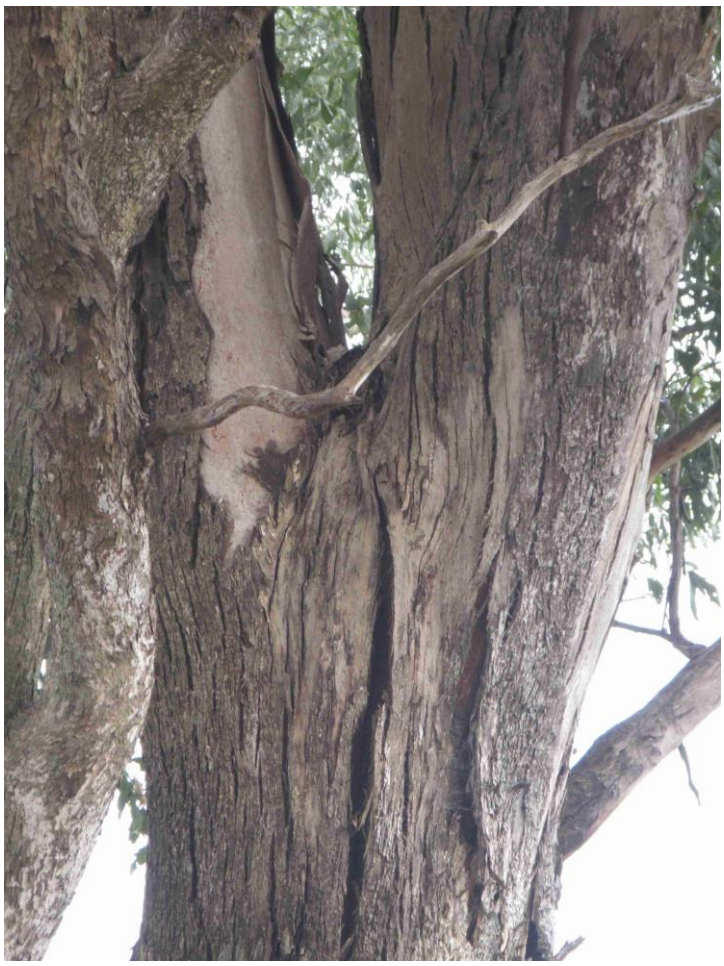


Figure 15 Shows a major split on the trunk towards the branch union.

Figure 16 Shows the trees lower trunk from a distance.

14.0 CONCLUSION

The trees which are subject of this report are protected under Blacktown City 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;

Subject to Council process, approval is recommended for the removal of Ten-(10) trees numbered 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

Trees numbered 1, 2, 3, 4, 5, 6, 7, 85 and 9 are required to be removed due to their individual location within the proposed development or impacts to or from the trees due to their further growth.

Tree Numbered 10, is required to be removed due to its poor structural condition with noted open crack/split near the trunk branch union, as it represents a WH&S concerns to site and adjoining properties if retained.

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

In summary, no objections to these trees' removal are raised, subject to appropriate environmental safeguards and relevant replacement plantings where appropriate.

15.0 RECOMMENDATIONS

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

Subject to Council process, approval is recommended for the removal of Ten-(10) trees numbered 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

Trees numbered 1, 2, 3, 4, 5, 6, 7, 85 and 9 are required to be removed due to their individual location within the proposed development or impacts to or from the trees due to their further growth.

Tree Numbered 10, is required to be removed due to its poor structural condition with noted open crack/split near the trunk branch union, as it represents a WH&S concerns to site and adjoining properties if retained.

The following points may be considered for the proposed tree removal under this application;

- The applicant considers choosing plant species indigenous to the area as an environmental offset, and thus would help to flora and fauna habitat opportunities and greater diversity of the area,
- On site plantings should take into consideration the high priority of the visual residential element though the use of advanced trees ie. 100Lt,
- The trees should be programmed to be removed whilst they are upright and intact,
- The trees prior to removal shall be fully investigated for any nesting or roosting fauna,

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.

