Stokes Residence

5 Gipps Place CROMER

NSW 2099

Arboriculture Impact Assessment (AIA)

Client Representatives: Mick & Nikki Stokes

Client: Mick & Nikki Stokes

Submission Date: 14/5/24

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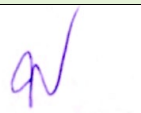
1 Quality Information

Document: *Stokes Residence*
5 Gipps Place CROMER NSW 2099
Arboriculture Impact Assessment
Date: 14/5/24
Prepared by: Nick Nelson
Reviewed by: Travis Wyper

Table 1, Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
1	9/5/24	First Draft	Nick Nelson, Consultant Arborist	
1	14/5/24	First Draft approved	Travis Wyper, Director Xylem TreeCare & Consultant Arborist	

2 Disclaimer

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- Xylem TreeCare's instructions as to the Purpose of the Report.
- Xylem TreeCare's instructions as to the identity of the Client.
- The use by the Client of the Report.
- Reliance on the Report by the Client.

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The client's receipt of the report, information, or other material in relation to the report is an express acknowledgment and acceptance of the foregoing.

3 Executive Summary

The *Stokes Residence 5 Gipps Place CROMER NSW 2099 Arboricultural Impact Assessment* (Report) relates to a total of five (5) trees located within the grounds of the private residence at 5 Gipps Place CROMER NSW 2099 (See Figure 1). The Stokes (referred to as the Client) have identified the subject site as having trees that could potentially be affected by the proposed alterations and additions. The client is applying to Northern Beaches Council for development approval to undertake alterations and additions to the existing residence. The proposed works include the extension of the existing timber deck, the construction of a new retaining wall in the garden upper tier adjacent to exiting deck, to install a new in-ground pool and the construction of new timber decking around the pool area at rear of the dwelling.

As part of the project scope, Xylem TreeCare are to determine trees which are negatively impacted by the proposed works to the extent that they will need to be removed in order for the works required to be undertaken. None of the five trees that were seen to be affected by the proposed works will require removal. Two other trees on the property are planned for removal under the 10/50 regulation and are therefore not included in this report.

4 Purpose

The purpose of this report is to undertake a review of the existing trees within the subject area to identify those trees which will need to be removed in order to undertake the required construction and provide recommendations for minimising the impact of the approved construction on the existing tree population that is to be retained.

The report has been requested by the client in order to address the requirements of the development application approval process with Northern Beaches Council.

The report findings and recommendations are based on the information and guidance contained within Australian Standard AS 4970-2009: *Protection of Trees on Development Sites.*

4.1 Project Requirements

Undertake an audit of all trees within the subject area.

- Provide information on the current condition of each tree.
- Provide general information i.e. Botanical name and dimensions i.e. height, canopy spread and DBH.
- Calculate the Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) of individual trees.

Review the approved and issued for construction plans and make recommendations for adjusting earthworks based on the proximity to individual trees within the subject area.

- Create an Arboricultural Impact Assessment Report outlining the following items:
    - Provide the current tree condition within the subject area in relation to the approved construction.
    - Utilise existing maps and plans provided outlining the earthworks in relation to the existing tree population.

5 Method

This assessment was undertaken on site on the 22nd of April 2024 using a ground-based visual assessment by Nick Nelson undertaking a desktop review of the construction plans.

The trees have been assessed for Arboricultural value using tree attributes and overall condition to assist in determining the retention value and significance.

The retention value ascribed to each tree in this report is not definitive and should be used as a guide only. Many factors influence the comparative value of a tree and a number of these factors are outside the scope of arboriculture assessment.

The assessment report provides information about the species, size, and condition of the trees, as well as any potential risks or hazards they may pose.

Site Plans, Aerial views and site photographs utilised in this report have been captured on site, downloaded from open-source GIS maps and as provided by the client's architects.

5.1 Limitations of Assignment

- Information obtained from publicly available databases has been used in the preparation of this report. The accuracy of information obtained from such sources cannot be guaranteed and has not been verified.
- The hybridization of flora species can cause an intermediate or incomplete form of morphological features and thereby affect the accuracy of field identification.
- Seasonal variations influence the presence of flowering and fruiting in flora species and thereby can affect the accuracy of field identification. Seasonal variation was not captured during the field assessment due to the short duration of the assessment.
- Xylem TreeCare has not undertaken any of the following items which may impact tree health:
    - Soil analysis
    - Below ground root analysis
    - Aerial tree inspections

5.2 Consulting Arborist

Table 2: Outlines the qualifications, experience and involvement of staff that have assisted in the development of this report.

