

ARBORICULTURAL ASSESSMENT AND TREE MANAGEMENT PLAN



**PICTON HIGH SCHOOL
480 ARGYLE STREET
PICTON, NSW 2571**

**REDEVELOPMENT AND
BUILDING ALTERATIONS AND
EXTENSION WORKS**

Report prepared for:

Billard Leece Partnership Pty Ltd
Studio 201 50 Holt Street
Surry Hills, NSW 2010

Report prepared by:

Scott Freeman - Principal
Horticultural Management Services
Diploma of Arboriculture (AQF L5)
ISA Tree Risk Assessment (TRAQ) Certified
Diploma of Horticulture
Diploma of Conservation and Land Management

Addendum 19th October 2018

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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.

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.

Horticultural Management Services accepts no responsibility for its use by other parties.

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1.0 INTRODUCTION AND BACKGROUND

This Arboricultural Impact Assessment and Tree Management Plan addendum was prepared Horticultural Management Services on behalf of Billard Leece Partnership Pty Ltd.

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), Threatened Species Conservation Act 1995, Biosecurity Act 2015 and Wollondilly Shire City Council Tree Preservation Order (TPO).

It is understood that this addendum report is to form part of a Development Application for a proposed redevelopment including building alterations and extensions of Picton High School, which includes the demolition of the existing dwellings, construction of new school facilities, new site accessway, removal of various trees, shrubs and associated landscaping as per Annexure A Proposed Development Layout.

Site investigations were undertaken over Friday 19th October 2018 to determine the existing trees overall health, structural integrity and identification of other physical conditions that may be present within the proposed redevelopment site, which may be affected by the proposed development.

The purpose of this report is to identify the trees within 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 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