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

ANNEXURE A: PROPOSED DEVELOPMENT LAYOUT

Proposed 12 Rooms Boarding House
at 227 Bungarribee Rd Blacktown NSW

Gus Fares Architects

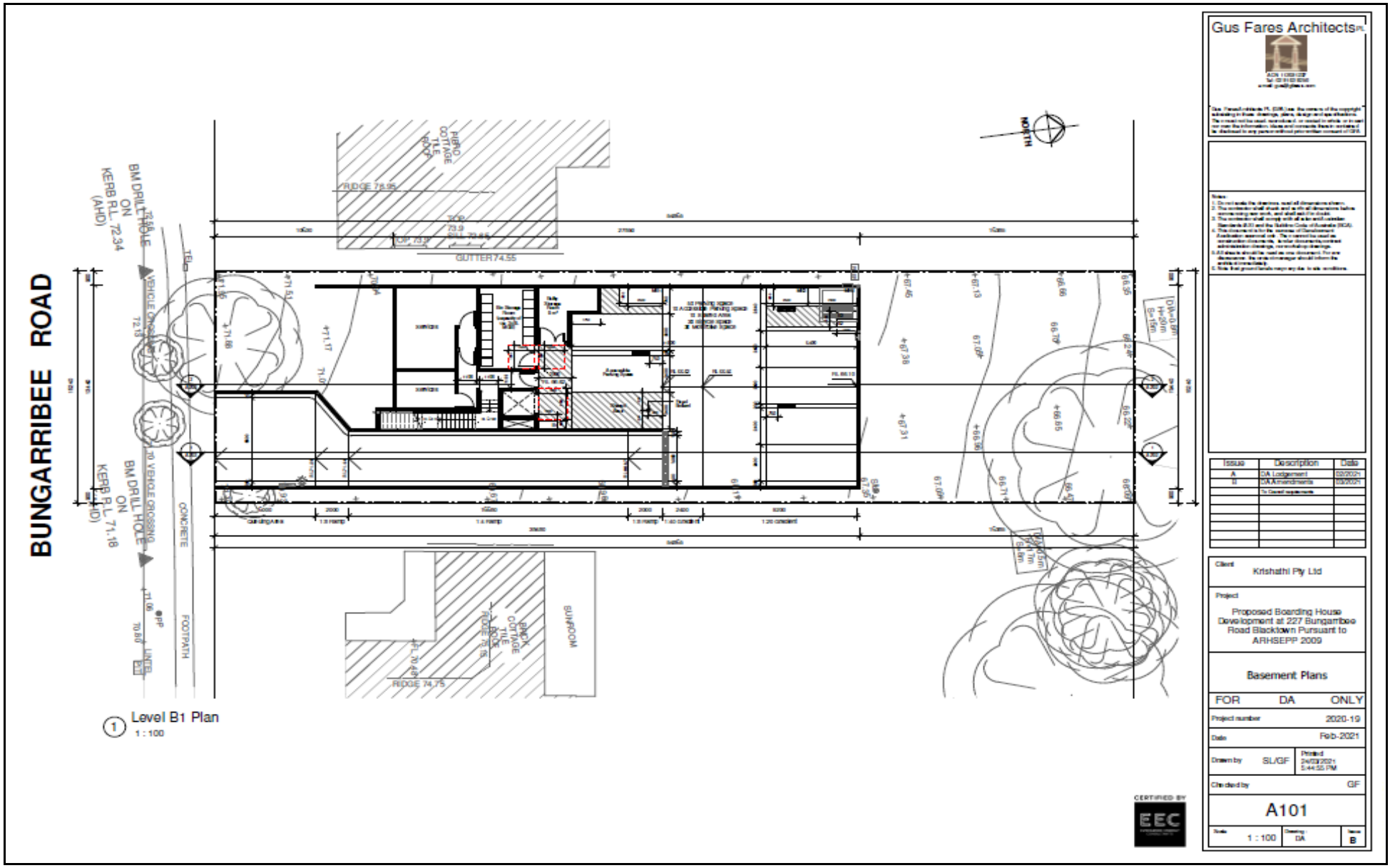
Cover Page

