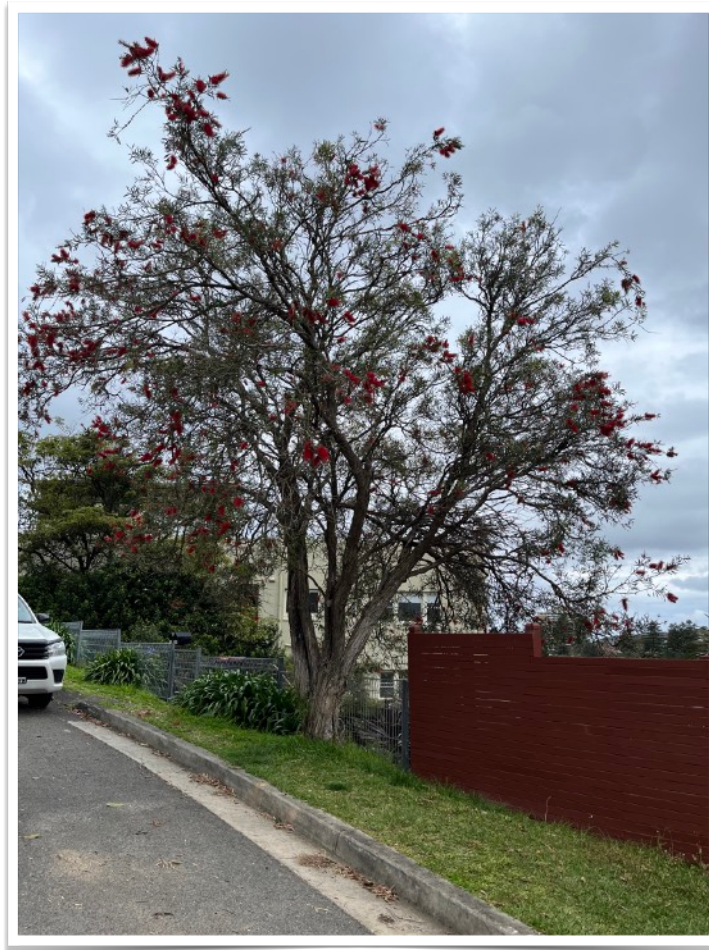




Arboricultural Impact Assessment and Management Plan



150 Queenscliff Road, Queenscliff.

Prepared For: **Christina and Anthony Clarke.**

Prepared By: **George Palmer, Botanics P/L.**

Dated: **October, 2022.**



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1.0 INTRODUCTION

1.1 Background

1.1.1 This Arboricultural Impact Assessment and Management Plan has been prepared for Scope Architects on behalf of the property owners Christiana and Anthony Clarke. This report has been requested to document the arboricultural significance of those trees located here and make recommendations for preservation or removal, based on this, and their location in relation to the proposed construction.

1.1.2 The site is an irregular shaped residential block located on the southern side of Queenscliff Road, Queenscliff. The site is in the design stages of a redevelopment process that will provide off street parking and reconfigure pedestrian access.

1.1.3 Site topography slopes down to the south from the Queenscliff Road northern boundary. This has been contoured and retained following the construction of a front boundary wall that has since been compromised by an adjacent Bottlebrush tree.

1.1.4 The purpose of this report is to identify all existing trees, assess both health and condition, determine landscape significance and safe useful life expectancy and make recommendations for preservation, removal or transplantation based on sustainability and suitability within the landscape. This report has assessed the likely impacts of the proposed development will have on the subject trees. An assessment of these impacts has been made in accordance with Australian Standard (AS) 4970 *for the Protection of Trees on Development Sites*. Pruning and removal works will be based on AS4373 *for the Pruning of Amenity trees* wherever applicable.

1.2 Methodology

1.2.1 A Visual Tree Assessment (VTA) was performed from ground level and consideration was given to the overall health of each documented tree, percentage of canopy, epicormic growth, deadwood and form for this species. The tree heights and canopy spreads have been estimated and where relevant the orientation of the canopy spread noted. The trunk diameters of each tree has been measured at breast height of 1.4 meters (DBH) and with a diameter tape to calculate Tree Protection Zones (TPZ) and Structural Root Zone (SRZ). The site was inspected by Level 5 consulting arborist George Palmer on the 18th October, 2022.