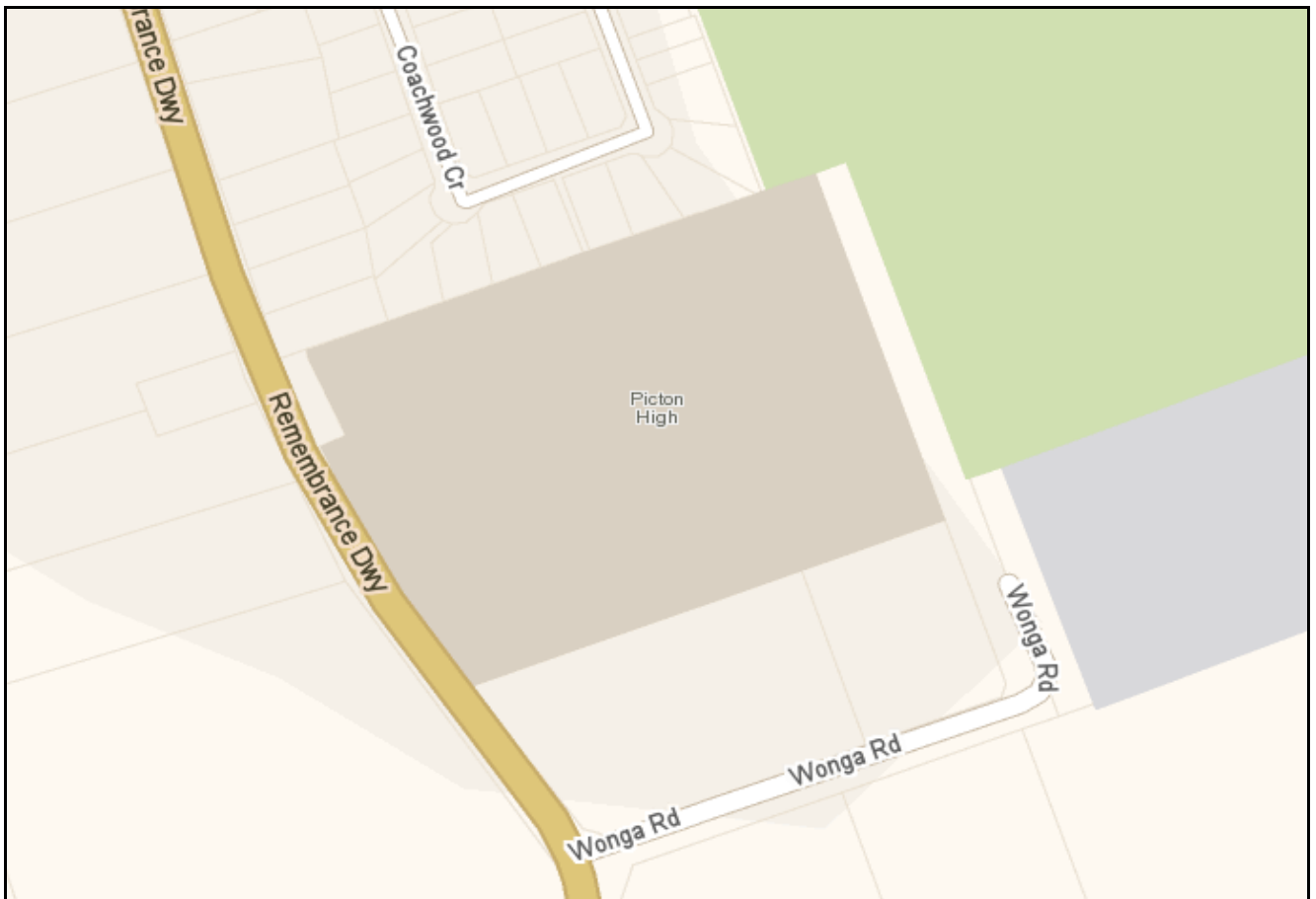


Figure 1 Shows the location of the study site. Source whereis.com.au

2.1 AERIAL SITE LOCATION



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

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 tree's and other vegetation on the subject site,
- Observations made,
- Discussion on the tree's 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 tree's and on-going public safety,
- Provide recommendations for Tree Management, if or as required, within the context of a development application,
- Prepare site specific tree protection specifications for trees recommended for retention,

4.0 SITE DESCRIPTION AND PROPOSED WORKS

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, which may be impacted upon.

The site is identified as Picton High School, 480 Argyle Street, Picton NSW 257.

It is understood that this addendum report is to form part of a Development Application for a proposed redevelopment including building alterations and extensions of Picton High School, which includes the demolition of the existing dwellings, construction of new school facilities, new site accessway, removal of various trees, shrubs and associated landscaping as per Annexure A Proposed Development Layout.

5.0 METHODOLOGY

This report was determined as a result of a site inspections undertaken Friday 19th October 2018. 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 Scheme Ordinance 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 <i>Threatened Species Conservation Act</i> (1995).
	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 Noxious Weeds 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, two trees adjoining the development have been assessed as part of this report.

There are no additional 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 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 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 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 8.0 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 trees 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.

7.1 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,

7.2 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,

7.3 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.

7.4 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. |

7.5 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 general 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. |

7.6 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

7.7 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

7.8 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°), watercourse buffer, sensitive vegetation buffer, Flora/Fauna significant/buffer as identified on site.

8.0 TREE IDENTIFICATION ASSESSMENT SUMMARY

Tree Number	Tree Species	Height	DBH @ 1.4m	SRZ Required	TPZ Required	Tree Age * Young * Semi Mature * Mature * Over Mature	Tree Health * Good * Fair * Poor * Dead	Tree Structure * Good * Fair * Poor	SULE Rating	Ecological Significance * High * Moderate * Low * Nil	Landscape/ Visual Significance * High * Moderate * Low * Nil	Tree to be Retained and Arborist Comments * Yes * No
79	Spotted Gum <i>Corymbia maculata</i>	15m	500mm	N/A	N/A	Mature	Good	Good	3	Low	Low	No, tree is required to be removed as its located within the scope of works and replaced in the landscape upon completion.
80	Jacaranda <i>Jacaranda mimosifolia</i>	9m	390mm	N/A	N/A	Mature	Good	Good	3	Nil	Low	No, tree is required to be removed as its located within the scope of works and replaced in the landscape upon completion.
81	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	15m	460mm 440mm	N/A	N/A	Mature	Fair	Fair to Poor	4A	Low	Low	No, tree is required to be removed as its located within the scope of works and replaced in the landscape upon completion.

82	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	12m	560mm	N/A	N/A	Mature	Fair	Fair to Poor	4A	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.
83	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	410mm	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.
84	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	410mm	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.

85	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	400mm	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.
86	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	12m	390mm	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.
87	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	430mm	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.

88	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	410mm	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.
89	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	410mm	N/A	N/A	Mature	Good to Fair	Fair	4C	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.
90	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	410mm	N/A	N/A	Mature	Good to Fair	Good to Fair	4A	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.

91	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	10m	390mm	N/A	N/A	Mature	Good to Fair	Good to Fair	4A	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.
92	Narrow-leaved Ironbark <i>Eucalyptus crebra</i>	11m	400mm	N/A	N/A	Mature	Good to Fair	Good to Fair	3	Low	Low	No, tree is required to be removed for material/Transportation and delivery as its located within Wonga Road and replaced in the landscape upon completion.