FOR DA ONLY

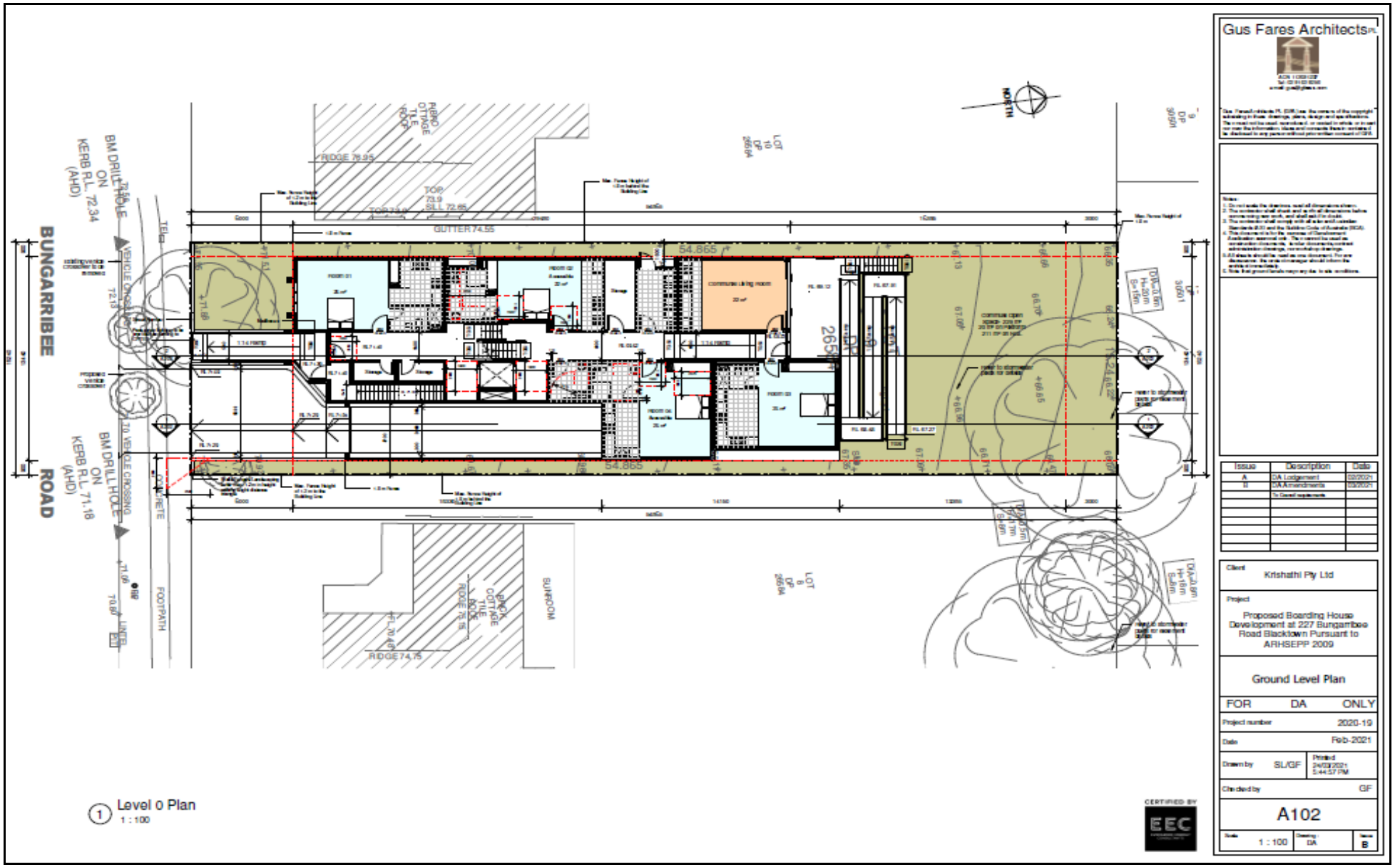
A000

EEC

HORTICULTURAL Management Services



1 Level B1 Plan
1 : 100


Gus Fares Architects
BUNGARRIBEE ROAD
NORTH
GUTTER 74.55
54.865
RIDGE 76.95
TOP 73.9
SILL 72.65
RIDGE 74.15