Table 2, Staff Qualifications

Staff Member	Qualifications	Experience	Project Involvement
Travis Wyper Senior Consulting Arborist	Certificate V in Arboriculture	Travis has 28 years' experience within the arboriculture Industry and 16 years as a Consulting Arborist	Review of AIA
Nick Nelson Consulting Arborist	Certificate V in Arboriculture	Nick has 25 years' experience within the arboriculture industry; 15 years as a Consulting Arborist	Completion of review and update of AIA

5.3 Site Information

Xylem TreeCare Pty Ltd has been commissioned to provide an AIA on five (5) trees located within private property at 5 Gipps Place CROMER NSW 2099 (See Figure 1). The site is located on a heavily sloped escarpment with outcroppings of sandstone in a number of areas. Landscaped garden areas are located at the sides and rear of the property. The trees that are the subject of this report are located in the rear garden area near the boundary with the rear neighbours. No trees on neighbouring properties were found to be affected by the works.

All of the subject trees were found to be protected under the provisions of the State Environmental Planning Policy (Biodiversity and Conservation) 2021 Chapter 2 Vegetation in non-rural areas.

Figure 1 – 5 Gipps Place CROMER NSW 2099 Image extracted from SIXMAPS 2024

Figure 2 - 5 Gipps Place CROMER NSW 2099 Tree Locations

5.4 Planning and Considerations

Trees that are the focus of the Arboricultural Impact Assessment Report (as shown in Figure 1) were identified through discussions with the client. Additionally, the identification process involved walking the site, reviewing the construction plans provided and a review of the requirements of the Northern Beaches Council Planning Controls: Northern Beaches Council: Former Warringah LEP 2011 and Northern Beaches Council: Former Warringah DCP 2011.

6 Observations

The following observations were identified during the field and desktop assessments.

6.1 Tree Condition

Five (5) trees were inspected and are the subject of the AIA and this report. The trees were found to be two (2) specimens of *Buckinghamia celsissima* (Ivory Curl), a single specimen of *Brachychiton acerifolius* (Illwarra Flame Tree) and two (2) specimens of *Glochidion ferdinandi* (Cheese Tree). All five (5) of the subject trees were found to be in fair health and condition with a moderate retention value.

Trees subject of this report have not been tagged on site with their unique tree number.

Complete data for each tree can be found in 10.2 Attachment 2 – Tree Data Detail.

6.2 Tree Retention Values

The retention value ascribed to each tree in this report is not definitive and should be used as a guide only. Many factors influence the comparative value of a tree and a number of these factors are outside the scope of arboriculture assessment. These factors cannot therefore be addressed in a single rating system.

The retention value is comprised of two parts. These are the Amenity Value of the tree rated as Very Low to Very High and the Useful Life Expectancy (ULE) of the tree.

The Amenity Value of the tree relates to the contribution of the tree to the aesthetic amenity of the area. The primary determinants of amenity value are tree health, size and form.

The Amenity Value is then modified by the ULE of the tree with short ULE values reducing the RV of the tree and long ULE values increasing the RV of the tree.

Table 3, Tree Retention Values General

Category	Example	Amenity Value Value (AVV)
Very High	Generally, a very large tree that exhibits excellent health and/or for or a tree that is listed on a heritage or significance register	10
High	Generally, a large tree that exhibits good health and/or form	8
Medium	Generally, a medium tree that exhibits good health and/or form. May be a large tree that exhibits fair health and/or form.	6
Low	Generally, a small tree that exhibits good health and/or form. May be a large or medium tree that exhibits fair or poor health and/or form	4
Very Low	Generally, a small tree that exhibits poor health and/or form. May be a large or medium tree that exhibits poor, or worse, health and/or form	2

Table 4 provides a summary of all subject trees and the assessed retention value Table 4, Tree Retention Values Project specific

Category	Tree Numbers
Very high	Nil
High	Nil
Medium	1-5
Low	Nil
Very Low	nil

6.3 Trees of Significance

6.3.1 Heritage Status

None of the five (5) trees were found to be covered under existing heritage orders.

6.3.2 Ecological Status

No specific ecological status was noted for any of the five (5) trees that are the subject of this report. The two specimens of *Glochidion ferdinandi* (Cheese Tree) are locally endemic to the Northern Beaches Council LGA but are considered threatened or endangered at the time of the generation of this report.