1.2.2 The impacts of the proposed works have been assessed based supplied plans. These show that the works will require the demolition of the existing residence to allow for the excavation and construction of the proposed. Supplied plant include the following;

- **Scope Architects:** Site Plan- Drawing A01. Dated: 21/09/2022.
- **Scope Architects:** Carpark Plan- Drawing A02. Dated: 21/09/2022.
- **Scope Architects:** Ground Floor Plan- Drawing A03. Dated: 21/09/2022.
- **Scope Architects:** Lower Ground Floor Plan- Drawing A04. Dated: 21/09/2022.



- **Scope Architects:** Basement Plan- Drawing A05. Dated: 21/09/2022.
- **Scope Architects:** East + West Elevation- Drawing A08 + A09. Dated: 21/09/2022.
- **Scope Architects:** Sections- Drawing A011. Dated: 21/09/2022.

2.0 RESULTS

2.1 The Site

2.1.1 The site comprises an area of just under 535 m² on the southern side of Queenscliff Road as detailed. The existing residence is located centrally on the block.

2.1.2 The site will have been part of the Coastal Banksia Creekline Rainforest plant communities. All remnant vegetation will have however been removed as part of the site's original subdivision and subsequently as part of this more recent construction. <https://www.northernbeaches.nsw.gov.au/environment/native-plants/native-planting-guide>

2.2 The Tree

2.2.1 This report focuses on the single *Callistemon viminalis*, or Bottlebrush located on the front verge. This has been assessed using Visual Tree Assessment (VTA) criteria and notes. This is a requirement of Clause 2.3.2 of the *Australian Standard 4970* (2009) for the *Protection of Trees on Development Sites*, each tree has been allocated a Retention Value based on the tree's Useful Life Expectancy and Landscape Significance with consideration to its health, structure, condition and site suitability.

2.2.2 The Retention Value does not take into account any proposed development. All trees have been allocated 1 of 4 Retention Values;

- **High Value** - Priority for Retention.
- **Moderate Value** - Consider for Retention.
- **Low Value** - Consider for Removal.
- **Remove** - Recommended for Removal Irrespective of works.

2.2.2 The documented tree is a semi mature example of the species that has been planted directly adjacent to the north of the site's northern boundaries. The tree has grown to approximately 6m in height and is supported on multiple leaders from within 1m of ground level. This canopy is supported on a series of leaders with a combined diameter of less than 50cm in diameter. This basal structure has multiple inclusions, while the tree retains a relatively sparse upper canopy.



3.0 ARBORICULTURAL IMPACT ASSESSMENT

3.1 As noted, all previously existing endemic vegetation will have been removed as part of the original subdivision and subsequently as part of more recent works. The existing construction footprints, including the northern boundary and retaining wall will have affected the abiotic development of adjacent and surrounding root growth. https://en.wikipedia.org/wiki/Abiotic_component.

3.2 This compromised root development has affected access to soil moisture and nutrients. The tree's upper canopy remains relatively sparse.

3.3 As noted, the tree's basal structure has multiple inclusions. This is a structural fault that can lead to the failure of the sub dominant leader and undermines the value of the tree.

3.4 The tree has forced the boundary wall south resulting in a vertical crack from ground level. **See Figure 2.**

4.0 DISCUSSION

4.1 The *Callistemon viminalis*, or Bottlebrush remains a fraction of its full biological potential with mature examples of the species regularly growing to over 12m in height and can be expected to be supported on trunks of well over 60cm in diameter. The tree has affected the front boundary wall and will continue to in time.

4.2 Works required to reconstruct this boundary wall are within the tree's SRZ as outlined within AS4970 for the Protection of Trees on Development Sites and will affect larger diameter tree roots. This will affect both the tree's ability to absorb soil moisture and nutrients as well as structural integrity.

4.3 The proposed works also include a driveway, again within the tree's SRZ that will affect the tree and lead to a requirement for removal.

5.0 CONCLUSIONS

5.1 The proposed works will significantly improve both the functionality and aesthetic appeal of the residence. These works will however require the removal of the single *Callistemon viminalis*, or Bottlebrush as detailed. This is a Low Value example of this common tree species that has been recommended for removal to both allow the proposed works to be completed and to provide the opportunity to replant.



6.0 RECOMMENDATIONS

6.1 It will be recommended that the *Callistemon viminalis*, or Bottlebrush be removed.

6.2 The remainder of the trees on site will be retained and protected throughout the construction process.

6.3 The indirect construction impacts should be mitigated with the implementation of the following:

6.4 Appointment of Site Arborist

A site arborist shall be appointed prior to the commencement of work on site. The Site Arborist shall clearly mark out all trees to be removed and ensure that all trees documented for retention are preserved with the implementation of the following tree protection measures. The Site Arborist shall have a minimum qualification equivalent to a NSW TAFE Certificate Level 5 or above in Arboriculture.