SUNROOM
FOOTPATH
BM DRILLHOLE ON KERB R.L. 72.34 (AHD)
BM DRILLHOLE ON KERB R.L. 71.18 (AHD)
Level 0 Plan
1 : 100
Krishathi Pty Ltd
Proposed Boarding House Development at 227 Bungarribee Road Blacktown Pursuant to ARHSEPP 2009
Ground Level Plan
FOR DA ONLY
2020-19
Feb-2021
SL/GF
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A102
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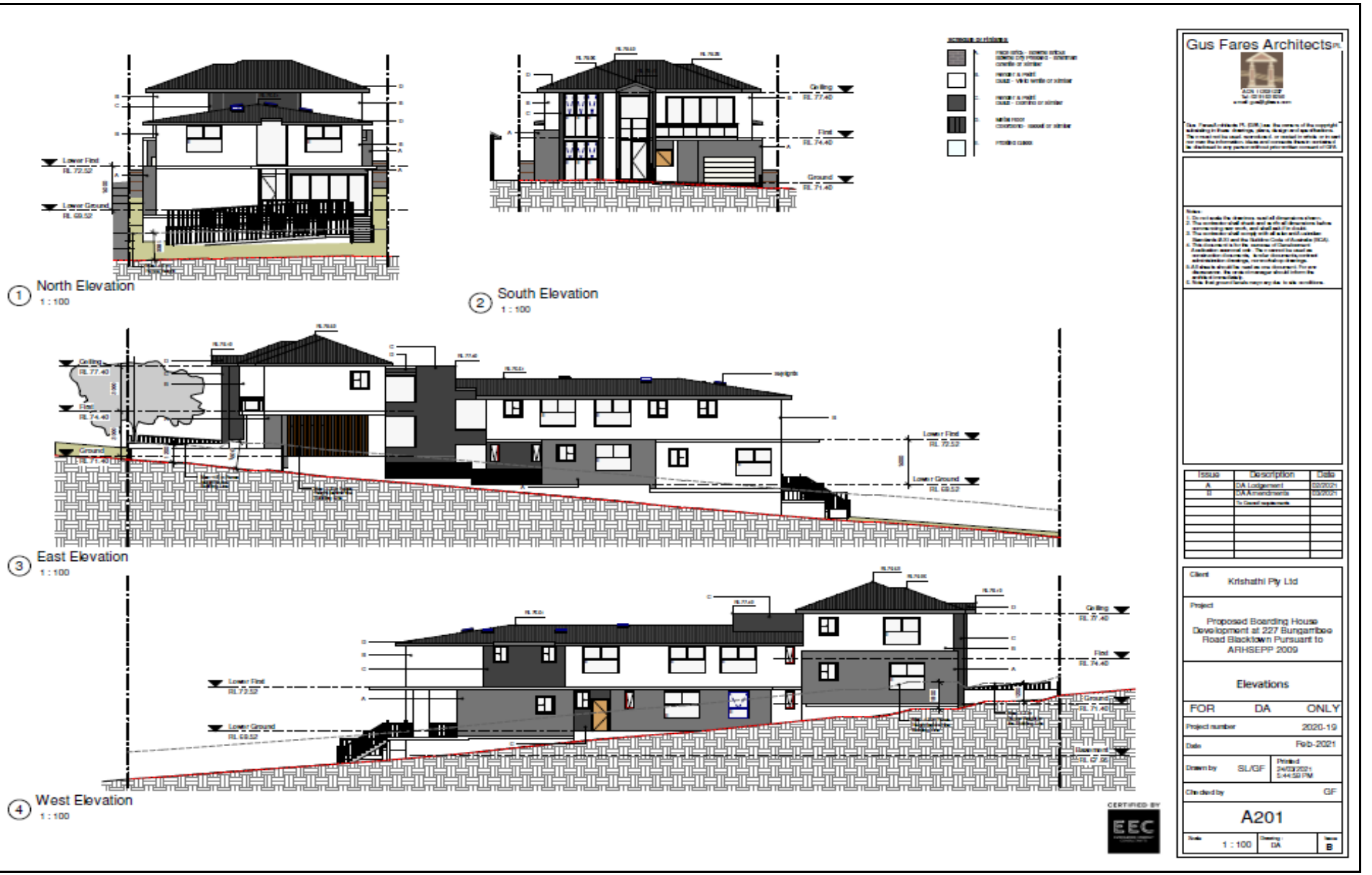
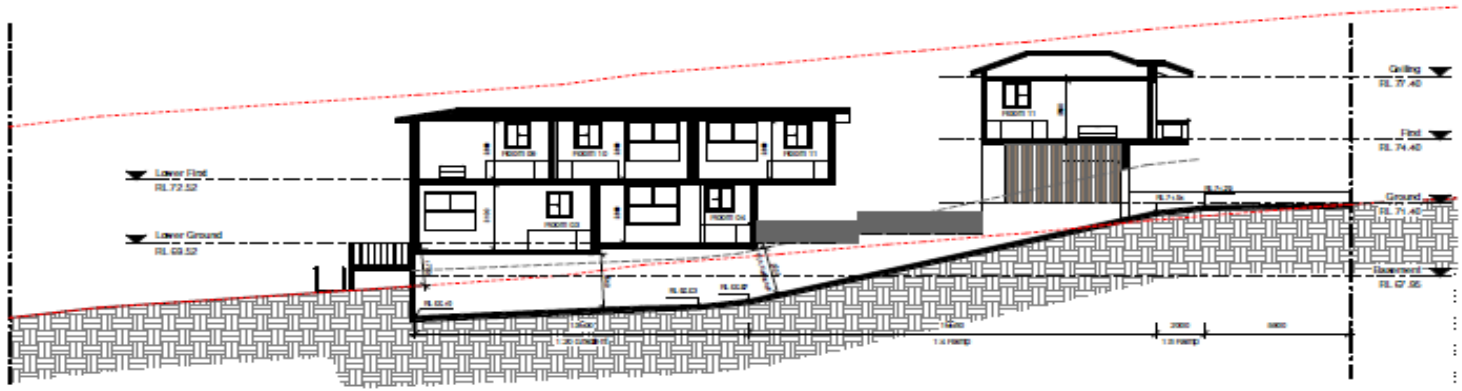