Figure 3 Shows a detailed list of trees observed and assessed in relation to this application. All species were identified, assessed and referenced against Councils Tree Preservation Guidelines by a Qualified Horticulturist and AQF Level 5 Arborist (Dip Arb).

9.0 ADDITIONAL TREE IDENTIFICATION BASED ON PROPOSED DEVELOPMENT

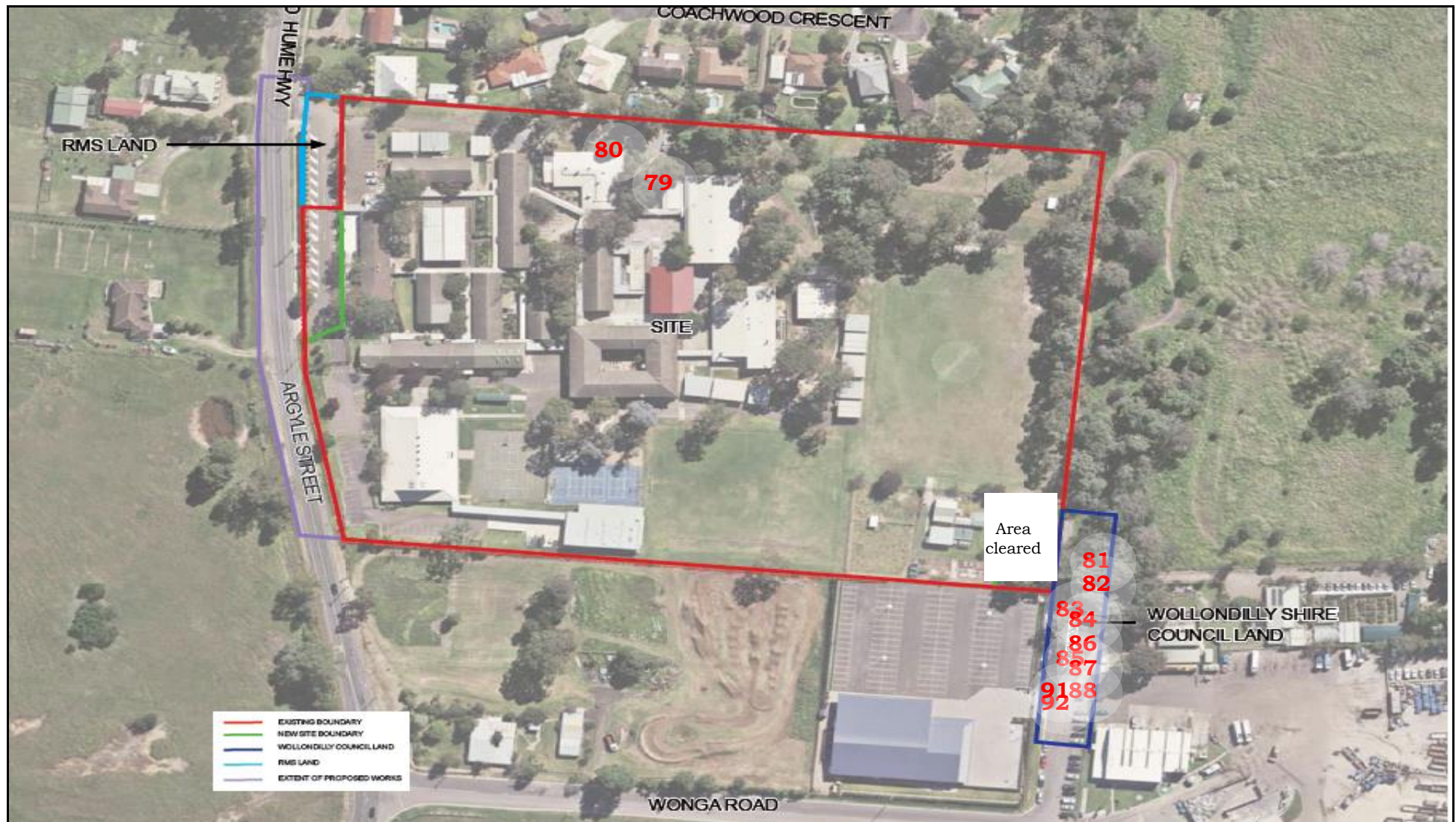


Figure 4 Shows the trees location that are required to be removed as part of the redevelopment works

10.0 SITE PHOTOGRAPHS



Figure 5 Shows Tree 80 that is required to be removed as part of the works.



Figure 6 Shows Tree 79 from a distance with adjoining trees already approved to be removed.



Figure 7 Shows a group of trees within Wonga Road, roadway that are required to be removed for vehicle access.



Figure 8 Shows Trees 88 to 92 that are required to be removed.