6.5 Inspection Points

Give 5 working days notice to allow inspections to be undertaken at the following stages;

Inspection Point	Inspection Personnel
Installation of Tree Protection Zones including Tree Protection Fencing, Silt Fencing and Signage	Site Arborist
Modification of the Tree Protection Zone	Site Arborist
Works within the Tree Protection Zone	Site Arborist
Completion of Construction Works	Site Arborist Site Supervisor.

6.6 Education

Contractors and site workers shall receive a copy of these specifications prior to the commencement of work. Contractors and site workers undertaking any works within a TPZ shall sign the site log to confirm that they have read and understand these specifications prior to their undertaking.

6.7 Tree Protection Zones

Where applicable, all trees to be retained through the construction process shall be protected from mechanical damage and the indirect impacts of the construction process with the installation of Tree Protection Zones.

Unless otherwise stated, the following activities must not be carried out within a TPZ;

- modification of existing soil levels
- excavation or trenching
- cultivation of soil
- mechanical removal of vegetation
- movement of natural rock
- storage of materials, plant or equipment



- erection of site sheds
- affixing signage or hoarding to trees
- disposal of chemical waste or construction material
- any activity that may directly or indirectly affect the health of these or surrounding trees.

Note: If access to a TPZ is required as part of the approved development, prior authorisation is required by the Site Arborist.

6.8 Tree Protection Fencing

Tree Protection Fencing shall be installed at the perimeter of the TPZ. As a minimum the Tree Protection Fencing shall be 1.8 meters high temporary chain supported by steel stakes. This shall be fastened and supported to prevent sideways movement. The trees woody roots shall not be damaged during the installation of this Tree Protection Fencing. This Tree Protection Fencing shall be erected prior to the commencement of works on site and shall be maintained for the duration of the construction process.

6.9 Signage

Tree Protection Signage shall be attached to the TPZ and displayed in a prominent location. These signs shall be repeated in 10m intervals or closer where the fence changes direction. These shall be a minimum of a 72 font size and each sign at-least 600 x 500mm.

6.10 Mulching

The area within the TPZ shall be mulched and maintained with 80mm of leaf litter mulch for the duration of the construction process. This mulch shall be spread by hand to limit the impact on underlying roots and shall be installed prior to the commencement of works on site.

6.11 Site Arborist

The Site Arborist shall inspect and approve the TPZ including mulching, signage, Tree Protection Fencing, Silt fencing and Signage prior to the commencement of works on site.

6.12 Site Management

Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height.

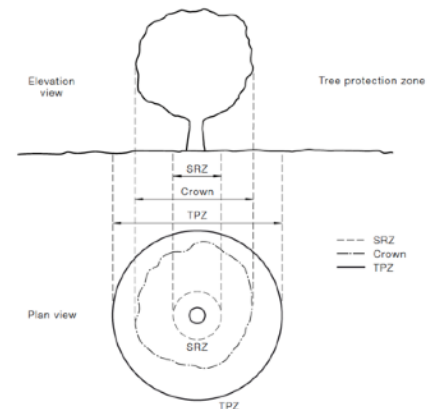
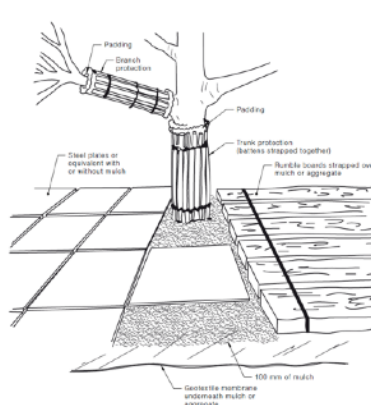
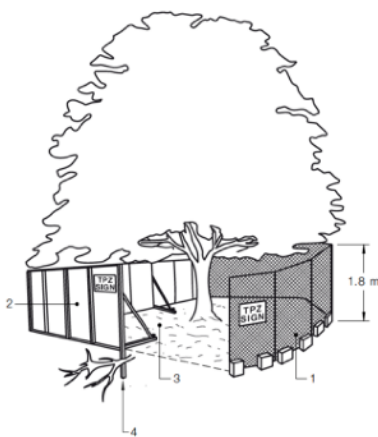
6.13 Works Within the TPZ

The TPZ may need to be modified during the works to allow access between the protected tree and the proposed construction. The TPZ shall remain as specified and only those works detailed in the proposed construction undertaken.