1 North Elevation
1 : 100

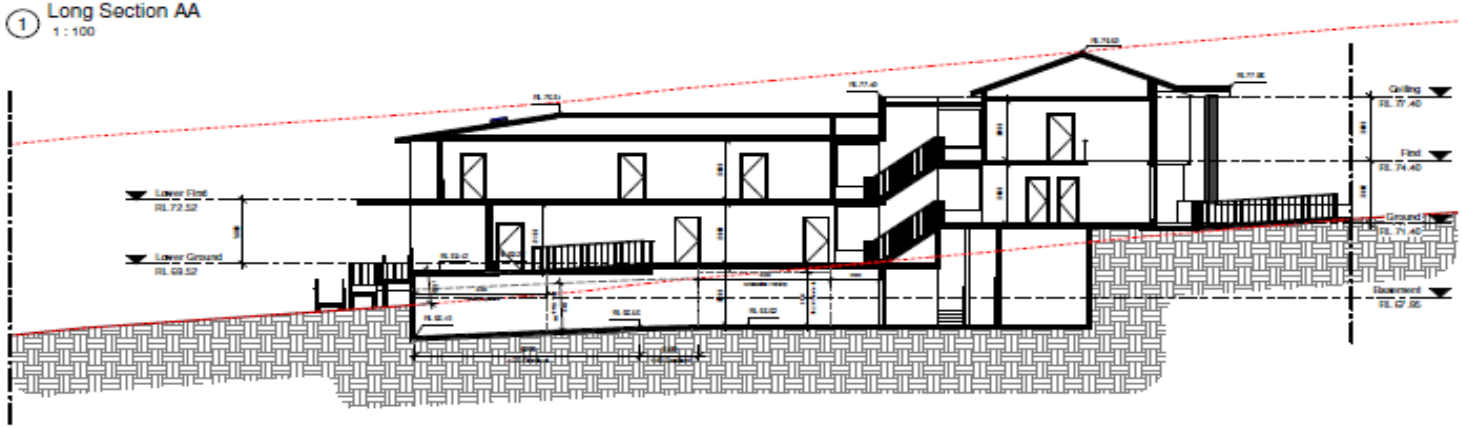
2 South Elevation
1 : 100

3 East Elevation
1 : 100

4 West Elevation
1 : 100



1 Long Section AA
1 : 100



2 Long Section BB
1 : 100

Gus Fares Architects

Issue	Description	Date
A	DA Lodgement	02/2021
B	DA Amendments	03/2021
	To Council requirements	

Client: Krishathi Pty Ltd

Project: Proposed Boarding House Development at 227 Bungambee Road Blacktown Pursuant to ARHSEPP 2009

Sections

FOR DA ONLY

Project number	2020-19
Date	Feb-2021
Drawn by	SL/GF
Printed	24/03/2021 5:44:58 PM
Checked by	GF

A202

Scale: 1 : 100 | Drawing: DA | Issue: B

CERTIFIED BY EEC

1 3D View 1

3 3D View 3

2 3D View 2

Gus Fares Architects Pty.

Issue	Description	Date
A	DA Lodgement	03/2021
B	DA Amendments	03/2021
	To Council requirements	

Client: Krishathi Pty Ltd

Project: Proposed Boarding House Development at 227 Bungambee Road Blacktown Pursuant to ARHSEPP 2009