Figure 9 Shows typical open wound from mechanical damage to these trees.



Figure 10 Shows again more mechanical damage to the lower trunk.



Figure 11 Shows mechanical and wound on the lower trunk.



Figure 12 Shows the poor branch inclusion and structural weakness.



Figure 13 Shows dead acacias and minor grass to be removed.



Figure 14 Shows the cleared Agriculture plot of vegetation for access.

11.0 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 Fourteen-(14) trees based on their location to the proposed redevelopment works (trees 79 and 80) and accessway requirements (Trees 81 to 92) within Wonga Road for building materials.

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

- The trees prior to removal shall be fully investigated for any nesting or roosting fauna.
- A Qualified Arborist/Horticulturalist undertakes all Arboricultural works,
- In order to ameliorate impact of any development, standard erosion and sediment controls are recommended,
- Trees removed will be replaced within the landscape master plan,
- Tree replacement ratio is recommended to be 2:1 for approved removed trees.

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.

12.0 CONCLUSION

Consideration of retaining mature significant vegetation to the local 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 Fourteen- (14) trees based on their location to the proposed redevelopment works (trees 79 and 80) and accessway requirements (Trees 81 to 92) within Wonga Road for building materials.

As stated this tabled report is a snap shot of the existing trees structural condition, health ad condition at that particular 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 redevelopment that would require modification to the proposal.

ANNEXURE A: PROPOSED SCHOOL REDEVELOPMENT LAYOUT

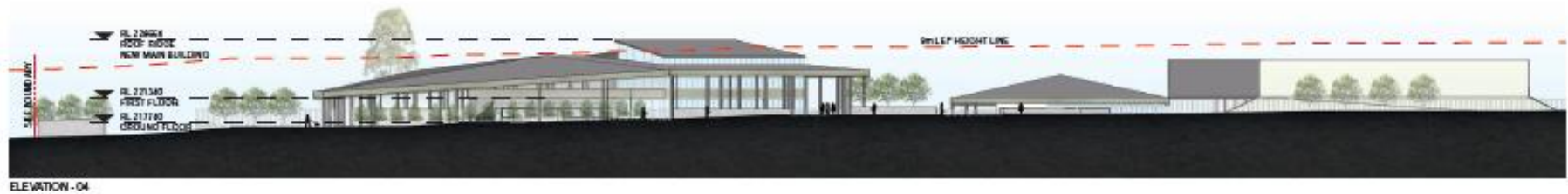
Billard Leese Partnership

Melbourne
T+61 3 9656 5000
Sydney
T+61 2 8096 4066
E info@blp.com.au
www.blp.com.au

Picton High School Redevelopment Picton, NSW







Education



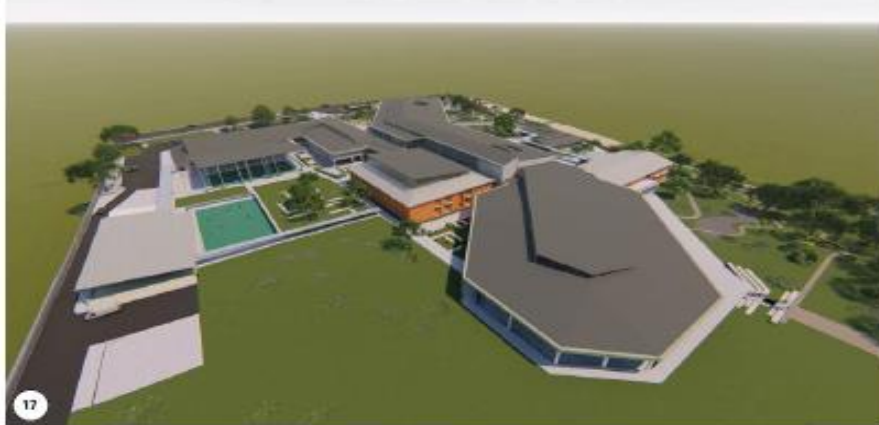
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DRAWING TITLE:
GENERAL ARRANGEMENT -
ELEVATIONS



DRAWING NUMBER
AA20-0002
SCALE
1:500 @ A3

PROJECT TITLE
PICKTON HIGH SCHOOL
REDEVELOPMENT
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PERSPECTIVE SHEET 4

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REDEVELOPMENT
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ANNEXURE B: 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 C: 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 actually 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 D: REFERENCES

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ANNEXURE E: CERTIFICATION

I certify that the enclosed “Arboricultural Assessment and Tree Management Plan Addendum” for the proposed redevelopment of Picton High School, 480 Argyle Street, Picton 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 19.10.2018

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