6.4 Proposed Construction

6.4.1 Proposed Development

Works proposed at the site include the extension of existing external timber decking, alterations to existing paths and the installation of an in-ground pool and new timber decking with new stairs; with landscaping works to be conducted throughout the area.

6.5 Design Review

The design has been reviewed in the context of tree retention and removal across the site utilising guidance provided within Australian Standard AS 4970-2009 *Protection of Trees on Development Sites*.

6.5.1 Significant root damage due to major TPZ encroachment:

Where major Tree Protection Zone (TPZ) encroachment occurs levelling, filling and cutting of soil grades will result in the same types of damage that are associated with excavating, trenching and soil compaction. Ninety percent of the fine roots that absorb water and minerals are in the upper 150-300mm of soil. This area is the most conducive to root growth as it usually has available space, oxygen, nutrients, and water. Altering the soil level during trenching may either strip away the fine absorbing roots from the soil surface or remove the nutrient-rich topsoil that supplies the basic elements trees require for growth.

Raising or filling grades around trees reduces oxygen diffusion, and exchange, in the rhizosphere. As little as 100mm of soil placed over the established root systems of some species is enough to cause their death. Grade changes to the soil outside the rhizosphere of the tree may also affect water drainage, causing root dieback due to changes in soil moisture content In the situation where roots have been identified and require extraction, it is important that this be undertaken under the direct supervision of a qualified Arborist. The use of earth moving equipment has the potential to cause significant damage not only to the exposed root needing removal but also to major anchorage roots within the Structural Root Zone (SRZ); this is due to the roots being removed, split and compresses vascular tissue away from the target site. Where possible roots should be removed radially from the root zone rather than directly across the root system, this will reduce secondary damage to structural roots.

6.5.2 Allowable Encroachment

The assumption of allowable encroachment and minimal long-term health or structural impacts to the subject trees on this site requires the adaptation of the following impact limiting measures

- The adoption of root sensitive construction methods within the TPZ, minimal excavation within the TPZ to limit root severance as agreed and supervised by the project arborist (i.e. construction placed outside the TPZ where possible).
- Utilisation of fill rather than excavation to affect level changes where possible (i.e. to minimise root severance and allow the trees root system time to adjust).
- No construction occurring within the SRZ, compensatory area being available around the un-impacted aspects of the trees and the enhancement of the existing TPZ area (where allowable encroachment has occurred and the results of non-destructive digging (NDD) reveal root damage, mulching, soil conditioning and or irrigation may be required).

6.5.3 Trees affected by encroachment

The development will not unduly affect the five (5) site trees through encroachment via excavation or machine tracking. Trees 1 to 5 will have less than a 10% impact to their TPZs which is considered an acceptable level of encroachment by the *Australian Standard AS 4970–2009: Protection of Trees on Development Sites*.

6.5 TPZ Encroachment

6.5.1 Major encroachment

As per the *Australian Standard AS 4970–2009: Protection of Trees on Development Sites*, a major encroachment into the TPZ of any tree is considered to occur when it is beyond a theoretical 10% of the total TPZ area. Trees with major encroachment may require removal or, in certain instances, be retained with specific protection requirements throughout the construction stage.

6.5.2 Minor encroachment

Under AS 4970-2009, a minor encroachment is determined as less than a theoretical 10% of the total TPZ area. Trees with minor encroachment may be retained with specific, generic or no protection requirements throughout the construction stage.

6.5.3 No encroachment

Trees with no encroachment may be retained with generic or no protection requirements throughout the construction stage.

6.5.4 Identification of trees to be retained and or removed

Trees in the AIA for this project have been categorised as follows:

- Trees to be retained and protected through the development process.

7 Recommendations

7.1 Tree Removal

Following the review of the approved designs provided none of the five (5) trees that were seen to be potentially affected by the works will need to be removed in order to allow for the construction process to be undertaken.

Table 5 Tree Removals

Recommendations	High retention value		Medium retention value		Low retention value		Very Low	
	QTY	Tree Numbers	QTY	Tree Numbers	QTY	Tree Numbers	QTY	Tree Numbers
Remove for Development TPZ impact greater than 10%	0	Nil	0	Nil	0	Nil	0	Nil

7.2 Tree Retention & Pruning

Trees 1-5 will be retained; no pruning was noted as being required at the time of the inspection.