6.14 Completion of Works within Specified TPZ

Upon the completion of works within a TPZ the protective fencing shall be reinstated as specified. Where the construction of new structures does not allow for the reinstallation of fencing the TPZ shall be modified by the Site Arborist.



Australian Standards: AS4970 The Protection of Trees on Development Sites



Figure 1 Shows the poor basal development of the Bottlebrush and the inclusions detailed.



Figure 2 Shows the compromised northern boundary wall.



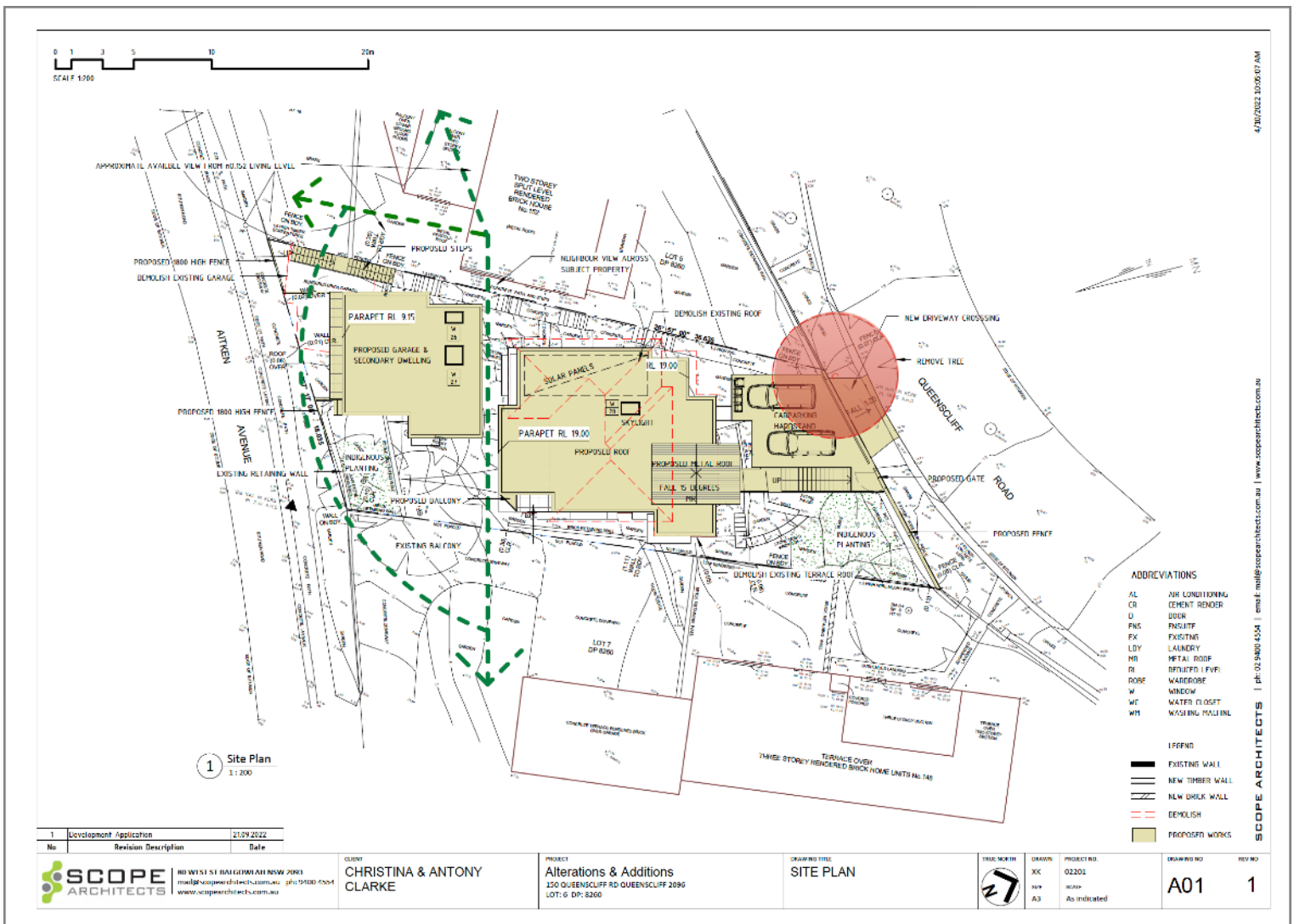


Figure 3 Shows the location of the Bottlebrush in relation to the proposed construction footprint.