3D Perspectives

FOR DA ONLY

Project number: 2020-19

Date: Feb-2021

Drawn by: GF

Printed: 24/03/2021 5:45:03 PM

Checked by: GF

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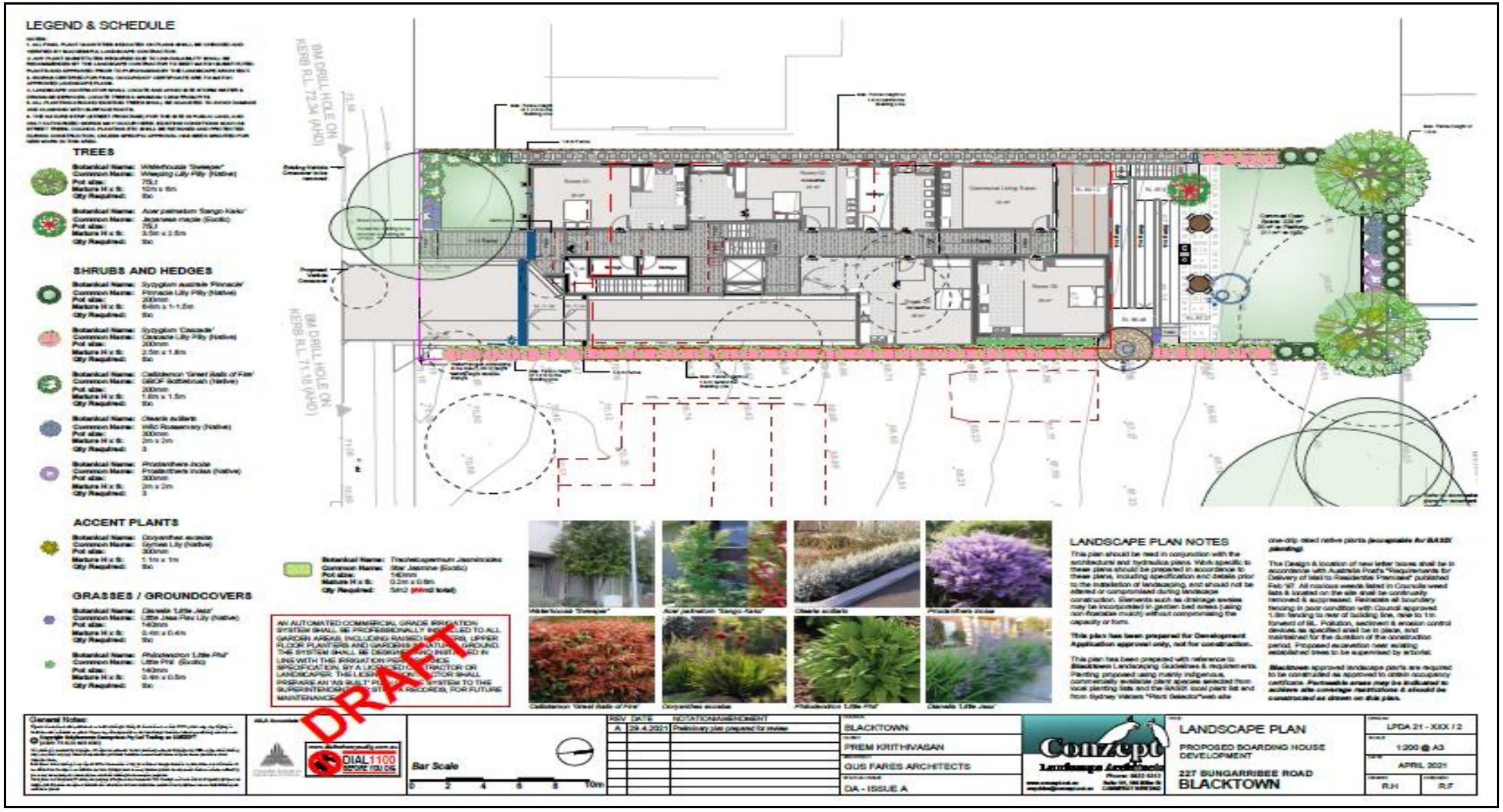
Scale: Drawing: DA Issue: B

CERTIFIED BY EEC

ANNEXURE B: PROPOSED LANDSCAPE MASTER PLAN



HORTICULTURAL Management Services

ANNEXURE C: 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 tress 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 D: 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 trees upper canopy foliage or crown condition is an important indicator of an individual trees' 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 where it is a potential hazard to site users. Dead wooding 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 ie. 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 E: REFERENCES

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2. Australian Standards - AS 4970-2009 Protection of trees on development sites.
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ANNEXURE F: CERTIFICATION

I certify that the enclosed "Arboricultural Impact Assessment" for the proposed development at 227 Bungarribee Road, Blacktown, 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 (AQF L5)***
- ***International Society of Arboriculture (ISA) Tree Risk Assessment TRAQ Certified***
- ***Diploma of Horticulture***
- ***Diploma of Conservation and Land Management***

Scott Freeman

Scott Freeman
Principal
Horticultural Management Services

Dated 3.05.2021

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