7.3 Protective Fencing, Trunk and Ground Protection Specification

AS4970-2009 Protection of Trees on Development Sites states that Protective fencing (as per Attachment 10.5) is to be installed as far as practicable from the trunk of any retained trees. Fencing should be erected as per the image and specifications in 10.5 before any machinery or materials are brought to site and before commencement of commencement of construction and or any demolition.

Once erected, protective fencing must not be removed or altered without approval from the project arborist. The TPZ fencing should be secured to restrict access.

TPZ fencing is to be constructed as per Attachment 10.5.

Tree protection fencing must remain intact throughout all proposed construction works and must only be dismantled after their conclusion. The temporary dismantling of tree protection fencing must only be done with the authorisation of the project arborist and/or the responsible authority

7.4 Tree Protection Signs

Signs identifying the TPZ (As per image in Attachment 10.5) should be placed at 10m intervals around the edge of the TPZ and should be visible from within the development site.

7.5 Project Arborist

The AS4970-2009 Protection of trees on development standard requires the appointment of a Project Arborist.

The project arborist must have a minimum five (5) years industry experience in the field of arboriculture with relevant demonstrated experience in tree management on construction sites, and Diploma level qualifications in arboriculture.

Inspections are to be conducted by the project arborist at several key points during the construction in order to ensure that protection measures are being adhered to during construction stages and any potential decline in tree health or additional remediation measures can be identified.

7.6 Project Milestones

The following visits and milestones are recommended as to when on-site tree inspection by the project arborist is required:

Table 6, Project Milestones

Item	Purpose of Visit	Timing of Visit(s)	Prerequisites
1	Regular site inspections	Minimum frequency quarterly for the duration of the project where works are affecting trees to be retained	The checklist must be completed by the Project Arborist at each site inspection and signed by both parties.
2	Final certification of retained trees	At the end of the constriction process.	

7.7 Compliance Reporting

Following the completion of the development process, the project arborist shall prepare a report detailing the completion of the works. This report will certify whether or not the works have been completed in compliance with the consent relating to required tree protection.

The report will contain photographic evidence where required to demonstrate that the work has been carried out as specified.

Matters to be monitored and included in the report will include the condition of retained trees, tree protection measures and impact of site works which may arise from changes to the approved plans.

The completed tree register, report and Compliance Statement shall be submitted to the client following the completion of the development process.

8 Offset Tree Planting

Offset planting should reflect the number of trees removed and the initial loss of amenity and biomass. New trees should be of long-term potential and sourced from a reputable supplier. Replacement tree species must suit their location on the site in terms of their potential physical size and their tolerance(s) to the surrounding environmental conditions. To avoid unethical or unprofessional tree selection and/or their placement within the landscape, replacement tree species must be selected in consultation with a consulting arborist, who can also assist in implementing successful tree establishment techniques.

Replacement tree species must have the genetic potential to reach a mature size potential of those trees removed to facilitate the development. As a guide, potential height will be a minimum of 10m (or more) and produce a spreading canopy so as they may provide amenity value to the property and contribute to the tree canopy of the surrounding area in the future.

9 Documents Reviewed

The following documents were reviewed in preparation of this report.

Table 7, Cited Project Documents

Date	Title	Revision Number	Attachment
29/03/24	Jamie King Landscape Architect Master Plans	C	10.3

9. References

- Australian Government (Dept. of Agriculture, Water and the Environment), n.d. Australian Heritage Database.[Online]
- Matthek, C. a. B. H., 1994. The Body Language of Trees: A Handbook for Failure Analysis. H. M. Stationery Office: University of Michigan.
- SEED, N. G. -., n.d. SEED - Sharing and Enabling Environmental Data. [Online] Available at: https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU
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- Standards Australia, 2009. AS4970–2009: Protection of Trees on Development Sites, Sydney: Standards Australia.
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- The British Standards Institution, 2012. BS5837–2012: Trees in relation to design, demolition and construction, London: BSI Standards Limited.
- Urban, J., 2008. Up By Roots - Healthy Soils and Trees in the Built Environment. Champaign (Illinois): International Society of Arboriculture.

10 Attachments

10.1 Attachment 1 – Site Map Showing Tree Locations

10.2 Attachment 2 – Tree Data Detailed

10.3 Attachment 3 – Construction Drawings

10.4 Attachment 4 – Descriptions

10.5 Attachment 5 – TPZ Management