9.0 GLOSSARY

COMMON NAME/GENUS SPECIES CULTIVAR – Common names can vary with selected texts. Where species is unknown, “sp.” indicated after genus. Where cultivar is unknown “cv” indicated after species. The number in brackets e.g. (x9) after the species indicates the number of trees in this tree group.

DBH – Diameter at Breast Height. Tree trunk diameter measured at breast height (1.4 metres above ground level). Fabric diameter tape is used which assumes a circular cross section. Multiple measurements indicate multiple trunks. More than three trunks are indicated as “multi”. Where DBH measurement cannot be taken at 1.4m the height at which it has been taken is indicated in the Comments column.

CANOPY SPREAD RADIUS – Average canopy radius (widest + narrowest 2). Circular canopy depictions on Tree Plan/Survey are indicative only. Where canopy spread was significantly skewed, all four cardinal point measurements were recorded.

AGE CLASS – Immature (IM), Semi-mature (SM), Mature (M), Over-mature (OM). Assessment of the tree’s current Age. A Mature (M) tree has reached a near stable size (biomass) above and below ground. Trees can have a Mature age class for >90% of life span. Over-mature (OM) trees show symptoms of irreversible decline and decreasing biomass.

VIGOUR–Good(G),Fair(F)orPoor(P). The general appearance of the canopy/foliage of the tree at the time of inspection. Vigour can vary with the season and rainfall frequency. A tree can have Good vigour but be hazardous due to Poor condition. A tree in Good vigour has the ability to sustain its life processes. Vigour is synonymous with health.

CONDITION – Good (G), Fair (F) or Poor (P). The general form and structure of the trunk/s and branching. Trunk lean, trunk/branch structural defects, canopy skewness or other hazard features are considered.

SRZ RADIUS – Structural Root Zone. The area around a tree required for tree stability. Earthworks should be prohibited within the SRZ.. The area is calculated from the formula and graph at Figure 1 of AS4970-2009. The SRZ graph has been adapted from the work of Claus Mattheck (1994). DBH has been used instead of stem diameter above root buttress in the calculation of SRZ. 0.1m has been added to SRZ to allow for minor increases in stem diameter.

TPZ RADIUS – Tree Protection Zone. Radial offset (m) of twelve times (12X) trunk DBH measured from centre of trunk (for trees less than 0.3 metre DBH minimum TPZ is 2.0 metres). To satisfactorily retain the tree construction activity (both soil cut and fill) must be restricted within this offset. TPZ offsets are rounded to the nearest 0.1 metre. Existing constraints to root spread can vary TPZ. Generally an area equivalent to the TPZ should be available to the tree post development. Encroachment occupying up to 10% of the TPZ area is acceptable without detailed root zone assessment. Encroachments greater than 10% require specific arboricultural assessment.

SULE – Safe Useful Life Expectancy. A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. The SULE method used in this assessment has been adapted for simplified use within the field. It gives a length of time that the Arborist feels a particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection. SULE ratings are Long (retainable for 40 years or more with an acceptable level of risk), Medium (retainable for 16-39 years), Short (retainable for 5-15 years) and Removal (tree requiring immediate removal due to imminent hazard or absolute unsuitability).

RECOMMENDATIONS – Retain (R), Retain Plus (R+), Transplant (T) or Remove (Rm).

COMMENTS – Comments relating to the location, surroundings and hazard potential of the trees at the time of inspection and where applicable the reason for removal.



9.0 BIBLIOGRAPHY & REFERENCES

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Disclaimer

All care has been taken to assess potential hazards, but trees are inherently dangerous. This assessment was carried out from the ground, and covers what was reasonable to be assessed at the time of inspection. No aerial or underground inspections were carried out. No liability is accepted for damage or injury caused by trees and no responsibility is accepted if the recommendations in this report are not adhered to. Limitations on the use of this report: This report is to be utilised in its entirety only. Any written or verbal submission that includes statements taken from this report may only be used where the whole report is referenced. Assumptions: Care has been taken to obtain accurate information from reliable sources. Botanicus can neither guarantee nor be responsible for the accuracy of information provided by others.